DRAFT

Environmental Impact Report
Byron Airport Development Program

State Clearinghouse # 2017092059

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JUNE 2021

Printed on 30% post-consumer recycled material.

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ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
AB	Assembly Bill
AC	advisory circular
ACOE	U.S. Army Corps of Engineers
ADT	average daily traffic
AIA	Airport Influence Area
ALP	Airport Layout Plan
ALUC	Airport Land Use Commission
ALUCP	Airport Land Use Compatibility Plan
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BBID	Byron Bethany Irrigation District
BMP	best management practice
BTU	British thermal unit
CAAQS	California Ambient Air Quality Standards
CAFE	Corporate Average Fuel Economy
CAL FIRE	California Department of Forestry and Fire Protection
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CALGreen	California Green Building Standards
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CBPP	Contra Costa Countywide Bicycle and Pedestrian Plan
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	chlorofluorocarbon
CFC	California Fire Code
CGS	California Geological Survey
CH_4	methane
CMA	Congestion Management Agency
CMP	Congestion Management Plan
CNEL	Community Noise Equivalent Level
CNRA	California Natural Resources Agency
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	Contra Costa County

Acronym/Abbreviation	Definition
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DDW	Division of Drinking Water
DPM	diesel particulate matter
DWR	California Department of Water Resources
ECAP	East County Action Plan for Routes of Regional Significance
ECCFPD	East Contra Costa Fire Protection District
EDR	Environmental Data Resources
EIR	Environmental Impact Report
EISA	Energy Independence and Security Act
EO	Executive Order
EOP	Emergency Operations Plan
EPA	U.S. Environmental Protection Agency
EV	electric vehicle
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FESA	federal Endangered Species Act
FIRM	Flood Insurance Rate Map
FR	Federal Register
FTA	Federal Transit Administration
GC	California Government Code
GHG	greenhouse gas
GMP	Growth Management Program
gpd	gallons per day
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWh	gigawatts per hour
GWMP	Groundwater Management Plan
GWP	global warming potential
HAP	hazardous air pollutant
HCFC	hydrochlorofluorocarbon
HCP	Habitat Conservation Plan
HFC	hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
HMP	Hazard Mitigation Plan
HU	hydrologic unit
HUC	hydrologic unit code
HVAC	heating, ventilation, and air conditioning
I	Interstate
IGP	industrial general permit

Acronym/Abbreviation	Definition
in/sec	inches per second
kBTU	thousand British thermal units
LCFS	Low Carbon Fuel Standard
LEED	Leadership in Energy and Environmental Design
L_{eq}	equivalent continuous sound level
LID	low impact development
LOS	level of service
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MM	Mitigation Measure
MMT	million metric tons
mpg	miles per gallon
MPO	Metropolitan Planning Organization
MRZ	mineral resource zone
MS4	Municipal Separate Storm Sewer System
MT	metric tons
M_w	moment magnitude
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NFPA	National Fire Protection Association
NHTSA	National Highway Traffic Safety Administration
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_x	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NSLU	noise-sensitive land use
O_3	ozone
OSHA	Occupational Safety and Health Administration
OWTS	on-site wastewater treatment system
PDA	Priority Development Area
PFC	perfluorocarbon
PG&E	Pacific Gas & Electric Company
PGA	peak ground acceleration
PM_{10}	coarse particulate matter
$PM_{2.5}$	fine particulate matter
ppv	peak particle velocity
PRC	California Public Resources Code
project	Byron Airport Development Program
PUC	Public Utilities Code
PWS	public water system

Acronym/Abbreviation	Definition
RCRA	Resource Conservation and Recovery Act
RFS	Renewable Fuel Standard
RHNA	Regional Housing Needs Assessment
ROG	reactive organic gas
RPS	Renewables Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCS	Sustainable Communities Strategy
SDWA	Safe Drinking Water Act
SF_6	sulfur hexafluoride
SFBAAB	San Francisco Bay Area Air Basin
SFHA	Special Flood Hazard Area
SGMA	Sustainable Groundwater Management Act
SLF	Sacred Lands File
SO_2	sulfur dioxide
SR	State Route
SRA	State Responsibility Area
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCR	tribal cultural resource
TDS	total dissolved solids
TMDL	total maximum daily load
TSA	Transportation Security Administration
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tank
VMT	vehicle miles traveled
WDR	waste discharge requirement
ZEV	zero-emissions vehicle

CHAPTER ES
EXECUTIVE SUMMARY

ES.1 INTRODUCTION

Contra Costa County (County) has prepared this Draft Environmental Impact Report (EIR) to inform the community, responsible agencies, trustee agencies, and other interested agencies and organizations, of the potential significant environmental effects resulting from implementation of the proposed Byron Airport Development Program (project) and the mitigation measures or project alternatives that would avoid or substantially reduce those effects. This Draft EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.).

ES.2 SUMMARY OF IMPACTS

Table ES-1 presents a summary of the potentially significant environmental impacts that could result from the project, proposed mitigation measures, and the level of significance of the impact after the implementation of the mitigation measures.

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
Aesthetics		
Impact 3.1-2: The project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings	**MM-AES-1:** Non-aviation development shall be subject to the following design requirements: • Long facades should be designed with building articulation and landscaping to break them up into smaller visual elements, avoiding public views of uninterrupted blank walls. • For industrial and warehouse buildings, bright reflective colors and materials shall not be allowed. Paint colors should be earth tones. Natural finishes such as brick or stone facades may also be incorporated into the design. • Project lighting shall comply with the policies of the Airport Land Use Compatibility Plan. • Loading areas should be located and designed to minimize direct exposure to public views. • Structures and parking lots located on the eastern edge of the airport property shall incorporate landscaping to screen public views. The type, quantity and placement of plant material should be selected for its compatibility with airport uses (tree heights, plants that are not wildlife attractants), as well as structure, texture, color and compatibility with the building design and materials. The design of non-aviation development shall be reviewed by the Department of Conservation and Development staff prior to issuance of building permits for conformance with these standards. Aviation uses shall be reviewed by Byron Airport staff.	Less than significant
Air Quality		
Impact 3.2-1: The project would conflict with or obstruct implementation of the applicable air quality plan.	**MM-AQ-2**, below	Significant and unavoidable
Impact 3.2-2: The project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard.	**MM-AQ-1**: The project contractor would be required as conditions of approval to implement the following best management practices that are required of all projects: • •All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day. • •All haul trucks transporting soil, sand, or other loose material off site shall be covered. • •All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.	Significant and unavoidable

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	• •All vehicle speeds on unpaved roads shall be limited to 15 mph. • •All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used. • •Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure, 13 CCR 2485). Clear signage shall be provided for construction workers at all access points. • •All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation. • •Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations. **MM-AQ-2**: The project shall implement the following measures for all facilities in order to reduce operational air pollutant emissions to the extent feasible. To the extent that the measures below are addressed by MM-AQ-4 as part of any health risk assessment that is prepared, the measures in MM-AQ-4 shall take precedence. • •Only haul trucks meeting model year 2010 engine emission standards shall be used for the on-road transport of materials to and from the project site. • •Legible, durable, weather-proof signs shall be placed at truck access gates, loading docks, and truck parking areas that identify applicable anti-idling regulations. At a minimum, each sign shall include: 1) instructions for truck drivers to shut off engines when not in use; 2) instructions for drivers of diesel trucks to restrict idling to no more than 5 minutes once the vehicle is stopped, the transmission is set to "neutral" or "park," and the parking brake is engaged; and 3) telephone numbers of the building facilities manager and the CARB to report violations. • •Prior to tenant occupancy, the facility operator shall provide documentation to Contra Costa County demonstrating that occupants/tenants of the project site have been	

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	provided documentation on funding opportunities, such as the Carl Moyer Program, that provide incentives for using cleaner-than-required engines and equipment. • •The minimum number of automobile electric vehicle (EV) charging stations required by the California Code of Regulations Title 24 shall be provided. In addition, the buildings shall include electrical infrastructure sufficiently sized to accommodate the potential installation of additional auto and truck EV charging stations in the future. • •Conduit shall be installed to tractor trailer parking areas in logical locations determined by the facility operator during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at such time this technology becomes commercially available.	
Impact 3.2-4: The project could expose sensitive receptors to substantial pollutant concentrations.	**MM-AQ-3:** For non-aviation facilities with construction proposed within 1,000 feet of off-site residential receptors, a construction health risk assessment shall be prepared to assess exposure of existing sensitive receptors to toxic air contaminants (TACs) during project construction. If the health risk assessment determines that cancer and non-cancer impacts would be less than significant, no additional measures are needed. Alternatively, the results of the health risk assessment may necessitate implementation of TAC exposure reduction strategies in order to reduce potential risk to less-than-significant levels, which could include, but are not limited to, the following: • Portable equipment used during construction shall be powered by electricity from the grid instead of diesel-powered generators, to the maximum amount feasible. • Equip heavy-duty diesel-powered construction equipment with Tier 4 Interim or better diesel engines, except where Tier 4 Interim or better engines are not available for specific construction equipment. Contra Costa County shall verify and approve all pieces within the construction fleet that would not meet Tier 4 Interim standards. At a minimum, Tier 3 engines will be required if Tier 4 engines are not available. • All conditions of approval/mitigations shall be placed on construction drawings and part of any construction contract. Physical copies of the plans shall be available at the on-site job trailer.	Less than significant

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	MM-AQ-4: For non-aviation uses, a health risk assessment of long-term operations shall be prepared if the proposed facility is within 1,000 feet of off-site residential receptors and would result in any of the following: • Accommodate more than 100 trucks per day, or • Accommodate more than 40 trucks with operating TRUs per day, or • Where TRU operations exceed 300 hours per week. Results of the health risk assessment may necessitate implementation of TAC exposure reduction strategies in order to reduce potential risk to less-than-significant levels, which could include, but are not limited to, the following: • Idling of diesel equipment of any type shall be strictly prohibited at the premises. The property owner/tenant/lessee shall inform all business partners, visitors, etc., of the Zero-Idling Rule in effect for the subject property and area streets. Highly visible signs prohibiting idling shall be posted at each entrance and exist. Violators of this zero-idling rule are subject to fines and or criminal charges. • Within 90 days of occupying the space, the facility operator shall submit to the Airports Division and the Department of Conservation and Development (DCD) the first of an annual inventory of all equipment that generates criteria pollutant, TACs, and GHG emissions operated at the subject location throughout the life of the project up to year 2035. The equipment inventory shall include the year, make, and model of the equipment that was used in the previous year, including annual hours of operation for each piece of equipment, including but not limited to heavy-duty drayage and non-drayage trucks, yard equipment, bulk material handling equipment (forklifts, etc.), and any other type of material handling equipment. The purpose of the inventory is to track emissions/equipment and to assist in technology reviews. • The facility operator shall purchase/lease or otherwise acquire zero-emission vehicles/equipment (including: light/heavy duty trucks, drayage equipment, forklifts and generators) when commercially available as the attrition of gasoline/diesel equipment occurs. The property owner/tenant/lessee is encouraged to utilize any or all of the funding opportunities offered by CARB and other available programs. The availability of zero-	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	emission equipment shall be determined in a joint effort between the Airports Division and the facility operator as part of an annual technology review. • The facility operator shall adhere to the findings of the annual technologies review for reducing air emissions as part of the County Climate Action Plan and long-range sustainability goals, which encourage property owners and tenants to use cleaner technologies over time as they become available. A priority goal of the review will be the replacement of older equipment in operation at the subject site that generates the highest levels of criteria pollutant, TAC, and GHG emissions. The equipment to be replaced will be determined based on the level of emissions and cost-effectiveness of the emissions reduction (e.g., biggest reduction per dollar), and identify implementation mechanisms including, but not limited to, tenant-based improvements, grant programs, or a combination thereof, based on regulatory requirements and the feasibility analysis performed by the Airports Division. The Carl Moyer Program, or similar cost-effectiveness criteria, shall be used to assess the economic feasibility (e.g., cost effectiveness) of the identified new technologies. Zero-emission equipment employed pursuant to this mitigation may be replaced by other technologies or other types of equipment as long as the replacement equipment achieves the same or greater criteria pollutant, TAC, and GHG emission reductions as compared to the equipment identified as part of the technology review. • Every California based TRU and electronic-TRU (E-TRU) operational at the site must be registered with the Air Resource Board Equipment Registration and shall be labeled with a CARB Identification Number. Business operations handling TRUs shall install charging infrastructure and encourage E-TRUs on site, and require those non-E-TRUs to plug in while stationary at the facility. • Prior to occupancy the facility operator shall demonstrate compliance with all newly adopted Ordinances/Statutes/Plans and requirements passed by all responsible agencies in relation to traffic, diesel emissions and air quality improvement measures.	
Biological Resources		
Impact 3.3-1: The project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate,	**MM-BIO-1**: ***a. Swainson's Hawk Pre-Construction Survey, Avoidance, Minimization and Construction Monitoring.*** Prior to any ground disturbance related to covered activities that occurs during the nesting season (March 15–September 15), a qualified biologist shall	Less than significant

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Impact	Mitigation Measures	Level of Significance After Mitigation
sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	conduct a preconstruction survey no more than 1 month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. If potentially occupied nests within 1,000 feet are off the project site, then their occupancy shall be determined by observation from public roads or by observations of Swainson's hawk activity (e.g., foraging) near the project site. If nests are occupied, minimization measures and construction monitoring are required (see below). During the nesting season (March 15–September 15), covered activities within 1,000 feet of occupied nests or nests under construction shall be prohibited to prevent nest abandonment. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the East Contra Costa County Habitat Conservancy shall coordinate with the California Department of Fish and Wildlife (CDFW)/U.S. Fish and Wildlife Service (USFWS) to determine the appropriate buffer size. If young fledge prior to September 15, covered activities can proceed normally. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the project proponent can apply to the East Contra Costa County Habitat Conservancy for a waiver of this avoidance measure. Any waiver must also be approved by USFWS and CDFW. While the nest is occupied, activities outside the buffer can take place. All active nest trees shall be preserved on site, if feasible. Nest trees, including non-native trees, lost to covered activities shall be mitigated by planting 15 saplings for every tree lost with the objective of having at least 5 mature trees established for every tree lost according. Preference shall be to provide on-site mitigation if feasible. Planting of replacement trees must be reviewed by the Airports Division for compatibility with airport operations. The project proponent shall either pay the East Contra Costa County Habitat Conservancy (Habitat Conservancy) an additional fee to purchase, plant, maintain, and monitor 15 saplings on the East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) Preserve System for every tree lost, or the project proponent shall plant, maintain, and monitor 15 saplings for every tree lost at a site to be approved by the Habitat Conservancy and per the requirements of the HCP/NCCP.	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	b. Migratory Bird Treaty Act Nesting Bird Avoidance. As part of the pre-construction survey for Swainson's Hawk, the qualified biologist approved by Contra Costa County shall also survey for native nesting birds protected by the Migratory Bird Treaty Act. If any active nests are observed during surveys, a suitable avoidance buffer from the nests shall be determined and flagged by the qualified biologist based on species, location and planned construction activity. Consultation with CDFW may be required to determine appropriate buffer distances. These nests shall be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. Any habitat (i.e., trees and brush) would be removed outside of the breeding bird season. **MM-BIO-2**: ***Western Burrowing Owl Pre-Construction Survey, Avoidance, Minimization, and Construction Monitoring.*** In accordance with Conditions on Covered Activities described in the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan, prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)/California Department of Fish and Wildlife (CDFW)-approved biologist shall conduct a preconstruction survey in grassland areas identified as having potential burrowing owl habitat. The surveys shall establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFG 1995). On the parcel where the activity is proposed, the biologist shall survey the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Adjacent parcels under different land ownership shall not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. All burrows or burrowing owls shall be identified and mapped. Surveys shall take place no more than 30 days prior to construction. During the breeding season (February 1–August 31), surveys shall document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1–January 31), surveys shall document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results shall be valid only for the season (breeding or nonbreeding) during which the survey is conducted. This measure incorporates avoidance and minimization guidelines from CDFW's *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 1995).	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	If burrowing owls are found during the breeding season (February 1–August 31), the project proponent shall avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance shall include establishment of a non-disturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1–January 31), the project proponent should avoid the owls and the burrows they are using, if possible. Avoidance shall include the establishment of a buffer zone (described below). During the breeding season, buffer zones of at least 250 feet in which no construction activities can occur shall be established around each occupied burrow (nest site). Buffer zones of 160 feet shall be established around each burrow being used during the nonbreeding season. The buffers shall be delineated by highly visible, temporary construction fencing. If occupied burrows for burrowing owls are not avoided, passive relocation shall be implemented. Owls should be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These doors should be in place for 48 hours prior to excavation. The project area should be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation (CDFG 1995). Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow. **MM-BIO-3:** ***California Red-Legged Frog Avoidance.*** Written notification to U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the East Contra Costa County Habitat Conservancy, including, photos and habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent shall also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate California red-legged frog within 14 days of receiving notice from the project proponent. The	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	project proponent must allow USFWS or CDFW access to the site prior to construction if they request it. There are no restrictions under the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individuals within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW). **MM-BIO-4:** ***California Tiger Salamander Minimization.*** Written notification to USFWS, CDFW, and the Implementing Entity, including photos and breeding habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate California tiger salamanders within 14 days of receiving notice from the project proponent. The applicant must allow USFWS or CDFW access to the site prior to construction if they request it. There are no restrictions under the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individual California tiger salamanders within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW).	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	MM-BIO-5: Rare Plant Surveys and Mitigation. Prior to commencement of any project-related construction activity, Contra Costa County shall retain a qualified biologist/botanist to conduct protocol-level special-status plant surveys of the undisturbed areas of the project site for alkali milk-vetch (*Astragalus tener* var. *tener*), brittlescale (*Atriplex depressa*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled poppy (*Eschscholzia rhombipetala*), and Contra Costa goldfields (*Lasthenia conjugens*). As part of the East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) application for coverage, the surveys shall be conducted during the appropriate blooming periods. The surveys shall be conducted by a qualified biologist knowledgeable of the plant species in the region. These plant surveys shall be conducted in accordance with 2009 California Department of Fish and Wildlife (CDFW) rare plant survey protocols. If any special-status plant species are observed during surveys, the project proponent shall notify the HCP/NCCP Implementing Entity (i.e., East Contra Costa County Habitat Conservancy) of the construction schedule so as to allow the HCP/NCCP Implementing Entity the option to salvage the population(s) in accordance with HCP/NCCP Conservation Measure 3.10 (Plant Salvage when Impacts are Unavoidable) described below. Additionally, the project proponent shall confirm with the HCP/NCCP Implementing Entity that the take limits of the HCP/NCCP for the species identified have not been reached. The following special-status plant species with potential to occur on the project site are covered by the HCP/NCCP: brittlescale, big tarplant, round-leaved filaree, and recurved larkspur. Alkali milk-vetch, diamond-petaled poppy, and Contra Costa goldfields are analyzed in the HCP/NCCP but are "no take" species, and avoidance is the only acceptable mitigation measure. Congdon's tarplant and spiny-sepaled button-celery are not addressed in the HCP/NCCP. For these plants, mitigation shall consist of, in order of preference, (1) avoidance, (2) salvage and transplant as described below, or (3) off-site habitat enhancement or restoration in consultation with CDFW.	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	Plant Salvage when Impacts are Unavoidable (Covered Species) *Perennial Covered Plants* Where impacts to covered plant species cannot be avoided and plants will be removed by approved covered activities, the HCP/NCCP Implementing Entity has the option of salvaging the covered plants. Salvage methods for perennial species shall be tested for whole individuals, cuttings, and seeds. Salvage measures shall include the evaluation of techniques for transplanting as well as germinating seed in garden or greenhouse and then transplanting to suitable habitat sites in the field. Techniques shall be tested for each species, and appropriate methods shall be identified through research and adaptive management. Where plants are transplanted or seeds distributed to the field they shall be located in preserves in suitable habitat to establish new populations. Field trials shall be conducted to evaluate the efficacy of different methods and determine the best methods to establish new populations. New populations shall be located such that they constitute separate populations and do not become part of an existing population of the species, as measured by the potential for genetic exchange among individuals through pollen or propagule (e.g., seed, fruit) dispersal. Transplanting within the preserves shall only minimally disturb existing native vegetation and soils. Supplemental watering may be provided as necessary to increase the chances of successful establishment, but must be removed following initial population establishment. See also *All Covered Plants*, below. *Annual Covered Plants* For annual covered plants, mature seeds shall be collected from all individuals for which impacts cannot be avoided (or if the population is large, a representative sample of individuals). If storage is necessary, seed storage studies shall be conducted to determine the best storage techniques for each species. If needed, studies shall be conducted on seed germinated and plants grown to maturity in garden or greenhouse to propagate larger numbers of seed. Seed propagation methods shall ensure that genetic variation is not substantially affected by propagation (i.e., selection for plants best adapted to cultivated conditions). Field studies shall be conducted through the Adaptive Management Program to determine the efficacy and best approach to dispersal of seed into suitable habitat. Where	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	seeds are distributed to the field, they shall be located in preserves in suitable habitat to establish new populations. If seed collection methods fail (e.g., due to excessive seed predation by insects), alternative propagation techniques shall be necessary. See also *All Covered Plants*, below. *All Covered Plants* All salvage operations shall be conducted by the HCP/NCCP Implementing Entity. To ensure enough time to plan salvage operations, project proponents shall notify the HCP/NCCP Implementing Entity of their schedule for removing the covered plant population. The HCP/NCCP Implementing Entity may conduct investigations into the efficacy of salvaging seeds from the soil seed bank for both perennial and annual species. The soil seed bank may add to the genetic variability of the population. Covered species may be separated from the soil though garden/greenhouse germination or other appropriate means. Topsoil taken from impact sites shall not be distributed into preserves because of the risk of spreading new non-native and invasive plants to preserves. The HCP/NCCP Implementing Entity will transplant new populations such that they constitute separate populations and do not become part of an existing population of the species, as measured by the potential for genetic exchange among individuals through pollen or propagule (e.g., seed, fruit) dispersal. Transplanting or seeding "receptor" sites (i.e., habitat suitable for establishing a new population) should be carefully selected on the basis of physical, biological, and logistical considerations (Fiedler and Laven 1996); some examples of these are listed below: • Historic range of the species. • Soil type. • Soil moisture. • Topographic position, including slope and aspect. • Site hydrology. • Mycorrhizal associates (this may be important for Mount Diablo manzanita). • Presence or absence of typical associated plant species. • Presence or absence of herbivores or plant competitors.	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	• Site accessibility for establishment, monitoring, and protection from trampling by cattle or trail users.	
Impact 3.3-2: The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	**MM-BIO-6: a.** ***Wetlands and Waters of the United States or State.*** Prior to commencement of any project-related construction activity, Contra Costa County (County) shall retain a qualified biologist or wetland scientist to prepare a jurisdictional delineation of the project site to determine the extent of potentially jurisdictional features within the project disturbance area. Impacts to wetlands and other waters of the United States or waters of the state shall require authorization from the U.S. Army Corps of Engineers in the form of a Clean Water Act (CWA) Section 404 Permit, from the Regional Water Quality Control Board in the form of a CWA Section 401 Water Quality Certification, and the California Department of Fish and Wildlife in the form of a California Fish and Game Code Section 1602 Streambed Alteration Agreement. Such permits typically include measures to avoid and minimize or mitigate impacts. Where avoidance of jurisdictional wetlands or waters is not feasible, replacement of resources is required in the form of restoration or creation. The project shall seek coverage under the East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) for impacts to jurisdictional waters or wetlands. If neither avoidance nor coverage under the HCP/NCCP is feasible, the County shall comply with the requirements of the 404 permit coverage for on- or off-site mitigation, at a replacement ration of no less than 1:1. ***b. Brushy Creek Setback.*** Per the requirements of the HCP/NCCP and Contra Costa County General Plan policy, a development setback of 75 feet from Brushy Creek (measured from top of bank) is required. Note that a lesser setback (for an area less than 300 linear feet) may be approved in consultation with the East Contra Costa Habitat Conservancy. **MM-BIO-7:** ***Alkali Grassland Avoidance and Mitigation.*** A portion of the aviation development area, adjacent to the existing facilities, includes alkali grassland. Ultimate development of this site shall require either avoidance, or establishment of like alkali grassland outside of the development area, which shall be made under consultation with the East Contra Costa County Habitat Conservancy. Because this area is relatively disturbed, is isolated from similar habitat, and is maintained on an on-going basis by airport staff, it does not represent an exemplary patch of alkali grassland. Thus, mitigation ratios shall not exceed 1:0.5 (acres disturbed, acres restored/created).	Less than significant

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Impact	Mitigation Measures	Level of Significance After Mitigation
	MM-BIO-8: San Joaquin Kit Fox Preconstruction Surveys, Avoidance and Minimization, and Construction Monitoring. Prior to any ground disturbance related to covered activities, a USFWS/CDFW– approved biologist shall conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys shall establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999). Preconstruction surveys shall be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist shall survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership shall not be surveyed. The status of all dens shall be determined and mapped. Written results of preconstruction surveys shall be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities. If San Joaquin kit foxes and/or suitable dens are identified in the survey area, the measures described below shall be implemented. • If a San Joaquin kit fox den is discovered in the proposed development footprint, the den shall be monitored for 3 days by a USFWS/CDFW– approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used. • Unoccupied dens should be destroyed immediately to prevent subsequent use. • If a natal or pupping den is found, USFWS and CDFW shall be notified immediately. The den shall not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFW. • If kit fox activity is observed at the den during the initial monitoring period, the den shall be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities). If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances shall be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities shall occur within the exclusion zones. Exclusion zone radii for potential dens shall be at least 50 feet and shall be demarcated with four to five flagged stakes. Exclusion zone radii for known dens shall be at least 100 feet and shall be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox. **MM-BIO-9: East Contra Costa County HCP/NCCP Covered Shrimp Preconstruction Survey, Avoidance and Minimization, and Construction Monitoring.** Prior to any ground disturbance related to covered activities, a USFWS-approved biologist shall conduct a preconstruction survey in areas identified in the planning surveys as having suitable shrimp habitat. The surveys shall establish the presence or absence of covered shrimp and/or habitat features and evaluate use by listed shrimp in accordance with modified USFWS survey guidelines (USFWS 1996a). Project proponents are required to conduct USFWS protocol surveys in 1 year (rather than 2) to determine presence or absence of listed shrimp species. If covered shrimp are absent from the site, there are no further requirements related to covered shrimp. If covered shrimp are present, the following avoidance and minimization and construction monitoring measures are required. • To the maximum extent practicable, impacts on occupied habitat of covered shrimp shall be avoided by implementing the following measures based on existing mitigation standards (USFWS 1996b). • If suitable habitat for covered shrimp will be retained on site, establish a buffer (described below) from the outer edge of all hydric vegetation associated with seasonal wetlands occupied by covered shrimp. Alternatively, at the request of the project proponent, representatives of the East Contra Costa County Habitat Conservancy and USFWS may conduct site visits to inspect the particular characteristics of specific project sites and may approve reductions of the buffer. Buffer reductions may be approved for all or portions of	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	the site whenever reduced setbacks will maintain the hydrology of the seasonal wetland and achieve the same or greater habitat values as would be achieved by the original buffer. • Activities inconsistent with the maintenance of seasonal wetlands within the buffers and disturbance of the on-site watershed shall be prohibited. Inconsistent activities include altering existing topography; placing new structures within the buffers; dumping, burning, and/or burying garbage or any other wastes or fill materials; building new roads or trails; removing or disturbing existing native vegetation; installing storm drains; and using pesticides or other toxic chemicals. • Filling of seasonal wetlands, if unavoidable, shall be delayed until pools are dry and samples from the top 4 inches of wetland soils are collected. Soil collection will shall be sufficient to include a representative sample of plant and animal life present in the wetland by incorporating seeds, cysts, eggs, spores, and similar inocula. The amount of soil collected shall be determined by the size of the wetland filled and the variation in physical and biological conditions within the wetland. The number and size of samples shall be sufficient to capture this variation. For very small wetlands it may be most cost effective to simply collect all topsoil. These samples shall be provided to the East Contra Costa County Habitat Conservancy so that the soil can be translocated to suitable habitat within the inventory area unoccupied by covered shrimp or used to inoculate newly created seasonal wetlands on preserve lands. • Seasonal wetlands occupied by covered shrimp that are filled shall be offset by preserving or acquiring seasonal wetlands occupied by the covered shrimp species and restoring habitat suitable for the covered shrimp species in accordance with Conservation Measure 3.8. Such mitigation shall supersede requirements for mitigation of impacts on wetland habitat when covered species are present. If suitable habitat for covered shrimp shall be retained on site, project proponents shall establish a buffer from the outer edge of all hydric vegetation associated with seasonal wetlands occupied (or assumed to be occupied) by covered shrimp. This buffer zone shall be determined in the field by the biologists as the immediate watershed feeding the seasonal wetland or a minimum of 50 feet, whichever is greater. Buffers shall be marked by brightly	

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Impact	Mitigation Measures	Level of Significance After Mitigation
	colored fencing or flagging throughout the construction process. Activities shall be prohibited within this buffer in accordance with the minimization measure above. Construction personnel shall be trained to avoid affecting shrimp. A qualified biologist approved by USFWS shall inform all construction personnel about the life history of covered shrimp, the importance of avoiding their habitat, and the terms and conditions of the Eastern Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan related to avoiding and minimizing impacts on covered shrimp.	
Impact 3.3-3: The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	**MM-BIO-6**, above.	Less than significant
Cultural Resources		
Impact 3.4-1: The project may cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5	**MM-CUL-1: Accidental Discovery of Archaeological Resources.** Prior to commencement of any construction activities involving ground disturbance, Contra Costa County, a qualified archaeologist, and the construction contractor shall be invited to meet or otherwise discuss by conference call the project site's archaeological sensitivity and determine the duration and extent of monitoring for archaeological deposits that may be uncovered during construction. Given the present disturbed condition in some locations surrounding existing airport facilities, areas of elevated potential for encountering unanticipated resources should be considered those within 500 feet of the historic-era corral and Brushy Creek, and no deeper than 4 feet below the present ground surface. An archaeological monitor shall be present for initial ground-disturbing work in these areas, after which the monitoring frequency shall be reduced to periodic spot-checks elsewhere. The monitoring strategy shall be adjusted (increased, decreased, or discontinued) based on the results of monitoring within areas of elevated archaeological sensitivity and as recommended by a qualified archaeologist meeting the Secretary of the Interior's Professional Qualification Standards. In the event that archaeological resources are exposed, work within 100 feet of the find shall be halted or directed to another location until a qualified archaeologist can evaluate the significance of the	Less than significant

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Impact	Mitigation Measures	Level of Significance After Mitigation
	find. Possible management recommendations for historical or unique archaeological resources include resource avoidance, or, where avoidance is infeasible, data recovery.	
Impact 3.4-2: The project may cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	**MM-CUL-1**, above.	Less than significant
Impact 3.4-3. The project may disturb human remains, including those interred outside of dedicated cemeteries.	**MM-CUL-2: Accidental Discovery of Human Remains.** Pursuant to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, as well as California Environmental Quality Act Guidelines Section 15064.5(e), in the event of the discovery of human remains, work shall be suspended within 100 feet of the find, and the Contra Costa County (County) Coroner/Sheriff shall be immediately notified. The County Coroner/Sheriff shall determine if an investigation is necessary. If the remains are determined to be Native American: 1. The Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. 2. The NAHC shall identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American. 3. The MLD shall have an opportunity to make a recommendation to the County for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in California Public Resources Code Section 5097.98.	Less than significant
Impact 3.4-4. The project may cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.	**MM-CUL-3:** Should a potential tribal cultural resource (TCR) be inadvertently encountered, construction activities within 100 feet of the TCR shall be halted and Contra Costa County Department of Conservation and Development (Department) notified. The Department shall notify Native American tribes that have been identified by the Native American Heritage Commission to be traditionally and culturally affiliated with the geographic area of the project. Any affected tribe shall be provided a reasonable period of time to conduct a site visit and make recommendations regarding future ground disturbance activities as well as the treatment and disposition of any discovered TCR. Depending on the nature of the potential resource and tribal recommendations, review by a qualified archaeologist may be required. Implementation of proposed recommendations shall be made based on the determination of	Less than significant

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Impact	Mitigation Measures	Level of Significance After Mitigation
	the County that the approach is reasonable and feasible. All activities shall be conducted in accordance with regulatory requirements.	
Geology, Soils, and Minerals		
Impact 3.5-4. The project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code	**MM-GEO-1:** Prior to the approval of any building or improvement plans, a geotechnical report shall be prepared by a registered civil or geotechnical engineer and submitted to the County Department of Conservation and Development. The report shall address the specific approach to development. This report shall: (A) provide specific criteria and standards for identifying suitable imported fill materials; (B) if import fills may be expansive or corrosive, provisions shall be made for the import fill materials; (B) if import fills may be expansive or corrosive, provisions shall be made for testing of soils on rough-graded pads and providing design measures to avoid/control damage to foundations and buried utilities; (C) provide criteria for placement of engineered fill; (D) provide further evaluation of seismic settlement and other types of seismically induced ground failure by recognized methods appropriate to soil conditions discovered during subsurface investigation; (E) provide detailed evaluation of the compressibility of the alluvial soils and forecast the anticipated amount of total settlement and timing of settlement to occur or placing a surcharge on the site to speed settlement; (F) provide California Building Code seismic parameters; and (G) outline recommendations for geotechnical observation and testing services during site preparation-, grading-and foundation-related work. Improvement, grading, and building plans shall carry out the recommendations of the approved report.	Less than significant
Impact 3.5-5. The project may have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater	**MM-GEO-1**, above.	Less than significant
Impact 3.5-6. The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**MM-GEO-2:** If paleontological resources (i.e., fossil bones, teeth, shells, plants, or trace fossils) are exposed during construction activities for the project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified paleontologist, meeting the Society of Vertebrate Paleontology standards, can evaluate the significance of the find and determine whether or not additional study is warranted. The paleontologist shall be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large paleontological resources. Depending upon the significance of the find, the qualified	Less than significant

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	paleontologist may simply remove and record the find and allow work to continue. If the discovery proves significant under the California Environmental Quality Act, additional work, such as data recovery and extended specimen removal, may be warranted. The qualified paleontologist shall prepare a Paleontological Resources Impact Mitigation Program for the project, which outlines where paleontological monitoring is required based on the location of the discovery, geotechnical reports, and construction plans. The qualified paleontologist shall also be required to curate specimens in a repository with permanent retrievable storage and submit a final written report to the repository and lead agency for review.	
Greenhouse Gas Emissions		
Impact 3.6-1. The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	**MM-GHG-1:** The individual development projects shall include the following transit-oriented and alternative transportation development design features to reduce the use of single-occupancy fossil fueled vehicles and vehicle miles traveled: • Provide preferred parking for zero/low emission vehicles. Bicycle parking and only the minimum amount of auto parking shall be provided to encourage alternative forms of travel. • Install conduits from the building(s) to the parking lot(s), to allow for installation of EV charging stations for vehicles. The proportion of EV parking spaces shall comply with the applicable CALGreen standards. • The proposed project shall promote ridesharing programs through a multifaceted approach, such as designating a certain percentage of parking spaces for ridesharing vehicles; designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles; or providing a website or message board for coordinating rides. • The proposed project shall implement marketing strategies to reduce commute trips. Information sharing and marketing are important components to successful commute trip-reduction strategies. Implementing commute trip-reduction strategies without a complementary marketing strategy would result in lower vehicle miles traveled reductions. Marketing strategies may include: new employee orientation of trip reduction and alternative mode options; event promotions; or publications. **MM-GHG-2:** The individual development projects shall include the following design features to reduce the demand for energy use and greenhouse gas emissions:	Significant and unavoidable

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation

	• Obtain Leadership in Energy and Environmental Design (LEED) Certification for building construction, where feasible.
	• Provide the maximum amount of skylights to reduce electricity use associated with interior lighting.
	• All facility lighting shall meet or exceed the applicable Title 24 requirements.
	• All installed appliances (e.g., washer/dryers, refrigerators, dishwashers) shall be Energy Star rated or equivalent.
	• Design proposed buildings with:
	  ○ Roof structure with additional load (defined as 1 to 2 pounds per square foot) capacity to allow the future installation of solar panels without retrofitting. The installation of solar panels would comply with the policy and procedures set forth in the Interim Policy for FAA Review of Solar Energy System Projects on Federally Obligated Airports (78 FR 63276).
	  ○ Installation of an above market sized electrical infrastructure system (larger electrical room for future expansion, underground conduits (car, truck and loading dock) for future electrical charging systems, as well as additional conduits into the grid system for future expand-ability.
	MM-GHG-3: The individual development projects shall incorporate the following design features to conserve water:
	• Install low flow plumbing fixtures, such as faucets, toilets, and showers.
	• Utilize water efficient landscaping to reduce the usage of outdoor water on the premises.
	• Construct dual plumbing for both potable and recycled water for exterior landscape irrigation, unless determined infeasible by Department of Conservation and Development, Current Planning Division.	

Impact 3.6-2. The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (Potentially Significant)	**MM-GHG-1** through **MM-GHG-3**, above.	Significant and unavoidable

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
Hazards and Hazardous Materials		
Impact 3.7-1. The project has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	**MM-HAZ-1:** Prior to initiation of grading and construction, a Hazardous Materials Contingency Plan shall be in-place and consist of the following: • Identification of areas of potential fuel- or oil-impacted soils on a site plan. • Protocol for identifying suspected contaminated soils (e.g., discoloring, odor, positive photoionization detector readings), utilizing personnel trained in recognition of contaminated soils/groundwater and certified with respect to Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response (i.e., OSHA HAZWOPER training). • Procedures for notification and reporting, including internal management and to Contra Costa Environmental Health Department and local agencies, as needed. • Procedures for temporary cessation of construction activity and evaluation of the level of environmental concern. • Procedures for limiting access to the contaminated area to personnel with OSHA HAZWOPER training. • A worker health and safety plan for excavation of contaminated soil and/or groundwater. • Procedures for characterizing, managing, and disposing of potentially contaminated soils.	Less than significant
Impact 3.7-2: The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	**MM-HAZ-2:** Prior to development of the former agricultural areas identified ion Figure 3.7-1, Hazards Site Map, soil samples shall be collected and tested for pesticides. Shallow soil samples shall be collected from the upper 0.5 to –1.0 foot of ground surface from the site soils and analyzed for organochlorine pesticides by U.S. Environmental Protection Agency (EPA) Method 8081A and arsenic by EPA Method 6010B. The soil samples shall be analyzed by a California Environmental Laboratory Accreditation Program-certified laboratory. The pesticide sampling data shall be compared to applicable regulatory threshold levels such as the EPA Regional Screening Levels and the Department of Toxic Substances Control Human and Ecological Risk Office Note 3 screening levels. The arsenic sampling data shall be compared to California typical background levels, such as those in the 1996 Kearney Foundation Special Report on Background Concentrations of Trace and Major Elements in California Soils.	Less than significant

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	If the soil sampling concentrations, using the 95% upper confidence level or other statistical evaluation, exceed the screening level, mitigation shall include removal of impacted soil for off-site disposal prior to or during construction grading. A soil management plan, including a health and safety plan, shall be prepared to properly manage the excavated soil and protect worker and public health and safety.	
Hydrology and Water Quality		
Impact 3.8-3. The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c)create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows.	**MM-HYD-1**: **Hydrology and Drainage Study**. Prior to approval of individual development plans, a Hydrology and Drainage Study shall be prepared for the project to refine the size and hydrologic characteristics of drainage areas that intersect the project site, to estimate pre- and post-project flow rates and volumes under 10- 25-, 50- and 100-year storm events, and to provide recommendations for needed improvements. The Hydrology and Drainage Study shall quantify the capacity of the existing detention basin; determine whether or not it will be sufficient to serve future land uses; and establish the hydrology performance criteria and design standards applicable to potential future tenants, based on the destination of runoff (i.e., detention basin or Bushy Creek) and the degree of impervious surface coverage. The study shall be consistent with the hydrology performance criteria and design standards contained within the Contra Costa County Drainage Ordinance (Division 914), which include but are not limited to: • Drainage facilities shall be designed to convey a minimum (with sufficient freeboard) of the runoff produced by a) a 10-year storm event for facilities draining an area of less than 1 square mile, b) a 25-year storm event for facilities draining an area of between 1 and 4 square miles, and c) a 50-year storm event (and 100-year event without freeboard) for facilities draining an area of more than 4 square mile. • Finished floors shall be elevated above the base flood elevation of the one-hundred-year frequency storm runoff, as determined using the maximum potential development of the drainage basin or watershed shall. • Storm flows shall be collected and conveyed in a manner that avoids damage to any improvement, building site or dwelling which may be constructed as part of the project. • Detention basins shall be sized to contain without freeboard a one-hundred-year average recurrence interval runoff, unless it can be shown that a one- hundred-year average	Less than significant

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	recurrence interval runoff can be safely passed through the detention basin without damage to the detention basin or any other property. • Drainage capacity shall be provided that accounts for the full build-out of uses anticipated with the drainage area. The study shall be submitted to the Contra Costa County Public Works Department (Flood Control District) for review and approval prior to finalizing individual development plans. In addition, the Hydrology and Drainage Study shall be reviewed by Airports Division staff to ensure any drainage basins proposed are consistent with Federal Aviation Administration aviation obstruction standards for avian attractants (e.g., requirement to drain ponded water within 48 hours of a major storm event). **MM-HYD-2**: **Drainage Protection and Flood Control**. For all areas of the project within the Federal Emergency Management Agency (FEMA) 100-year floodplain (Special Flood Hazard Area [SFHA]), Contra Costa County shall ensure that development proposals are consistent with the requirements of the Contra Costa County Floodplain Management Ordinance (Municipal Code Chapter 82-28), Contra Costa County Flood Control Ordinance, and FEMA National Flood Insurance Program. Development proposals in this area shall be submitted to the Contra Costa County Public Works Department for review and approval, and all requirements imposed by the department shall be satisfied. Such requirements may include floodproofing measures (such as elevating structures above the base flood elevation and providing the required freeboard). In the event development proposals involve encroachment onto or undergrounding of Brushy Creek, a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers shall be obtained, per MM-BIO-6, and the Contra Costa County Public Works Department shall be provided with drainage studies and engineering reports sufficient to demonstrate that flood flows on Brushy Creek would not be impeded or redirected. For all development planned within the FEMA 100-year floodplain, subject to approval of the Contra Costa County Public Works Department, the developer would be required to file a Conditional Letter of Map Revision to process the change and shall obtain a FEMA modification of the SFHA as shown on the Flood Insurance Rate Map.	

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
Noise		
Impact 3.10-1. The project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of the project area in excess of standards established in the local general.	No feasible mitigation measures have been identified for Impact 3.10-1.	Significant and unavoidable
Transportation and Traffic		
Impact 3.13-1. The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance or the circulation system.	**MM-TRA-1:** Construct a protected receiving lane on Byron Highway at Holey Road for eastbound left turns, an eastbound left turn pocket, and a northbound left turn pocket. The receiving lane would transition to a through-lane across the railroad tracks north of the Byron Highway / Holey Road intersection. **MM-TRA-2**: Construct a signal and a northbound left turn pocket at the intersection of Byron Highway and Byron Hot Springs Road. **MM-TRA-3**: Implement overlap phasing for the eastbound right turn movement at the intersection of Byron Highway and Camino Diablo. Alternatively, construct a roundabout if feasible (considering right of way constraints from the railroad). **MM-TRA-4**: Convert the intersection of Holway Drive and Camino Diablo to an all-way stop controlled intersection and construct an eastbound left turn lane at this intersection. **MM-TRA-5**: Implement the following at the Byron Highway and Holway Drive intersection: • Construction of a signal; and • Construction of a southbound right turn pocket; and • Construction of a northbound left turn pocket; and • Realignment of the three intersections into one signalized intersection OR • Construction of a roundabout (may be infeasible due to railroad right of way) OR • Termination of Holway Drive south of the railroad tracks; and • Construction of a roundabout at the intersection of Byron Highway and Camino Diablo	Significant and unavoidable

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
	MM-TRA-6: Construct an additional westbound right turn pocket on Camino Diablo at Vasco Road. Extend the northbound right and southbound left turn **MM-TRA-7:** Prior to the completion of the first airport-related development that would serve heavy trucks, the project proponent shall construct the following local street improvements: • Widen Byron Hot Springs Road to provide two 12-foot travel lanes from Byron Highway to Holey Road. • Widen Holey Road to provide two 12-foot travel lanes from the Airport property line to Byron Highway. • Ensure an adequate paved turn-radius at the intersection of Byron Hot Springs Road and Armstrong Road. Ensure an adequate paved turn-radius at the intersection of Byron Hot Springs Road and Holey Road. **MM-TRA-8:** Implement MM-TRA-1 at Byron Highway and Holey Road. The project applicant shall pay the project's fair share of the intersection improvement cost. **MM-TRA-9:** Implement MM-TRA-2 at Byron Highway and Byron Hot Springs Road. The project applicant shall pay the project's fair share of the intersection improvement cost. **MM-TRA-10:** Implement MM-TRA-3 and extend the northbound left turn pocket to accommodate the 95th percentile queue on Byron Highway at Camino Diablo. The project applicant shall pay the project's fair share of the intersection improvement cost. **MM-TRA-11:** Construct a signal at the intersection of Holway Drive and Camino Diablo. Construct an eastbound left turn pocket (per MM-TRA-4) and a westbound left turn pocket. Alternatively, construct a roundabout at this location. The project applicant shall pay the project's fair share of the intersection improvement cost. **MM-TRA-12:** Implement MM-TRA-5 at Byron Highway and Holway Drive. The project applicant shall pay the project's fair share of the intersection improvement cost. **MM-TRA-13:** Construct an urban compact interchange consistent with long-range planning for the Vasco corridor. The project applicant shall pay the project's fair share of the intersection improvement cost.	

Table ES-1
Summary of Potentially Significant Environmental Impacts

Impact	Mitigation Measures	Level of Significance After Mitigation
Impact 3.13-4. The project would potentially increase hazards due to an incompatible feature on the roadway system.	See **MM-TRA-7**, above.	Less than significant
Utilities		
Impact 3.14-1. The project would result in the construction of new or expanded water, wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	**MM-UTIL-1:** Prior to (1) the development of non-aviation uses, or (2) the expansion of aviation uses that would increase water demand in excess of the current well system, Contra Costa County (County) shall conduct a feasibility study of the water supply sources identified in the proposed project's Water Supply Assessment. If the water supply is to consist of connection to the Byron-Bethany Irrigation District or the Town of Discovery Bay, the County shall not permit development to proceed until the feasibility of the water supply has been confirmed, and appropriate agreements or will-serve letters have been obtained from the chosen supplier(s). If part or all of the supply is to come from on-site groundwater, the County shall obtain a water supply permit from the State Water Resource Control Board Division of Drinking Water, a well drilling permit from Contra Costa County Public Works, and all other applicable permits and approvals prior to development. The feasibility study, will-serve letters, and water supply permit(s) approvals shall be required prior to the start of construction of any uses that involve human occupancy or demand water in excess of currently available supply. **MM-UTIL-2:** Prior to (1) the development of non-aviation uses, or (2) the expansion of aviation uses that involve additional human occupancy, Contra Costa County shall prepare a study for the provision of adequate wastewater disposal. Options for disposal to be studied may include expansion of the on-site septic system, construction of an on-site package wastewater plant, and connection to the Town of Discovery Bay or Byron-Bethany Irrigation District sewer systems. The study shall demonstrate feasibility of the proposed system and compliance with all applicable Contra Costa County and Regional Water Quality Control Board standards for wastewater treatment, including waste discharge requirements. If connection to an off-site system is proposed, the study shall demonstrate that the provider has adequate capacity to serve build-out of the proposed project, in addition to existing and proposed future users. **MM HYD-2**, above.	Less than significant

ES.3 ANALYSIS OF ALTERNATIVES

ES.3.1 Alternatives Considered

Three alternatives to the proposed project, including the No Project/Aviation Only Alternative, were considered in Chapter 4, Alternatives. The No Project Alternative is a required element of an EIR pursuant to Section 15126.6(e) of the CEQA Guidelines that examines the environmental effects that would occur if the project were not to proceed. The other alternatives are discussed as part of the "range of reasonable alternatives" selected by the County. The alternatives addressed in Chapter 4 are listed below, followed by a description of each:

- **No Project/Aviation Only Alternative:** This alternative assumes that 167 aircraft would be based at the airport within 10 years (compared to the current estimate of 105). Airport storage, including hangars and tie-downs, would be constructed to accommodate additional aircraft. New structures would be limited to 20,000 to 40,000 square feet due to limitations in water, sewer, and stormwater infrastructure. Development would occur on the "aviation reserve" site south of the main runway, as identified in the Project Description. No development would occur in the non-aviation area east of the main runway. Acquisition of the residence in the northeast corner of the project site would not occur.
- **Aviation Expansion:** Under this Alternative, 11.8 acres would be dedicated to future airport storage (including hangars and tie downs). Up to 154,000 square feet of aviation related buildings would be constructed, within a project area of 11.8 acres. No development would occur in the non-aviation area east of the main runway. Acquisition of the residence in the northeast corner of the project site would not occur.
- **Reduced Intensity**: The development footprint under the Reduced Intensity Alternative would be similar to the proposed project, but the intensity would be reduced. The floor-to-area ratio of logistics/warehouse/distribution would be reduced to 0.25 (from 0.30 in the proposed project). Office and commercial development would be eliminated and the potential acreage for those uses would be used for logistics/warehouse/distribution. The 11.7-acre parcel adjacent to the non-aviation development would not be acquired. The development scenario is shown in the Table ES-2, below.

Table ES-2
Reduced Intensity Alternative

	Available Acres	FAR	Building Area (ksf)	Employee/ Visitors (per ksf)	Employees/ Visitors	Persons/ Acre
Non-Aviation Uses	*46.6*					
Logistics/Warehouse/Distribution	21.0	0.25	229	1.0	229	11
Light Industry/Business Park	14.0	0.35	213	1.4	298	21
Total Non-Aviation Use	*35.6*		*484*		*1,213*	

Table ES-2
Reduced Intensity Alternative

	Available Acres	FAR	Building Area (ksf)	Employee/ Visitors (per ksf)	Employees/ Visitors	Persons/ Acre
Aviation Uses	*23.5*					
Aircraft Storage	11.8	0.25	128	0.3	32	3
Aviation	11.8	0.3	154	0.5	77	7
Total Aviation Use	*23.5*		*282*		*109*	
Total	**58**		**723**		**636**	

Notes: FAR = floor-to-area ratio; ksf = thousand square feet.

Total building area would be reduced to 723,000 square feet, as opposed to the proposed project amount of 941,000 square feet. Total employees and visitors would not exceed 636 at any given time, as opposed to 1,528 for the proposed project.

ES.3.2 Environmentally Superior Alternative

The No Project/Aviation Only Alternative would result in the least environmental impacts and would be the environmentally superior alternative. However, none of the project objectives would be achieved by the No Project/Aviation Only Alternative. Section 15126.6(e)(2) of the CEQA Guidelines states that if the environmentally superior alternative is the No Project Alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives. In this case, the environmentally superior alternative is the Aviation Expansion Alternative, which would reduce potentially significant impacts related to greenhouse gas emissions and traffic and circulation. By reducing the number of truck traffic, vendors, employees and visitors, the Aviation Expansion Alternative would reduce impacts related to transportation, GHG emissions, and noise. This alternative would achieve the aviation-related objectives of the project, but would not achieve objectives related to economic development and financial self-sufficiency.

ES.4 AREAS OF CONTROVERSY

Section 15123 (b)(2) of the CEQA Guidelines requires the executive summary of an EIR to disclose areas of controversy known to the lead agency that have been raised by the agencies and the public. The County circulated a Notice of Preparation (NOP) to solicit agency and public comments on the scope and environmental analysis to be included in the EIR. A total of three comment letters were received during the NOP public review period. Copies of the NOP and the NOP comment letters received by the County are included in Appendix A to this EIR. The following issues were raised in the written responses to the NOP:

- Transportation/vehicle miles traveled

- Cultural resources/tribal cultural resources
- Water quality

ES.5 ISSUES TO BE RESOLVED BY LEAD AGENCY

Section 15123(b)(3) of the CEQA Guidelines requires that an EIR contain a discussion of issues to be resolved. With respect to the proposed project, the key issues to be resolved include decisions by the County, as lead agency, as to:

- Selection of proposed project or feasible project alternatives.
- Feasibility of the recommended mitigation measures.
- Whether or not to proceed with the proposed project.

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CHAPTER 1
INTRODUCTION

1.1 PURPOSE AND INTENDED USE OF THIS EIR

Contra Costa County (County) has prepared this Draft Environmental Impact Report (EIR) to inform the community, responsible agencies, trustee agencies, and other interested agencies and organizations of the potential significant environmental effects resulting from implementation of the proposed Byron Airport Development Program (project) and the mitigation measures or project alternatives that would avoid or substantially reduce those effects. This Draft EIR was prepared in compliance with the California Environmental Quality Act (CEQA) (California Public Resources Code, Section 21000 et seq.) and the CEQA Guidelines (14 CCR 15000 et seq.).[1]

As described in CEQA Guidelines Section 15121(a), an EIR is an informational document that assesses the potential environmental impacts of a proposed project and identifies mitigation measures and alternatives to a proposed project that could reduce or avoid adverse environmental impacts. As the CEQA lead agency for this project, the County is required to consider the information in the EIR along with any other available information in deciding whether to approve the project. The basic requirements for an EIR include providing information that establishes the environmental setting (or project baseline) and identifying environmental impacts, mitigation measures, project alternatives, growth-inducing impacts, and cumulative impacts. In a practical sense, an EIR functions as a method of fact finding, allowing an applicant, the public, other public agencies, and agency staff an opportunity to collectively review and evaluate baseline conditions and project impacts through a process of full disclosure. Additionally, this EIR represents the primary source of environmental information for the lead agency to consider when exercising any permitting authority or approval power directly related to implementation of this project. It is not the intent of an EIR to recommend either approval or denial of a project.

This Draft EIR is a Program EIR, pursuant to CEQA Guidelines Section 15168. A Program EIR examines the environmental impacts of a series of actions that can be characterized as one large project. In this instance, there are multiple individual projects that may be approved by the County in the further development of Byron Airport. However, it is the intent of this program EIR to describe the project site and the potential development in sufficient detail that subsequent activities can be found to be within the scope of this Program EIR, and no additional environmental

[1] The California Resources Agency, in conjunction with the Governor's Office of Planning and Research, recently prepared the 2018 Update to the CEQA Guidelines. The amended guidelines were approved by the Office of Administrative Law on December 28, 2019. Per Section 15007(d), a lead agency shall comply with new requirements in amendments to the guidelines no later than the 120th day after the effective date of the amendments, unless the lead agency amends their local procedures to comply earlier. Per Section 15007(c), a document sent out for public review shall conform to the guidelines in effect at this time. Therefore, this Draft EIR reflects the amendments approved on December 28, 2018.

documents need be prepared, per Section 15168(c)(5). Please see Chapter 2, Project Description, for information on the development program and the anticipated subsequent activities.

1.2 PROJECT BACKGROUND AND OVERVIEW

The original Byron Airport Master Plan (Airport Master Plan) was adopted in 1986, and the airport was opened in 1994. The Airport Master Plan was updated in 2005 and identifies a 20-year plan to support aviation activities at the airport. The 2005 Airport Master Plan also identifies potential development opportunities on airport property to increase airport revenue and achieve economic self-sufficiency.

In 2015, the County identified a suite of proposed land uses for development on airport property, building on the framework of the 2005 Airport Master Plan. The uses included aviation reserve land uses, which would be directly associated with aircraft operations (e.g., hangar development, aircraft repair and maintenance), and aviation-related land uses, which would not be aeronautical uses but would be compatible with on-going aircraft operations (i.e., aviation-compatible uses). Examples of aviation-compatible uses include warehouse use and light industry.

The County's current General Plan policies, zoning regulations, and airport land use compatibility plan policies specific to the airport would not accommodate many of the proposed land uses. Therefore, the County's Department of Conservation and Development, Department of Public Works, and Airports Division are working collaboratively to amend the General Plan, Zoning Code, and Airport Land Use Compatibility Plan to enable on-site development in accordance with the proposed Airport Master Plan. Ultimately, the Byron Airport Planned Unit District (P-1) identified in the Zoning Code will be amended to identify additional aviation-reserve uses and aviation-compatible uses that would be permitted by right.

The project would provide for both aviation development and non-aviation (airport-related) development. Aviation uses include aircraft storage, administrative facilities, instructional facilities, fixed base operators, pilot and passenger terminal improvements, cargo facilities, and aircraft repair and service. Non-aviation development includes a wide range of industrial, commercial, and office uses that benefit from proximity to the airport and the regional roadway network. These uses may include warehousing and distribution; light manufacturing; research and development; regional retail, including construction materials and home goods; service commercial; and offices. Local retail and food service may also be provided to serve the airport and local residents.

1.3 ENVIRONMENTAL IMPACT REPORT PROCESS

Notice of Preparation

In accordance with CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was circulated for public and agency review from April 1 through April 30, 2015 (included as Appendix A). The purpose of the NOP was to provide notification that an EIR for the proposed project was being prepared and to solicit guidance on the scope and content of the document.

Three comment letters were received during the NOP scoping period. All of the comment letters were from public agencies: California Department of Transportation District 4, the Central Valley Regional Water Quality Control Board, and the Native American Heritage Commission. These letters are included as Appendix B of this EIR. The scoping comments are considered in the relevant resource sections in Chapter 3, Environmental Setting and Impacts.

Pursuant to CEQA Guidelines Section 15082(c), the Department of Conservation and Development held a scoping meeting on October 16, 2017. No additional comments regarding the scope and content of the EIR were received at this meeting.

Draft Environmental Impact Report and Public Review

This Draft EIR is being circulated for public review and comment for a period of 45 days. The beginning and end dates of the comment period are identified in the notice of availability for this Draft EIR. Written comments may be addressed to the following:

Daniel Barrios, Senior Planner
Department of Conservation and Development
Contra Costa County
30 Muir Road
Martinez, California 94533
Email: Daniel.Barrios@dcdcccounty.us

One or more public hearings will be held as part of the County Board of Supervisor's consideration of the adequacy of the EIR.

The public can review the Draft EIR and supporting documents at the following address during normal business hours (Monday through Friday, 8:00 a.m. to 4:00 p.m.) or on the County website:

Department of Conservation and Development
Contra Costa County
30 Muir Road
Martinez, California 94533

Final Environmental Impact Report and Environmental Impact Report Certification

Following the Draft EIR public review period, a Final EIR will be prepared that will include written comments on the Draft EIR received during the review period and the County's responses to those comments. The Final EIR will address any revisions to the Draft EIR made in response to agency or public comments.

Prior to approving the project, the County Board of Supervisors must certify that the EIR has been completed in compliance with CEQA, that the board has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the board. The board must also adopt findings of fact for each project impact. If the project includes one or more significant and unavoidable impacts, the board shall adopt a statement of overriding considerations explaining the decision to balance the benefits of the project against unavoidable environmental impacts if it approves the proposed project (see also California Public Resources Code, Section 21081). The Board must also approve a mitigation monitoring and reporting plan for all required mitigation measures (per California Public Resources Code, Section 21081.6).

1.4 SCOPE OF THE DRAFT ENVIRONMENTAL IMPACT REPORT

Based on a review of the project and comments received during the NOP public review period, the City determined that an EIR should be prepared that addresses the following technical issue areas:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources and Tribal Cultural resources
- Geology, Soils, and Minerals
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population, Housing, and Growth
- Public Services
- Transportation
- Utilities
- Energy Consumption

The evaluation of these resources is included in Chapter 3. Note that wildfire impacts are addressed in Chapter 3.7, Hazards and Hazardous Materials. Recreation is addressed in Chapter 3.12, Public Services. Environmental issues related to agricultural and forestry resources were considered, but it was determined that the project would have no potential for significant environmental effects. This is further discussed in Chapter 5, Other CEQA Considerations.

This EIR evaluates the direct impacts, reasonably foreseeable indirect impacts, and cumulative impacts resulting from planning, construction, and operation of the proposed project using the most current information available and in accordance with the provisions set forth in CEQA and the CEQA Guidelines. In addition, the EIR recommends potentially feasible mitigation measures, where possible, and project alternatives that would reduce or eliminate significant adverse environmental effects.

The alternatives chapter of this EIR (Chapter 4, Alternatives) was prepared in accordance with Section 15126.6 of the CEQA Guidelines. CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that would otherwise occur. Project modification or alternatives are not required, however, where significant environmental impacts would not occur.

1.5 ORGANIZATION OF THE DRAFT EIR

Executive Summary—Summarizes the elements of the project and the environmental impacts that could result from implementation of the proposed project and provides a table that lists impacts, describes proposed mitigation measures, and indicates the level of significance of impacts before and after mitigation.

Chapter 1, Introduction—Provides an introduction and overview of the EIR process and describes the intended use of the EIR and the review process.

Chapter 2, Project Description—Provides a detailed description of the proposed project, including its location, background information, project history, project objectives, and technical characteristics.

Chapter 3, Environmental Setting and Impacts—Describes the baseline environmental setting and provides an assessment of potential project impacts for each technical issue area presented. Each section is divided into four subsections: introduction, environmental setting, regulatory background, and impacts and mitigation measures (project-specific and cumulative).

Chapter 4, Alternatives—Describes and compares the proposed project alternatives to the proposed project.

Chapter 5, Other CEQA Considerations—Provides information required by CEQA regarding impacts that would result from the proposed project, including a summary of significant and unavoidable impacts, significant irreversible changes to the environment, and a discussion of impacts that were found to be less than significant and eliminated from further consideration.

Chapter 6, List of Preparers—Lists report authors who provided technical assistance in the preparation and review of the EIR.

Appendices (included on CD at the back of this EIR)—Includes various documents and data that support the analysis presented in the EIR.

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND AND OVERVIEW

Studies carried out in the late 1970s and early 1980s identified the need for one or more airports in Contra Costa County (County) to relieve the aircraft parking and operational pressures on Buchanan Field Airport in Concord, California. Continued urbanization in the western and central sections of the county made it impossible to develop a new airport in those areas.

The County focused its attention on finding a site for a new airport in the less-populated eastern portion of the county. A site evaluation led the County Board of Supervisors to select Byron Airpark to provide aviation facilities for the residents in the eastern part of the County. An Airport Master Plan and Environmental Impact Report (EIR) were adopted in 1986. The intent of the Airport Master Plan was to guide development of the airport over a 20-year planning period. Byron Airpark was purchased in 1986 and a new airfield was constructed in the early 1990s. Byron Airport opened to the public in 1994.

In 2005, the County adopted an updated Byron Airport Master Plan. In keeping with Federal Aviation Administration guidelines, the 2005 Airport Master Plan involves a 20-year planning period, with 2003 as the base year. Individual airport improvement recommendations are oriented to 5- (2008), 10- (2013), and 20-year (2023) planning horizons (Contra Costa County 2005a).

The 2005 Airport Master Plan identifies several potential development areas within the airport's boundary. Existing aircraft storage and parking occupies approximately 20 acres on the south side of the main runway. The 2005 Airport Master Plan identifies 35 acres for future aviation uses, generally located west of the intersection of the two runways, which is reserved for uses directly associated with the function of the airport, such as a terminal, hangars, fixed-base operator, aircraft maintenance, fueling facilities, and administrative offices. Approximately 86 acres is designated for non-aviation (airport-related) uses and is generally located east of the runways. This area is planned for airport compatible uses, such as light industry. This area may include leases to private entities, thereby providing a revenue stream for the airport. The remaining development area, approximately 30 acres, is reserved for low-intensity uses, including infrastructure and/or protection of the airfield. The 2005 Airport Master Plan identifies 814 acres as a biologically sensitive area for habitat management (Contra Costa County 2005a).

The County identified a range of potential land uses that could be developed in the aviation and non-aviation areas, including commercial and industrial land uses. Many of these land uses (those not directly related to aviation activities) are not compatible with the current zoning or General Plan designation. In addition, development of these land uses is constrained by the current Airport Land Use Compatibility Plan (ALUCP) (Contra Costa County 2000). The County proposes to

update the zoning for the airport property and associated General Plan policies. The update of the ALUCP must be approved by the Contra Costa County Airport Land Use Commission, which must then determine that the updated zoning ordinance and General Plan are consistent with the approved ALUCP update.

As part of this process, the County refined the proposed development areas on the airport property at this time, eliminating 11 acres of aviation development north of the crosswind runway and approximately 40 acres of non-aviation development east of the runways. An isolated 10.4 acres designated for non-aviation development on Armstrong Road was also eliminated from the proposed development area. The proposed development area is discussed further in Section 2.6, Proposed Land Use and Zoning.

2.2 PROJECT LOCATION

Byron Airport is located in southeastern Contra Costa County (Figure 2-1, Project Location). The airport property consists of 1,427 acres, including 1,307 acres south of Armstrong Road and 120 acres north of Armstrong Road. The center of the main runway is located at latitude 37°49'52" N and longitude 121°37'34" W. The proposed Byron Airport Development Program (project) site excludes the 120 acres north of Armstrong Road but includes an 11.7-acre parcel located next to the northwest corner of the airport (Figure 2-2, Project Site).

2.2.1 Setting

Byron Airport is located on the western edge of the flat Sacramento–San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. Byron Hot Springs, a now abandoned resort and former World War II prisoner-of-war camp, is located north of the airport. Several rural residential uses are on the east and west sides of the airport. Nearby unincorporated communities include Byron, approximately 2.5 miles north; Discovery Bay 4 miles to the northeast; and Mountain House, approximately 4 miles southeast. Clifton Court Forebay is located less than 2 miles east, Bethany Reservoir is approximately 3 miles south, and Los Vaqueros Reservoir is 5 miles west of the project site.

2.2.2 Project Site

The project site consists of the approximately 1,307-acre Byron Airport property south of Armstrong Road, and the 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. Byron Airport also owns an additional 120 acres north of Armstrong Road that is not part of the project site. The airport reference elevation (the highest point of the main runway) is 78.5 feet above mean sea level (AMSL). The project site elevation varies between 30 to 100 feet AMSL. The project site includes the existing airport facilities and areas proposed for development (referred to as the development area). Most of the

project site is reserved for habitat management. See Section 2.6 below for a description of the project site land uses.

Byron Airport has two nonintersecting runways, each with a parallel taxiway and several connector taxiways. General aviation facilities are generally concentrated in the west-facing "V" formed by the two runways and include aircraft surface storage, runway apron, hangars, and office space (see Figure 2-2). The majority of these facilities were constructed when the airport was built in the early 1990s.

Existing Airport Facilities and Structures

The primary runway, Runway 12-30 (northwest–southeast), is 4,500 feet long and 100 feet wide. The crosswind runway, Runway 5-23, is 3,000 feet long and 75 feet wide. Both runways have 20-foot-wide unpaved shoulders on both sides of the runways. Byron Airport can accommodate aircraft with wingspans of up to (but not including) 79 feet, and approach speeds of up to (but not including) 121 knots, and meets the Federal Aviation Administration's Air Reference Code criteria for all aircraft currently using the airport. The runways are equipped with runway lighting, and Runway 12-30 is also equipped with runway end-identifier lights.

There are three taxiways. Two are parallel to the runways, and the third connects the aircraft parking apron to the other two taxiways. The aircraft parking apron is approximately 4 acres.

Byron Airport does not have a control tower. Buildings include the 2,400-square-foot administration building (500 Eagle Court) and a 7,500-square-foot maintenance hangar (505 Eagle Court). The administration building is served by 18 parking spaces. A fuel farm is located southeast of the maintenance hangar. Accessory structures include a 300-square-foot pump house for fire protection, east of the intersection of the two runways. A small building on the north side of the airport (6900 Falcon Way) was part of the original Byron Airpark and is currently leased to Bay Area Sky Diving.

Hangars are arranged in rows, starting northwest of the administration building. There is a 28-unit T-hangar constructed in 1996, two rows of portable T-hangars (39 units), and two executive hangars (10 and 12 units). The Byron Jet Center (760 Osprey Court) is located northwest of the executive hangars. Tie downs for based aircraft and transient aircraft are located between the hangars and the taxiways. A wash rack is located at the east side of the executive hangar row. Wastewater from the wash rack drains though an oil–water separator to a leach field located to the east, between the wash rack and Taxiway A.

Utilities

Electrical power is supplied by Pacific Gas & Electric Company via Holey Road. There is no natural gas service at the airport. The water system consists of a domestic well with a 4,000-gallon holding tank, booster pump, and chlorinator. The on-site water supply is non-potable. Drinking water is provided by bottled water deliveries to the airport. The sewer system consists of a 3,000-gallon septic tank and lift station that pumps to a leach field located southwest of the aircraft apron. Telephone service is provided by SBC Communications.

2.3 PROJECT OBJECTIVES

Pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15124(b), the project description must include a clear statement of project objectives. The County has identified the following project objectives:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts.
- Achieve economic self-sufficiency of the airport through the development of airport-related land uses.
- Protect current and future airport operations from incompatible land uses.
- Provide a streamlined planning framework for future development consistent with the General Plan and the ALUCP.

2.4 PROPOSED AIRPORT LAND USE PLAN UPDATE

Every county in California that contains at least one public airport must prepare an Airport Land Use Plan (also known as an Airport Land Use Compatibility Plan), per the State Aeronautics Act (Public Utilities Code Section 21001 et seq.). The purpose of ALUCPs is to minimize the public's exposure to excessive noise and safety hazards while providing for the orderly expansion of airports. ALUCPs achieve this by identifying land use types and intensities that are compatible with four key factors: safety, noise, airspace protection, and overflight. The California Department of Transportation (Caltrans), Division of Aeronautics, provides guidance on airport land use planning in its California Airport Land Use Planning Handbook (Caltrans 2011).

The ALUCP for Byron Airport was adopted in 2000, with minor modifications in 2006 and 2016 (Contra Costa County 2000). The current ALUCP reflects the original 1986 Airport Master Plan for the East Contra Costa County Airport (now Byron Airport). The Byron Airport Master Plan was updated in 2005 (Contra Costa County 2005a). In addition, the Airport Layout Plan—required by the Federal Aviation Administration and a main component of the Airport Master Plan—was updated in 2016 (Contra Costa County 2016). The standards used in the current ALUCP for Byron

Airport are based on the 1993 edition of the Airport Land Use Planning Handbook. Caltrans has updated this guidance document twice since that time, in 2002 and 2011 (Caltrans 2011). Thus, the current ALUCP for Byron Airport does not reflect the latest planning and forecasts for the airport, and is based on dated compatibility planning guidance. The Airport Layout Plan was updated in 2016, and this is not reflected in the current ALUCP for Byron Airport. The effect is an ALUCP that does not allow the type of development envisioned in the Airport Master Plan, which would provide for the economic development and fiscal self-sufficiency of Byron Airport.

The proposed ALUCP update for Byron Airport would revise the policies for Byron Airport, consistent with current Caltrans California Airport Land Use Planning Handbook and the policy framework in effect at Buchanan Airport (Contra Costa County 2000). The Countywide policies in the ALUCP for Byron Airport would not change. Key changes for Byron Airport policies are described below by category: safety, noise, airspace protection, and overflight.

Safety

Several important changes would be made to Byron Airport's safety policies. These are driven primarily by applying the latest Caltrans guidance to the airport. The current ALUCP for Byron Airport uses six "composite" zones known as zones A, B1, B2, C1, C2, and D. These zones combine noise and safety criteria to determine compatible land uses (Contra Costa County 2000). The proposed ALUCP update would identify six safety zones (1 through 6) consistent with the current Airport Land Use Planning Handbook. By using more carefully defined safety zones and by addressing noise compatibility separately, a greater range of development types would be allowed. In addition, applying current Airport Land Use Planning Handbook standards for non-residential development would increase the level of development that would be allowed, and thereby support the County's goals for economic development at the airport.

Noise

The proposed ALUCP update for Byron Airport would separate the noise criteria from the safety criteria when determining compatible use. Noise compatibility is based on noise contours developed from forecasted aviation activity. The aviation forecasts for the airport remain valid and would not be revised as part of the proposed ALUCP update. Therefore, the noise contours would not change. The commercial and light industrial uses planned for the airport are not considered to be noise-sensitive uses. Therefore, separating the noise criteria from the safety zones would increase the range and intensity of non-residential land uses.

Airspace Protection

Airspace protection policies regulate development that may interfere with the safe navigation of aircraft, including physical structures or potential hazards such as dust, smoke, light/glare, and

wildlife. Minor changes would be made to airspace policies to reflect the 2016 Airport Layout Plan, including runway approach profiles. However, no significant changes would be made to the policies, and there would be no effect on allowable land uses.

Overflight

Overflight policies do not regulate land use but identify the areas subject to noise from overflight (as compared to noise from aircraft approaches and departures). The overflight area, along with airspace protection, discussed above, helps to define the airport influence area. The airport influence area includes a notification area (the area where home buyers must be notified of the presence of the airport), which is related to overflight. Overflight policies also identify areas where avigation easements (dedicating airspace rights to the airport) should be acquired. The notification area would be slightly larger in the proposed ALUCP update for Byron Airport to reflect the 2016 Airport Layout Plan, but there would be no change to policies that would affect allowable land uses or future development.

2.5 GENERAL PLAN AMENDMENT

The County General Plan designates the existing aviation facilities and the master-planned development areas as Public/Semi-Public (PS). The remainder of the airport property is designated as Open Space (consistent with the habitat management use for the non-developable airport property) (Contra Costa County 2017). The General Plan designation for the existing airport property will not change. The 11.7-acre acquisition parcel would be redesignated from Agricultural Lands to PS.

General Plan Policy 5-66 states, "Establishment of commercial, industrial or residential development around the planned airport shall not be allowed" (Contra Costa County 2005b). This policy would be amended to specify that commercial or industrial development would be allowed on airport property if it is consistent with the ALUCP and the Airport Master Plan for Byron Airport.

Policy 5-77 would be updated to reflect the new compatibility zone designations (Zone B-1 would become Safety Zone 2) and the additional uses at the airport that may be found compatible under the updated ALUCP for Byron Airport.

2.6 PROPOSED LAND USES AND ZONING

The airport property is currently zoned Planned Unit District (P-1) (Contra Costa County 2005c). The P-1 zoning is intended to allow diversification in the relationship of various uses, buildings, structures, lot sizes, and open space areas while ensuring substantial compliance with the General Plan and the intent of the County Code in requiring adequate standards necessary to satisfy the

requirements of public health, safety, and general welfare. Currently, the Byron Airport P-1 zoning only allows aviation-related uses, agriculture, and open space.

The amended Planned Unit District will identify four separate development areas: Aviation, Airport Related, Low-Intensity Use, and Habitat Management. These zones are further described below and are shown in Figure 2-3, Development Area and Safety Zones (which includes an overlay of the proposed ALUCP safety zones). The most important change would be to the airport-related uses, which would allow non-residential development that is compatible with the ALUCP for Byron Airport. These uses would include light industry, warehousing and logistics, commercial, and low-intensity office.

In addition, the 11.7-acre parcel to be acquired by the County would be rezoned from Agriculture (A-3) to P-1.

Aviation

A total of 23.5 acres is designated for aviation uses, located adjacent to the taxiways and runways. The aviation area is adjacent to a developed 10.5-acre aircraft storage area and 9.7-acre aircraft parking area south of the main runway (Runway 12-30). Proposed land uses in the aviation area include airport infrastructure (e.g., control tower, terminals), hangars, fixed-base operators, businesses that directly support aviation and travel (e.g., aircraft service and fuel, rental car facilities, pilots lounge, meeting facilities), and businesses that directly rely on aviation (e.g., agricultural aviation, aerial surveys and photography, air charter businesses, air cargo, just-in-time delivery).

Non-Aviation (Airport Related)

Approximately 46.6 acres of Byron Airport is designated for non-aviation. This includes 34.9 acres east of the main runway on the existing airport property, and 11.7 acres in the adjacent parcel.[1] The 46.6 acres would support commercial and light-industrial uses that are compatible with airport operations and would benefit from being located at an airport, with access to Highway 4, Interstate 205, and Interstate 580. A variety of retail, service, warehouse and distribution, light manufacturing, and low-density office uses would be allowed.

Low-Intensity Use

The areas adjacent to the ends of the primary runway and within the "no build" area adjacent to the runway, approximately 31 acres, are designated as low-intensity use. No structures would be allowed within this area. Infrastructure improvements may be allowed within this area.

[1] As shown in Figure 2-3, the total development area east of the main runway is 51.6 acres. However, 5 acres are constrained for stormwater infrastructure, for a net of 41.6 acres.

Habitat Management Lands

The majority of the project site, approximately 814 acres, is owned and managed by the County as wildlife habitat, consistent with the East Contra Costa County Habitat Conservation Plan (ECCC HCP 2006).[2] The proposed project does not propose changes to habitat management lands.

Development Reserve

As noted above, the 2005 Airport Master Plan identified a potential development area larger than the one currently under consideration. The areas that have been removed from the aviation and non-aviation development area are identified as "development reserve" in Figure 2-3. There are no land uses assigned to this category, it merely denotes an area that was previously identified for potential development in the 2005 Airport Master Plan, but is no longer considered part of the proposed development program.

Development Scenario

Taking into account the land use areas described above and the proposed safety zones (see Section 2.4, Proposed Airport Land Use Plan Update), a preferred development scenario was developed. This scenario represents a reasonable distribution of compatible land uses on the airport property and forms the basis of the impacts analysis in Chapter 3, Environmental Setting and Impacts. The development scenario, presented in Table 2-1, assigns a percentage of available acreage to the various uses (e.g., light industry), and estimates the potential building area as increments of 1,000 square feet for those uses based on floor-to-area ratio. The number of people who may the site at any given time was then calculated using intensity factors from the Airport Land Use Planning Handbook and the County's General Plan.

Table 2-1
Development Scenario

Land Use	Acres	FAR	Building Area (ksf)	Persons per ksf	Total Persons	Persons per Acre
Non-Aviation Use						
Logistics/Warehouse/Distribution (45% of acreage)[1]	21.6	0.30	274	1.0	274	13
Light Industry/Business Park (30% of acreage)[2]	14.0	0.35	213	1.4	298	21
Office (10% of acreage)[3]	4.7	0.40	81	4.0	325	70
Commercial (15% of acreage)[4]	7.0	0.30	91	5.7	522	75
Subtotal Non-Aviation Use	*46.6*	—	*660*	—	*1,419*	—

[2] The 120 acres owned by the airport north of Armstrong Road is also identified as habitat management land.

Table 2-1
Development Scenario

Land Use	Acres	FAR	Building Area (ksf)	Persons per ksf	Total Persons	Persons per Acre
Aviation Use						
Aircraft Storage	11.8	0.25	128	0.3	32	3
Aviation	11.8	0.3	154	0.5	77	7
Subtotal Aviation Use	23.5	—	282	—	109	—
TOTAL	**70**	**—**	**941**	**—**	**1,528**	**—**

FAR = floor-to-area ratio; ksf = thousand square feet.

1 FAR is based on comparable development, and falls within the range allowed by Table 3-4 of the County General Plan Land Use Element (Contra Costa County 2005d).

2 Persons per acre is based on an intensity of 725 square feet per person, consistent with the General Plan Land Use Element and comparable development.

3 An intensity of 250 square feet per person was used.

4 An intensity of 175 square feet per person was used, which would encompass large-scale ("big box") retail.

2.7 REQUIRED AGENCY ACTIONS

Table 2-2, Agency Actions, lists the discretionary actions that will be required to implement the proposed project.

Table 2-2
Agency Actions

Agency	Potential Action	Reliance on EIR
Contra Costa County Board of Supervisors	Approval of General Plan Amendment	Certify as lead agency
Contra Costa County Board of Supervisors	Approval of Zoning Amendment	Certify as lead agency
Contra Costa County Board of Supervisors	Acquire 11.7-acre parcel for airport	Certify as lead agency
Contra Costa County Airport Land Use Commission	Approval of Airport Land Use Compatibility Plan Amendment	Rely upon EIR as a Responsible Agency
Contra Costa County Airports Division and Planning Division	Review and approve individual development programs	Rely on EIR for any subsequent discretionary actions

EIR = Environmental Impact Report

The California Department of Fish and Wildlife may review the EIR in its role as a Trustee Agency under CEQA. No discretionary action is being requested of the California Department of Fish and Wildlife at this time, but future projects may require California Department of Fish and Wildlife actions that could rely on this EIR. Caltrans (Division of Aeronautics) will review and may comment on the ALUCP update, but it does not have approval authority over the proposed project.

2.8 FUTURE DEVELOPMENT AND ENVIRONMENTAL REVIEW

This Program EIR prepared for the General Plan Amendment, Zoning Amendment, and ALUCP update is intended to streamline future development at Byron Airport. The County Airports Division retains discretion over all new development at Byron Airport, and reviews subsequent projects for consistency with the ALUCP and the Airport Master Plan. Certain non-aviation development proposals may also be reviewed by the Department of Conservation and Development. It is intended that this Program EIR would provide the basis for approval of those land uses permitted in the Planned Unit District. Per CEQA Guidelines Section 15168(c)(2), a subsequent project that is consistent with the use, overall building intensity, and geographic area analyzed in a Program EIR may be found to be within the scope of that EIR, and no new environmental document would be required. If a subsequent project would, due to the nature of the project or its location, potentially result in impacts that were not addressed in the Program EIR as significant, or would be substantially greater than those identified in the Program EIR, a tiered CEQA document may be prepared, per CEQA Guidelines Section 15152, based on the Program EIR. A subsequent tiered document should analyze only those project or site-specific issues that were not addressed in the Program EIR. The "Development Scenario" presented in Section 2.6, Proposed Land Uses and Zoning, is not meant to be a regulatory limit on the types or distribution of allowed development, but to provide a reasonably foreseeable project condition and to assist the County in determining if subsequent implementing projects would be adequately addressed by this Program EIR.

2.9 REFERENCES CITED

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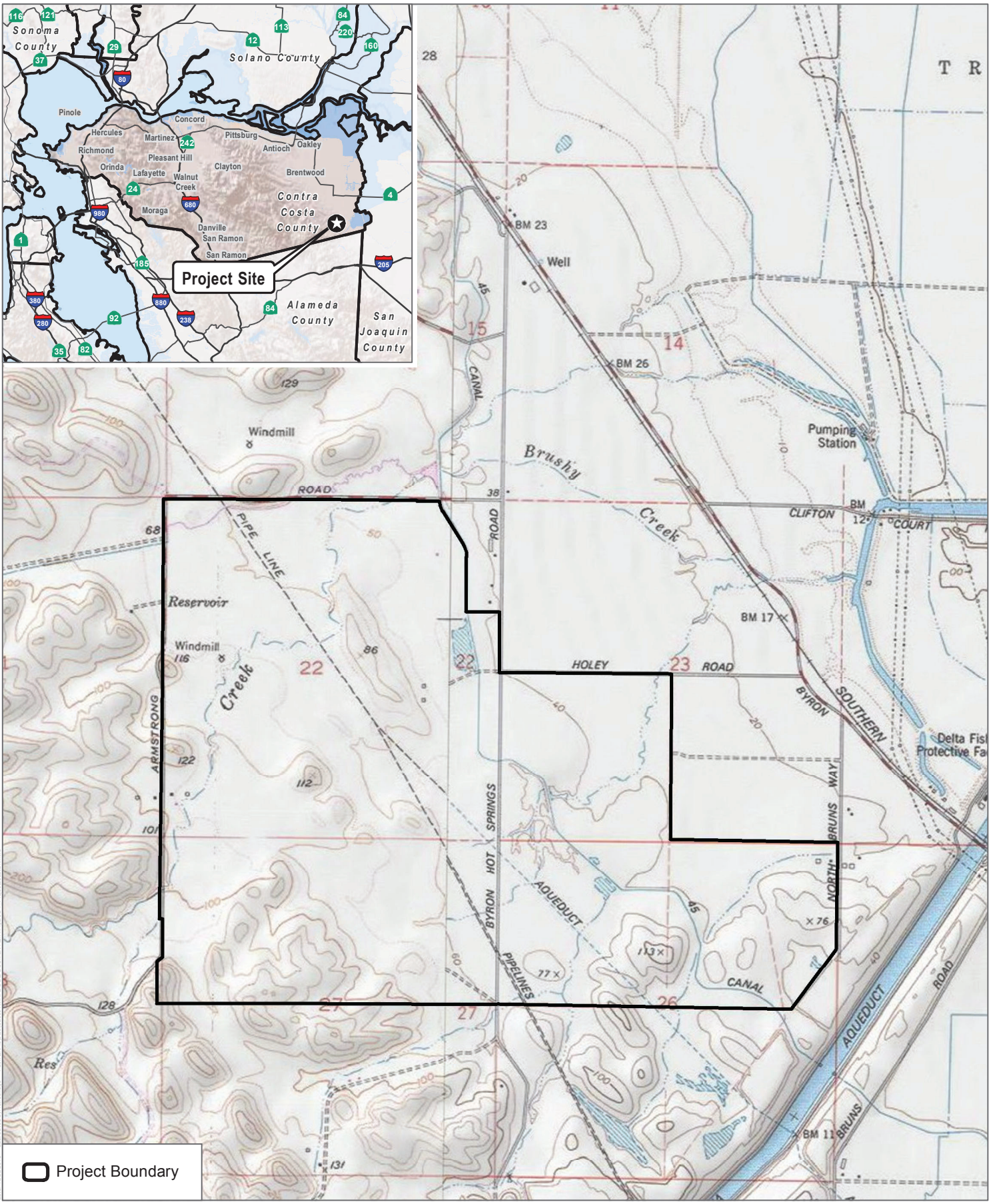

SOURCE: USGS 7.5-Minute Series Byron Hot Springs & Clifton Court Forebay Quadrangles

DUDEK

0 1,000 2,000 Feet

FIGURE 2-1

Project Location

Byron Airport Development Program EIR

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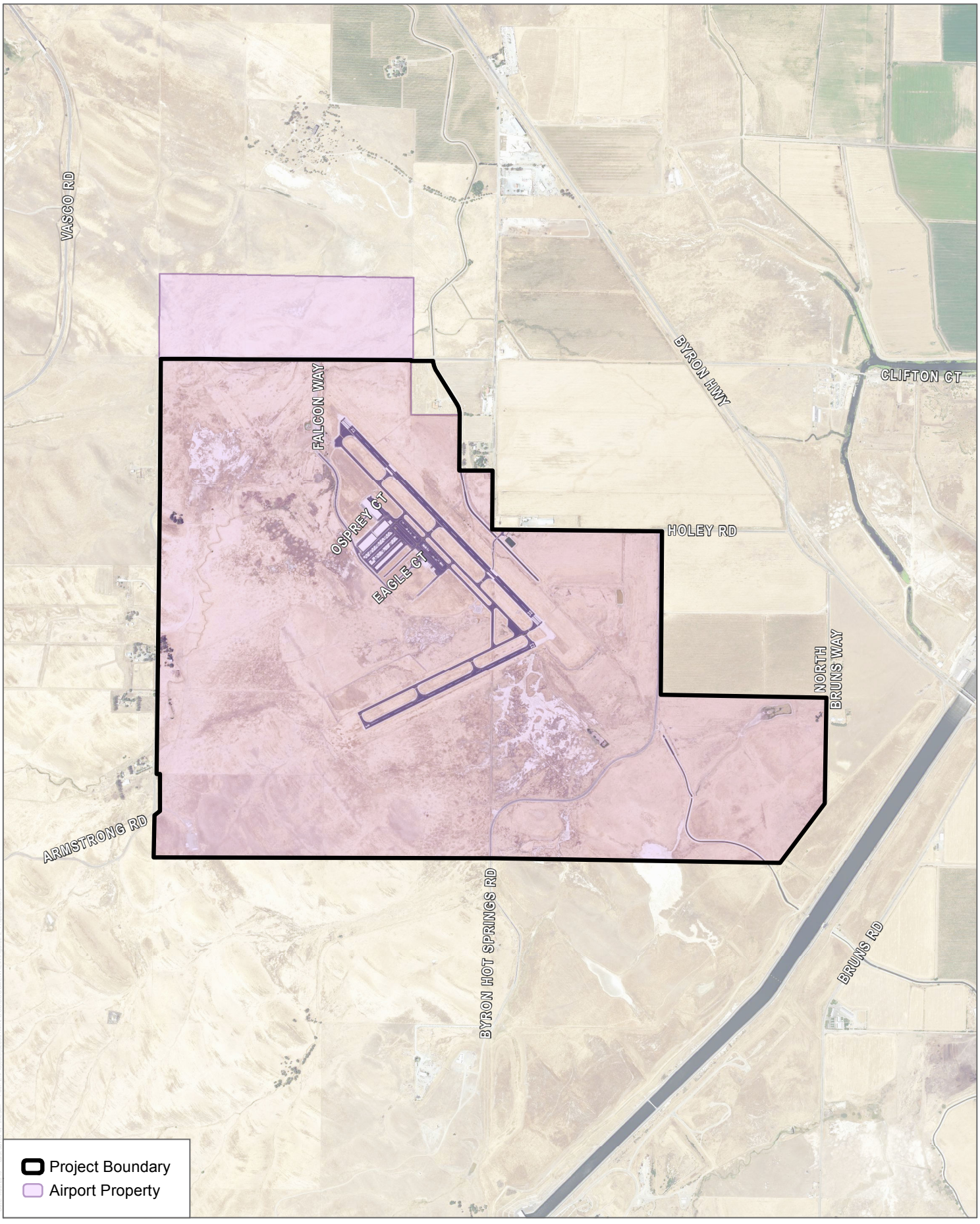

SOURCE: NAIP 2016; Contra Costa County 2017

DUDEK

0 1,000 2,000 Feet

FIGURE 2-2

Project Site

Byron Airport Development Program EIR

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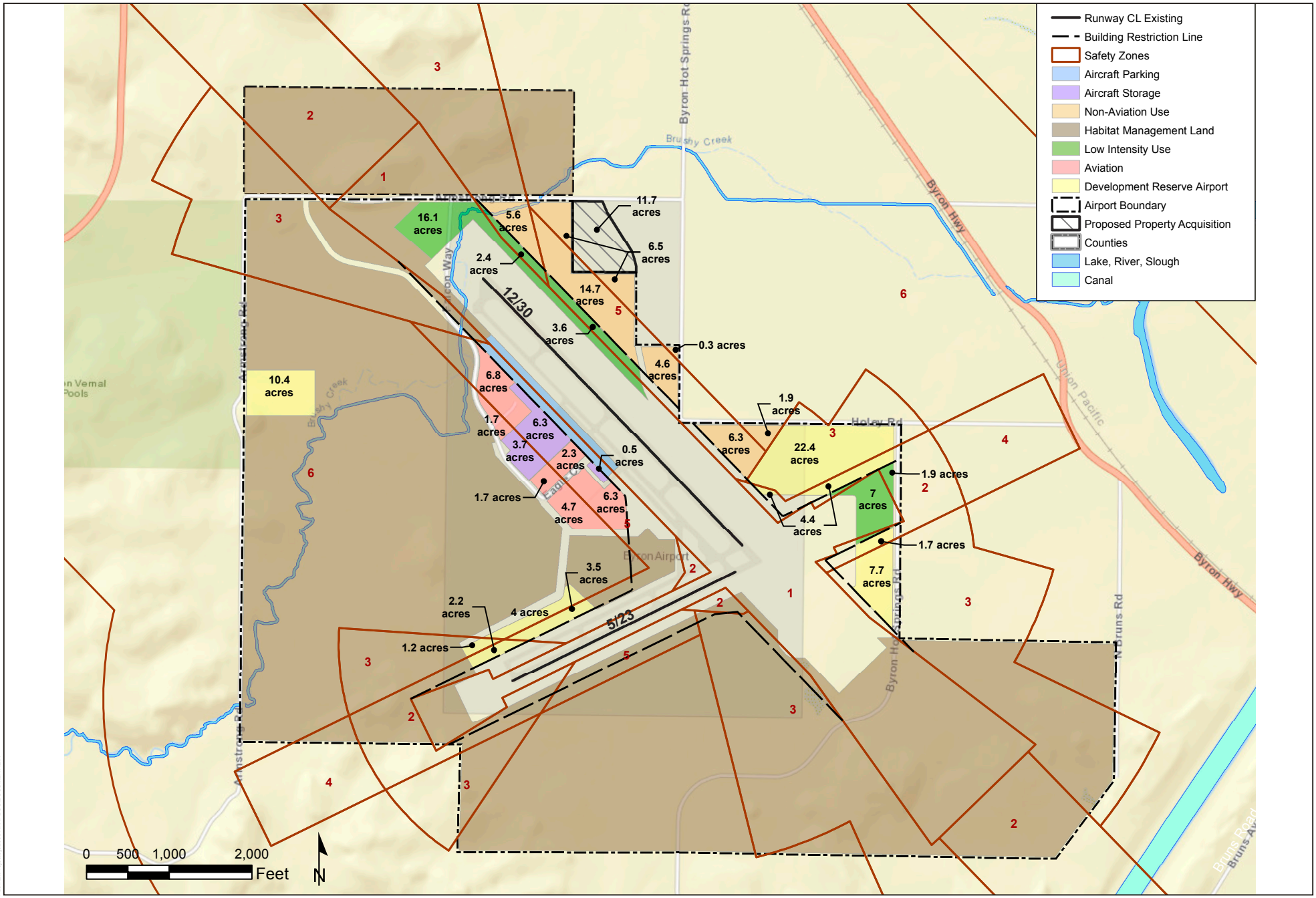

SOURCE: Mead & Hunt 2018

FIGURE 2-3

Development Area and Safety Zones

Byron Airport Development Program EIR

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CHAPTER 3
ENVIRONMENTAL SETTING AND IMPACTS

Chapter 3 discusses the environmental resources potentially impacted by the proposed Byron Airport Development Program (project). Each resource section includes an environmental and regulatory setting, the standards of significance, the potential project impacts (e.g., direct, indirect, and cumulative impacts), and mitigation measures that would avoid or substantially reduce potentially significant impacts. To the extent that mitigation measures would themselves result in secondary impacts, those impacts are discussed, although not at the level of detail required for project impacts.

3.0 ENVIRONMENTAL SETTING

3.0.1 Project Baseline

According to Section 15125(a) of the California Environmental Quality Act (CEQA) Guidelines, an Environmental Impact Report (EIR) must include a description of the existing physical environmental conditions in the vicinity of the project as they exist at the time when the Notice of Preparation was published. This "environmental setting" will normally constitute the "baseline condition" against which project-related impacts are compared. Therefore, the baseline conditions for this Draft EIR, unless noted otherwise, are based on conditions that existed in September 2017, when the Notice of Preparation was published. The exact date of baseline information may vary based on the availability of data and the timing of certain studies. CEQA follows a rule of reason regarding data collection, and to the extent feasible, data will reflect conditions closest to September 2017 for the proposed project.

3.0.2 Cumulative Setting

CEQA requires that an EIR assess the cumulative effects that could be associated with the incremental effects of a proposed project. Cumulative effects are defined as two or more individual effects that, when considered together are considerable or that would compound or increase other environmental effects. The cumulative impact of a project results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. As indicated in the CEQA Guidelines, the discussion of cumulative impacts need not provide the same level of detail as project-related impacts. The discussion should be guided by "standards of practicality and reasonableness" (CEQA Guidelines, Section 15130[b]). Although project-related impacts can be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed (14 CCR 15130[a]). Where a lead agency concludes that the cumulative environmental impacts of a project, taken together with the impacts of other closely related past, present, and reasonably foreseeable probable future projects are significant, the lead agency then must determine whether the proposed

project's incremental contribution to such significant cumulative impacts is "cumulatively considerable" (and thus significant in and of itself).

Cumulative Context

To ensure that an adequate discussion of cumulative impacts is included in an EIR, CEQA allows the lead agency to use one of two methods. The first method consists of a list of past, present, and probable future projects, including those projects outside of the control of the lead agency. The second method consists of projections included in adopted local, regional, and/or statewide plans, such as a General Plan (CEQA Guidelines Section 15130[b][1]). There are no currently proposed projects in the immediate project vicinity. In fact, as an airport, the location of Byron Airport is surrounded by agricultural land and scattered rural and light industrial development, and not urban development. Therefore, this EIR relies upon the projection method from adopted plans. The Contra Costa County General Plan 2005–2020 is relied upon as the overall source for future development, but individual resource areas may rely upon other projections. For example, the cumulative traffic analysis relies upon estimates of regional traffic growth from the Contra Costa Countywide Travel Demand Model.

The geographic setting of cumulative impacts may also vary with the resource. Cumulative air impacts related to criteria air pollutants, for example, consider the entire air basin for a regional context. Aesthetic impacts consider the viewshed that includes the project site, and water quality and hydrology consider the entire water basin. Each impact section discusses the method and geography used to assess cumulative impacts (see Sections 3.1 through 3.15).

3.1 AESTHETICS

This section describes the existing visual setting of the project site and vicinity, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Byron Airport Development Program (project).

3.1.1 Existing Conditions

3.1.1.1 Overview

The project site is located in southeastern Contra Costa County (County), approximately 2.5 miles south of the community of Byron. The County General Plan recognizes scenic ridges, hillsides, rock outcroppings and the San Francisco Bay/Delta estuary system as important scenic resources within the County (Contra Costa County 2005a). The County General Plan designates scenic ridgelines that contribute to the rural feeling of the County's communities and provide a scenic backdrop for the County's developed areas. The nearest County-designated scenic ridgeway is approximately 7.2 miles west of the project site near the Los Vaqueros Reservoir. Additionally, scenic waterways are designated by the County to ensure that preservation of the scenic character of these waterways is considered in the project review process. The nearest County-designated scenic waterway to the project site is the Clifton Court Forebay, approximately 1.9 miles east of the project site.

The Byron Airport is situated in a rural area. The area has numerous wind turbines on the hill ridges to the west, some within 1 mile of the airport. The Clifton Court Forebay is located less than 2 miles east of the site, Bethany Reservoir is approximately 3 miles to the south, and the Los Vaqueros Reservoir is 5 miles to the west. Byron Hot Springs, a now abandoned resort and former World War II prisoner-of-war camp, is located north of the airport. Rural residential uses surround the airport on the east and west sides. Other significant development in the immediate vicinity includes several high-voltage transmission lines within 3 miles to the east, west, and south of the project site and a railroad line running parallel to the Byron Highway. The community of Byron is located approximately 2.5 miles north of the airport. This small community is surrounded by agricultural lands and contains concentrated areas of single-family residential development, commercial development centralized along the Byron Highway, schools, churches, and wineries. Nearby residences are composed of large buildings with neutral exteriors that are located on large lots. Development is primarily located along Camino Diablo, Byron Highway, and Holway Drive.

3.1.1.2 Existing Project Site

The project site consists of the Byron Airport property south of Armstrong Road, which is approximately 1,307 acres, and the 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. The airport owns an additional 120

acres north of Armstrong Road that is not considered part of the project site. Most of the site is open grassland, and 814 acres of the project site are reserved for habitat management and are therefore maintained in a natural condition. The airport is located on the western edge of the flat Sacramento-San Joaquin Delta agricultural lands and on the eastern edge of the Diablo Range. The site's topography consists of low rolling hills, leveling out into flat, irrigated pastures on the east side. Two hills occupy the center of the site, extending up to 125 feet above mean sea level, 30 to 50 feet higher than most of the project site. The remainder of the site is mostly flat, and the elevation of the property is 30 to 80 feet above mean sea level. Hills surround the project site on all but the east and northeast sides. The hills located approximately 2.5 miles to the west of the site range from 400 feet to above 900 feet in elevation.

The airport contains two asphalt concrete nonintersecting runways, each with a parallel taxiway and several connector taxiways. The primary runway, Runway 12-30 (northwest–southeast), is 4,500 feet long and 100 feet wide. The crosswind runway, Runway 5-23, is 3,000 feet long and 75 feet wide. Both runways have 20-foot unpaved shoulders. General aviation facilities are generally concentrated within the "V" formed by the two runways. These facilities include the administration building, the maintenance hangar, a pump house, the 6900 Falcon Way building, and aircraft hangars.

The administration building comprises approximately 2,400 square feet. It is located at 500 Eagle Court, adjacent to the general aviation apron. This 60-foot by 40-foot double-wide modular building has a tan exterior and metal roof. The maintenance hangar, 505 Eagle Court, is a 75-foot by 100-foot two-bay hangar with a simple tan exterior and metal roof.

A pump house (a 15-foot by 20-foot building) is located on the northeast side of Runway 12-30 (by Holey Road) together with a fire protection pond that serves as water supply for the airport. There is also an emergency pump station located southeast of the runway intersection that provides water from an underground 960-inch diameter pipe to supplement the fire protection pond. The pump house is a gray rectangular building with a flat roof.

The 6900 Falcon Way building is located along Falcon Way towards the north side of the airport. It is one of the original buildings from Byron Airpark, making it one of the oldest at the airport. It is a tan building with a flat roof and an outdoor area with picnic tables. It contains a shaded open storage area on its southern side and is presently leased to Bay Area Sky Diving.

The aircraft hangars are described by rows, starting northwest of the administration building. The first two rows, A and B, are vacant land reserved for future development. Existing buildings start with Row C. Row C is a 28-unit T-hangar constructed in 1996. Rows D and E are portable T-hangars that were relocated from the original airpark in 1994. Row F has two privately owned buildings on ground leases—a 12-unit executive hangar and a 10-unit executive hangar (which includes an owner maintenance hangar at the eastern end). The Byron Jet Center is located north

of the executive hangars. Hangars consist of tan rectangular buildings with metal roofs. A wash rack is located at the east side of the Row F buildings. Wastewater from the wash rack drains though an oil–water separator to a leach field located to the east, between the wash rack and Taxiway A.

The majority of the project site, approximately 814 acres, is owned and managed by the County as habitat, consistent with the East Contra Costa County Habitat Conservation Plan (HCP). The HCP details the implementation of an avoidance and preservation program and identifies the land that would be impacted, avoided, and preserved in perpetuity. This habitat preserve area is located to the south and west of the airfield. Seven land cover types exist on the project site. The majority of the site is made up of annual grassland habitat with urban areas that include the buildings, paved areas, and ornamental landscaping associated with operation of the airport. Annual grassland within the site is dominated by a dense to sparse cover of annual, non-native grasses and forbs. The remaining portion of the project site consists of annual and alkali grasslands interspersed with seasonal and alkali wetlands, as well as vernal pools. Seasonal wetlands are prevalent in the annual grassland in the northwestern and western areas of the project site. Alkali wetlands consist of seasonal wetlands within alkali grassland. The alkali wetlands generally consist of barren areas where water remains inundated for prolonged periods of time during the growing season.

Several drainages also cross through the project site. These drainages appear to be intermittent in nature, carrying water only during the wet season. The banks of the drainages are generally dominated by non-native grasses. Brushy Creek travels through the project site from the southwest and exits the site at the northern end of the project site. This feature holds more water than the other drainages; however, it is still considered intermittent because it appears to dry during dry periods. Aquatic features within the site include numerous seasonal wetlands, alkali wetlands, swales, vernal pools, and drainages that are scattered throughout the site. Most of these features occur in the northern and western portions of the site. Within the project site, urban areas consist of roadways, runways, hangars, and other airport buildings. In addition, a major irrigation canal flows northward across the eastern portion of the site, and high-pressure gas and petroleum pipelines run diagonally through the middle of the site. Vegetation in these areas is sparse to absent, consisting primarily of cultivated plants in planters.

3.1.1.3 Views of the Project Site from the Surrounding Area

The project site is visible from Armstrong Road to the north and west, Byron Hot Springs Road to the east, and Holey Road to the northeast. Views of the project site can also be seen from the Byron Highway, approximately 0.4 miles east of the project site, and from Vasco Road to the west. Views from the north along Armstrong Road primarily consist of short-range views of annual grasslands, and minor long-range views of airport buildings and facilities. Views along Byron Hot Springs Road to the east consist of rural residences and grasslands in the

foreground, with minor views of airport buildings and facilities in the background. From the west of the project site along Armstrong Road, buildings on the project site are barely visible, as they are blocked by small hills and grassland vegetation. Views from the west largely consist of grassy hillsides, flat grasslands, utility poles lining Armstrong Road, and open-wire fencing. Mature trees are scattered across the landscape. From Vasco Road, minor views of airport hangar buildings are available to passersby when not obscured by the rolling hills.

Key Viewpoints

Key viewpoints are shown on Figure 3.1-1. The key viewpoints were determined based on publicly accessible areas that afford views of the project site and that may have a substantial number of viewers. As discussed in Section 3.1.2, Relevant Plans, Policies, and Ordinances, there are no identified scenic routes or scenic vistas with a view of the project site.

3.1.1.4 Light and Glare

Nighttime lighting is necessary to provide and maintain safe, secure, and attractive environments. Light that falls beyond the intended area of illumination is referred to as "light trespass." Types of light trespass include spillover light and glare. Spillover light, which is light that illuminates surfaces beyond the intended area, is typically caused by artificial lighting sources, such as from building security lighting, signs, parking lot lights, roadway lights, and stadium lights on playing fields. Spillover light can adversely affect light-sensitive uses, such as residential neighborhoods at nighttime. Because light dissipates as it moves farther from its source, the intensity of the lighting source is often increased to compensate for dissipating light, which can increase the amount of light that illuminates adjacent uses. The type of light fixture determines the extent to which light will spill over onto adjacent properties and/or be visible from far away. Modern, energy-efficient fixtures that face downward, such as cutoff-type fixtures and shielded light fixtures, are less obtrusive than light fixtures that have been used in the past.

The second type of light trespass is glare, which results when a light source in the field of vision is brighter than the eye can comfortably accept. Glare can result from sunlight or from artificial light reflecting off building exteriors, such as glass windows, metal roofs, or other highly reflective surface materials. Squinting or turning away from a light source is an indication of glare. Cutoff-type light fixtures minimize glare because they emit relatively low-intensity light at these angles. Glare resulting from sunlight reflecting off building exteriors can be reduced with design features that use low-reflective glass and exterior materials and colors that absorb, rather than reflect, light.

The project site currently supports aviation uses. Existing lighting on the airfield includes medium-intensity runway lights, runway end identifier lights, and precision approach path indicators. Runways 5, 12, 23, and 30 are equipped with medium-intensity runway lights and Runway 30 is also equipped with runway end identifier lights. All runway lighting is pilot controlled by

activating the local airport radio frequency. Runways 30 and 23 are equipped with two-light precision approach path indicators on the left (3.5° glide path). Runways 5 and 12 currently do not have approach lighting systems. The airport apron, parking, and hangar area is illuminated with ramp floodlights that are photocell controlled. Existing buildings, parking areas, passenger boarding areas, and maintenance areas on the project site are illuminated with safety and security lighting. As the project site is located in a rural area, surrounding lighting is minimal.

3.1.2 Relevant Plans, Policies, and Ordinances

Federal

There are no federal regulations pertaining to visual resources that would apply to the proposed project.

State

California Scenic Highway Program

California's Scenic Highway Program was created by the legislature in 1963 to preserve and protect scenic highway corridors from change that would diminish the aesthetic value of lands adjacent to highways. The state laws governing the Scenic Highway Program are found in the Streets and Highways Code, Section 260 et seq. The Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. County roads can also become part of the Scenic Highway System. To receive official designation, the County must follow the same process required for official designation of State Scenic Highways.

The nearest designated state scenic highway is State Route (SR) 680 from the Alameda County boundary to SR-24, approximately 19.8 miles west of the project site. The nearest portion of an eligible scenic highway is the segment of SR-4 from SR-160 near Antioch to SR-84 near Brentwood, which is located approximately 6.4 miles northwest of the project site (Caltrans 2017).

Local

Contra Costa County General Plan

The Open Space Element of the County General Plan provides objectives, policies, and programs regarding aesthetics, including the following (Contra Costa County 2005b):

Goal 9-A To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.

Goal 9-2 Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Goal 9-D To preserve and protect areas of identified high scenic value, where practical, and in accordance with the Land Use Element Map.

Goal 9-F To preserve the scenic qualities of the San Francisco Bay/Delta estuary system and the Sacramento-San Joaquin River/Delta shoreline.

Policy 9-10 In areas designated for urban development, the principles outlined below shall be applied in the review of development proposals.

Policy 9-11 High-quality engineering of slopes shall be required to avoid soil erosion, downstream flooding, slope failure, loss of vegetative cover, high maintenance costs, property damage, and damage to visual quality. Particularly vulnerable areas should be avoided for urban development. Slopes of 26% or more should generally be protected and are generally not desirable for conventional cut-and-fill pad development. Development on open hillsides and significant ridgelines shall be restricted.

Policy 9-12 In order to conserve the scenic beauty of the county, developers shall generally be required to restore the natural contours and vegetation of the land after grading and other land disturbances. Public and private projects shall be designed to minimize damage to significant trees and other visual landmarks.

Policy 9-14 Extreme topographic modification, such as filling in canyons or removing hilltops, shall be avoided. Clustering and planned unit development approaches to development shall be encouraged. All future development plans, whether large- or small-scale, shall be based on identifying safe and suitable sites for buildings, roads, and driveways. Exemptions to this policy are appropriate for mining, landfill, and public projects in open space areas.

Policy 9-24 The appearance of the county shall be improved by eliminating negative features such as non-conforming signs and overhead utility lines, and by encouraging aesthetically designed facilities with adequate setbacks and landscaping.

Policy 9-25 Maintenance of the scenic waterways of the county shall be ensured through public protection of the marshes and riparian vegetation along the shorelines and delta levees, as otherwise specified in this Plan.

Policy 9-27 Physical and visual public access to established scenic routes shall be protected.

Contra Costa County Zoning

The airport's current zoning is P-1, for planned development. This zoning is intended to foster a diversification of land uses, buildings, structures, lot sizes, and open space while complying with the General Plan and County code standards (Contra Costa County Zoning Ordinance, Division 84, Chapter 66). Within the overall airport zone are four separate zones, aviation, airport related, low intensity use, and habitat management. Parcels surrounding the project site are primarily zoned for agricultural uses, including General Agriculture (A-2), Heavy Agriculture (A-3), and Agricultural Preserve (A-4) (Contra Costa County 2015). The County General Plan designates the project site's land use as Public/Semi-Public (PS), with the area immediately surrounding the project site being designated Open Space (OS) on the west and Agricultural Lands (AL) on the east (Contra Costa County 2014).

While the zoning ordinance does not specifically regulate visual quality, it provides a basis for lot coverage, setbacks, and building mass that affects the visual qualities of development.

3.1.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to aesthetics are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to aesthetics would occur if the project would:

1. Have a substantial adverse effect on a scenic vista.
2. Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway.
3. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?
4. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The project site is not visible from a state scenic highway and this impact is not considered further.

The project is located in a largely rural, agricultural area. Therefore, the approach to changes in visual character and quality is based generally on a simplified version of the Federal Highway Administration's methodology for visual impact assessment (FHWA 2015). This methodology focuses on the character and quality of existing resources, the degree of potential change, and the sensitivity and exposure of view groups. Visual simulations are used to demonstrate the degree of change in the existing environment from the key viewpoints.

Light and glare impacts are considered in the context of existing regulations regarding lighting, and, similar to visual character, the degree of change experienced by the public.

3.1.4 Impacts Analysis

Impact 3.1-1. The project would not have a substantial adverse effect on a scenic vista. (Less than Significant)

The project site includes areas planned for aviation, non-aviation, low-intensity, and habitat management uses. The 23.5-acre area identified for aviation uses is generally located west of the intersection of the two runways. The 46.6-acre area designated for non-aviation is generally located east of the runways. These two areas could be developed with aviation and aviation-compatible uses, respectively. The low-intensity area, approximately 31 acres, is reserved by the County for infrastructure and/or protection of the airfield. The habitat management lands are not subject to development.

Proposed land uses in the aviation area include airport infrastructure (e.g., control tower, terminals), hangars, fixed-base operators, businesses that directly support aviation and travel (e.g., aircraft service and fuel, rental car facilities, pilots lounge, meeting facilities), and businesses that directly rely on aviation (e.g., agricultural aviation, aerial surveys and photography, air charter businesses, air cargo, just-in-time delivery). These uses would operate within buildings and structures that would be visually consistent with the existing buildings and structures on the project site and would support or be attached to the existing aviation uses on the site. Buildings would generally be low to the ground (typically 30 to 40 feet in height) and not very visible except from the immediate vicinity. Proposed land uses in the non-aviation area would include industrial, commercial, and office uses. These land uses would be subject to County zoning controls for height and bulk.

As described above, the nearest County-designated scenic ridgeway is approximately 7.2 miles west of the project site and the nearest County-designated scenic waterway to the project site is located approximately 1.9 miles east of the project site. Due to distance and topography, the project site is not visible from these areas, and would not obstruct public views of these visual resources. The majority of the project site would continue to be preserved as a habitat management area or low-intensity use. Therefore, this area would remain as open grassland. New buildings and

structures would only be placed within the 70 acres designated for aviation and non-aviation uses near the existing airport development. The aviation uses and airport compatible uses that would be developed within this area would be consistent with the existing aviation facilities on the project site, including administration buildings, aircraft hangars, and aviation support buildings.

Because the proposed project would not obstruct or interfere with views from or to a designated scenic vista, this impact would be **less than significant**.

Impact 3.1-2. The project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Potentially Significant)

The project site predominantly consists of annual grassland habitat with urban areas that include the buildings, paved areas and ornamental landscaping associated with operation of the airport. The Byron Airport Master Plan designates areas within the airport property for aviation, airport-related, low-intensity, and habitat management uses. The project would add 11.7 acres to the airport site and allow development in two areas on the airport: a 23.5-acre area identified for aviation uses, generally located west of the primary runway, and 46.6 acres designated for non-aviation uses, generally located east of the primary runway. The remaining areas would not be developed in the foreseeable future, including the habitat management lands.

Proposed land uses in the aviation area include airport infrastructure (e.g., control tower, terminals), hangars, fixed-base operators, businesses that directly support aviation and travel, (e.g., aircraft service and fuel, rental car facilities, pilots lounge, meeting facilities), and businesses that rely on aviation (e.g., agricultural aviation, aerial surveys and photography, air charter businesses, air cargo, just-in-time delivery). These uses would operate within buildings and structures that would be visually consistent with the existing buildings and structures on the project site and would support or be attached to the existing aviation uses on the site.

Development of non-aviation uses would predominantly occur along the eastern border of the site. These uses may include warehousing, light industrial, office, and commercial uses. The buildings would be generally consistent with the existing visual character of the site—large single-story buildings—and would not significantly change the visual character of the area.

Visual simulations of potential building massing for the airport-related land uses are shown in Figure 3.1-2a, Figure 3.1-2b, and Figure 3.1-2c. The building mass is based on a 35-acre warehousing and logistics project (a development that is considered within the scope of this Environmental Impact Report). The potential building mass is shown from the three key viewpoints shown in Figure 3.1-1. Airport development would not substantially change the visual character and quality of the project site from key viewpoints 2 and 3. Viewpoint 1, at Armstrong Road and Byron Hot Springs Road, could be affected by the construction of large warehouses in the northeast area of the project site. The modeled height of the warehouses is 35 to 40 feet.

Depending on the massing of these buildings, the impact to public views (public road adjacent to the airport) would be **potentially significant**.

Impact 3.1-3. The project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. (Less than Significant)

Existing lighting sources on the project site include medium-intensity runway lights, runway end identifier lights, and precision approach path indicators as navigation aids on the airfield, along with lighting associated with existing buildings, parking areas, passenger boarding areas, and aircraft maintenance areas on site. The airport apron, parking, and hangar area is illuminated with ramp floodlights that are photocell controlled. The project site is located in a rural area with minimal lighting sources. Introduction of proposed land uses, including airport infrastructure, hangars, fixed-based operators, and businesses that support aviation and travel or that rely on aviation would increase lighting at the project site. Proposed industrial and commercial uses would include additional lighting sources, including parking lot and building lighting.

The Federal Aviation Administration has established requirements for aeronautical ground lighting systems such as runway, taxiway, and approach lighting. Light spillage and glare from non-aviation land uses are hazards to pilots and tower personnel. Glare can impact the visibility of important aircraft navigation aids such as ground lighting, directional signs, and painted markings on the airfield. Furthermore, tower personnel can be impacted by directed glare, backscatter, and reflections that make it difficult to observe the area beyond the apron into the active airfield area. Light and glare impacts are addressed in the land use consistency policies of the Airport Land Use Compatibility Plan. All proposed on-airport land uses are subject to review by County staff for consistency with the Airport Land Use Compatibility Plan and Federal Aviation Administration criteria. Compliance with existing Airport Land Use Compatibility Plan policies would ensure that potential impacts would be **less than significant**.

3.1.5 Mitigation Measures

To reduce the effects of changes to public views, the following mitigation measure (MM) should be implemented.

MM-AES-1 Non-aviation development shall be subject to the following design requirements:

- Long facades should be designed with building articulation and landscaping to break them up into smaller visual elements, avoiding public views of uninterrupted blank walls.

- For industrial and warehouse buildings, bright reflective colors and materials shall not be allowed. Paint colors should be earth tones. Natural finishes such as brick or stone facades may also be incorporated into the design.
- Project lighting shall comply with the policies of the Airport Land Use Compatibility Plan.
- Loading areas should be located and designed to minimize direct exposure to public views.
- Structures and parking lots located on the eastern edge of the airport property shall incorporate landscaping to screen public views. The type, quantity and placement of plant material should be selected for its compatibility with airport uses (tree heights, plants that are not wildlife attractants), as well as structure, texture, color and compatibility with the building design and materials.

The design of non-aviation development shall be reviewed by the Department of Conservation and Development staff prior to issuance of building permits for conformance with these standards. Aviation uses shall be reviewed by Byron Airport staff.

3.1.6 Level of Significance After Mitigation

Implementation of MM-AES-1 would reduce Impact 3.1-2 to a **less-than-significant** level.

3.1.7 Cumulative Impacts

The cumulative context for the project consists of the surrounding areas visible from the key viewpoints. These areas include agricultural lands, wind energy development, and scattered rural and light industrial development. No other development is proposed within the key viewpoints. Although single-family homes and agricultural structures are allowed by right in the agricultural zones near the airport, this area has relatively little growth and these structures would be consistent with the existing visual character.

3.1.8 References Cited

Caltrans (California Department of Transportation). 2017. "List of Eligible and Officially Designated State Scenic Highways." March 2017.

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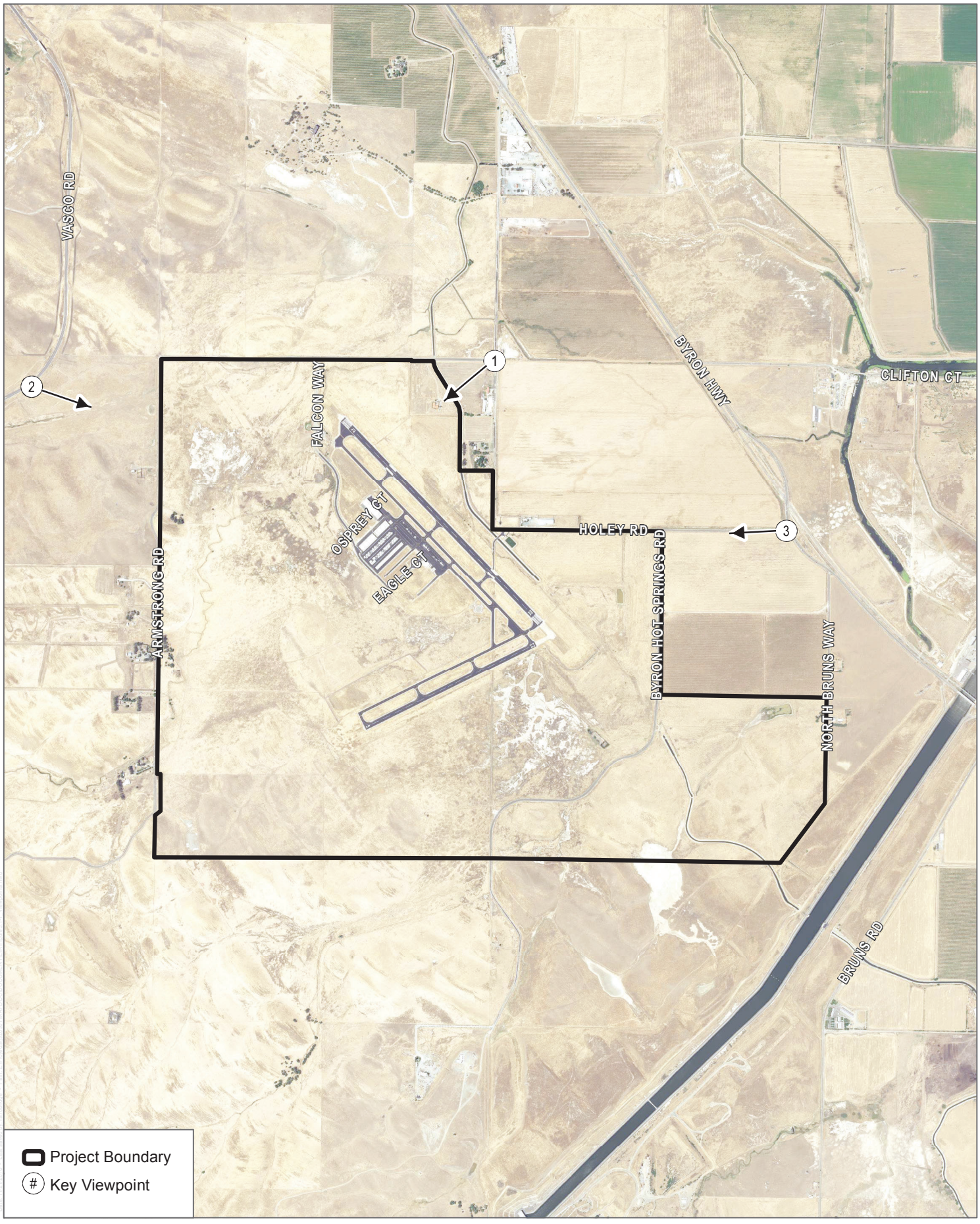

SOURCE: NAIP 2016; Contra Costa County 2017

DUDEK

0 1,000 2,000 Feet

FIGURE 3.1-1

Key Viewpoints

Byron Airport Development Program EIR

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Key Observation Point 1 - Existing Conditions



Visual Simulation of Proposed Project

FIGURE 3.1-2a

Visual Simulation

Byron Airport Development Project EIR

DUDEK

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Key Observation Point 2 - Existing Conditions



Visual Simulation of Proposed Project

FIGURE 3.1-2b

Visual Simulation

Byron Airport Development Project EIR

DUDEK

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Key Observation Point 3 - Existing Conditions



Visual Simulation of Proposed Project

FIGURE 3.1-2c

Visual Simulation

Byron Airport Development Project EIR

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3.2 AIR QUALITY

This section describes the impacts on air quality and contribution to regional air quality conditions, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed Byron Airport Development Program (project).

3.2.1 Existing Conditions

The project site is located in Contra Costa County (County), within the boundaries of the San Francisco Bay Area Air Basin (SFBAAB). The SFBAAB encompasses all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties and the southern portions of Solano and Sonoma Counties.

Air pollutants are emitted by a variety of sources, including mobile sources (vehicles), area sources (hearths, consumer product use, architectural coatings, and landscape maintenance equipment), energy sources (natural gas), and stationary sources (generators or other stationary equipment). Some air pollutants need to be examined at the local level, and others are predominantly an issue at the regional level. For instance, ozone (O_3) is formed in the atmosphere in the presence of sunlight by a series of chemical reactions involving oxides of nitrogen (NO_x) and reactive organic gas (ROG) (also termed volatile organic compounds). Because these reactions have broad-scale effects, O_3 is typically analyzed at the regional level (i.e., in the air basin) rather than the local level. On the other hand, air pollutants such as coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), and toxic air contaminants (TACs) are a potential concern in the immediate vicinity of the pollutant source because the pollutants are emitted directly by or are formed close to the source. Therefore, the study area for emissions of PM_{10}, $PM_{2.5}$, CO, and TACs is the local area near the source, such as in the vicinity of the project site, and the study area for regional pollutants such as NO_x and ROGs is the entire SFBAAB.

3.2.1.1 Regional Climatology

Air quality is a function of the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

The climate of the SFBAAB is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the west coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing more storms to pass through the region. During summer and early fall, when few storms pass through the region, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of

topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as O_3, and secondary particulates, such as nitrates and sulfates.

In the SFBAAB, temperature inversions can often occur during the summer and winter months. An inversion is a layer of warmer air over a layer of cooler air that traps and concentrates pollutants near the ground. As such, the highest air pollutant concentrations in the SFBAAB generally occur during inversions (BAAQMD 2017a).

The project site is located in the southeastern border of the County, at the edge of the Livermore Valley climatological subregion. Specific conditions for the subregion are described in the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act Air Quality Guidelines (BAAQMD 2017a). Maximum summer temperatures in the Livermore Valley range from the high-80s°F to the low-90s°F, with extremes in the 100s°F. Average winter maximum temperatures range from the high-50s°F to the low-60s°F, while minimum temperatures are from the mid-to-high-30s°F, with extremes in the high-10s°F and low-20s°F (BAAQMD 2017a). On the eastern side of the valley, such as where the project is located, the prevailing winds blow from north, northeast, and east. At times during the summer, a strong Pacific high-pressure cell from the west, coupled with hot inland temperatures, causes a strong onshore pressure gradient which produces a strong, afternoon wind (BAAQMD 2017a). During the winter, winds are typically light during the late night and early morning hours, and daytime winds sometimes flow from the south through the Altamont Pass to the San Joaquin Valley (BAAQMD 2017a).

3.2.1.2 Pollutants and Effects

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include O_3, nitrogen dioxide (NO_2), CO, sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. These pollutants, as well as TACs, are discussed in the following paragraphs.[1] In California, sulfates, vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

[1] The descriptions of the criteria air pollutants and associated health effects are based on the U.S. Environmental Protection Agency's Criteria Air Pollutants (EPA 2018a) and the California Air Resources Board's Glossary (CARB n.d.) and Fact Sheet: Air Pollution Sources, Effects and Control (CARB 2009).

Ozone

O_3 is a strong-smelling, pale blue, reactive, toxic chemical gas consisting of three oxygen atoms. It is a secondary pollutant formed in the atmosphere by a photochemical process involving the sun's energy and O_3 precursors. These precursors are mainly NO_x and ROGs. The maximum effects of precursor emissions on O_3 concentrations usually occur several hours after they are emitted and many miles from the source. Meteorology and terrain play major roles in O_3 formation, and ideal conditions occur during summer and early autumn on days with low wind speeds or stagnant air, warm temperatures, and cloudless skies. O_3 exists in the upper atmosphere O_3 layer (stratospheric ozone) and at the Earth's surface in the troposphere (tropospheric ozone).[2] The O_3 that the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate as a criteria air pollutant is produced close to ground level, where people live, exercise, and breathe. Ground-level O_3 is a harmful air pollutant that causes numerous adverse health effects and is thus considered bad O_3. Stratospheric, or good, O_3 occurs naturally in the upper atmosphere, where it reduces the amount of ultraviolet light (i.e., solar radiation) entering the Earth's atmosphere. Without the protection of the beneficial stratospheric O_3 layer, plant and animal life would be seriously harmed.

O_3 in the troposphere causes numerous adverse health effects; short-term exposures (lasting for a few hours) to O_3 can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes (EPA 2013). These health problems are particularly acute in sensitive receptors such as the sick, the elderly, and young children.

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban atmospheres. The major mechanism for the formation of NO_2 in the atmosphere is the oxidation of the primary air pollutant nitric oxide, which is a colorless, odorless gas. NO_x plays a major role, together with ROGs, in the atmospheric reactions that produce O_3. NO_x is formed from fuel combustion under high temperature or pressure. In addition, NO_x is an important precursor to acid rain and may affect both terrestrial and aquatic ecosystems. The two major emissions sources are transportation and stationary fuel combustion sources such as electric utility and industrial boilers.

NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections (EPA 2016).

[2] The troposphere is the layer of the Earth's atmosphere nearest to the surface of the Earth. The troposphere extends outward about 5 miles at the poles and about 10 miles at the equator.

Carbon Monoxide

CO is a colorless, odorless gas formed by the incomplete combustion of hydrocarbon, or fossil fuels. CO is emitted almost exclusively from motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains. In urban areas, automobile exhaust accounts for the majority of CO emissions. CO is a nonreactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions—primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, which is a typical situation at dusk in urban areas from November to February. The highest levels of CO typically occur during the colder months of the year, when inversion conditions are more frequent.

In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions.

Sulfur Dioxide

SO_2 is a colorless, pungent gas formed primarily from incomplete combustion of sulfur-containing fossil fuels. The main sources of SO_2 are coal and oil used in power plants and industries; as such, the highest levels of SO_2 are generally found near large industrial complexes. In recent years, SO_2 concentrations have been reduced by the increasingly stringent controls placed on stationary source emissions of SO_2 and limits on the sulfur content of fuels.

SO_2 is an irritant gas that attacks the throat and lungs and can cause acute respiratory symptoms and diminished ventilator function in children. When combined with particulate matter, SO_2 can injure lung tissue and reduce visibility and the level of sunlight. SO_2 can also yellow plant leaves and erode iron and steel.

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. $PM_{2.5}$ and PM_{10} represent fractions of particulate matter. Coarse particulate matter (PM_{10}) consists of particulate matter that is 10 microns or less in diameter and is about 1/7 the thickness of a human hair. Major sources of PM_{10} include crushing or grinding operations; dust stirred up by vehicles traveling on roads; wood-burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open

lands; and atmospheric chemical and photochemical reactions. Fine particulate matter ($PM_{2.5}$) consists of particulate matter that is 2.5 microns or less in diameter and is roughly 1/28 the diameter of a human hair. $PM_{2.5}$ results from fuel combustion (e.g., from motor vehicles and power generation and industrial facilities), residential fireplaces, and woodstoves. In addition, $PM_{2.5}$ can be formed in the atmosphere from gases such as sulfur oxides, NO_x, and ROGs.

$PM_{2.5}$ and PM_{10} pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. $PM_{2.5}$ and PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances such as lead, sulfates, and nitrates can cause lung damage directly or be absorbed into the bloodstream, causing damage elsewhere in the body. Additionally, these substances can transport adsorbed gases such as chlorides or ammonium into the lungs, also causing injury. Whereas PM_{10} tends to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that it can penetrate deeper into the lungs and damage lung tissue. Suspended particulates also damage and discolor surfaces on which they settle and produce haze and reduce regional visibility.

People with influenza, people with chronic respiratory and cardiovascular diseases, and the elderly may suffer worsening illness and premature death as a result of breathing particulate matter. People with bronchitis can expect aggravated symptoms from breathing in particulate matter. Children may experience a decline in lung function due to breathing in PM_{10} and $PM_{2.5}$ (EPA 2009).

Lead

Lead in the atmosphere occurs as particulate matter. Sources of lead include leaded gasoline; the manufacturing of batteries, paints, ink, ceramics, and ammunition; and secondary lead smelters. Prior to 1978, mobile emissions were the primary source of atmospheric lead. Between 1978 and 1987, the phaseout of leaded gasoline reduced the overall inventory of airborne lead by nearly 95%. With the phaseout of leaded gasoline, secondary lead smelters, battery recycling, and manufacturing facilities are becoming lead-emissions sources of greater concern.

Prolonged exposure to atmospheric lead poses a serious threat to human health. Health effects associated with exposure to lead include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level lead exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance, including intelligence quotient performance, psychomotor performance, reaction time, and growth. Children are highly susceptible to the effects of lead.

Sulfates

Sulfates are the fully oxidized form of sulfur, which typically occur in combination with metals or hydrogen ions. Sulfates are produced from reactions of SO_2 in the atmosphere and can result in respiratory impairment, as well as reduced visibility.

Vinyl Chloride

Vinyl chloride is a colorless gas with a mild, sweet odor, which has been detected near landfills, sewage plants, and hazardous waste sites, due to the microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air can cause nervous system effects, such as dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage, including liver cancer.

Hydrogen Sulfide

Hydrogen sulfide is a colorless and flammable gas that has a characteristic odor of rotten eggs. Sources of hydrogen sulfide include geothermal power plants, petroleum refineries, sewers, and sewage treatment plants. Exposure to hydrogen sulfide can result in nuisance odors, as well as headaches and breathing difficulties at higher concentrations.

Visibility-Reducing Particles

Visibility-reducing particles are any particles in the air that obstruct the range of visibility. Effects of reduced visibility can include obscuring the viewshed of natural scenery, reducing airport safety, and discouraging tourism. Sources of visibility-reducing particles are the same as for $PM_{2.5}$ described above.

Reactive Organic Gases

Hydrocarbons are organic gases that are formed from hydrogen and carbon and sometimes other elements. Hydrocarbons that contribute to formation of O_3 are referred to and regulated as ROGs (also referred to as volatile organic compounds). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are the sources of hydrocarbons. Other sources of hydrocarbons include evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

The primary health effects of ROGs result from the formation of O_3 and its related health effects. High levels of ROGs in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. Carcinogenic forms of hydrocarbons, such as benzene, are considered TACs. There are no separate health standards for ROGs as a group.

Non-Criteria Air Pollutants

Toxic Air Contaminants

A substance is considered toxic if it has the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure, or acute and/or chronic noncancer health effects. A toxic substance released into the air is considered a TAC. TACs are identified by federal and state agencies based on a review of available scientific evidence. In the State of California, TACs are identified through a two-step process that was established in 1983 under the Toxic Air Contaminant Identification and Control Act. This two-step process of risk identification and risk management and reduction was designed to protect residents from the health effects of toxic substances in the air. In addition, the California Air Toxics "Hot Spots" Information and Assessment Act, Assembly Bill (AB) 2588, was enacted by the legislature in 1987 to address public concern over the release of TACs into the atmosphere. The law requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years.

Examples include certain aromatic and chlorinated hydrocarbons, certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources, such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and noncarcinogenic effects. Noncarcinogenic effects typically affect one or more target organ systems and may be experienced on either short-term (acute) or long-term (chronic) exposure to a given TAC.

Diesel Particulate Matter

Diesel particulate matter (DPM) is part of a complex mixture that makes up diesel exhaust. Diesel exhaust is composed of two phases, gas and particle, both of which contribute to health risks. More than 90% of DPM is less than 1 micrometer in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$ (CARB n.d.). DPM is typically composed of carbon particles (soot, also called black carbon) and numerous organic compounds, including over 40 known cancer-causing organic substances. Examples of these chemicals include polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene (CARB n.d.). CARB classified "particulate emissions from diesel-fueled engines" (i.e., DPM) (17 CCR 93000) as a TAC in August 1998. DPM is emitted from a broad range of diesel engines: on-road diesel engines of trucks, buses, and cars and off-road diesel engines including locomotives, marine vessels, and heavy-duty construction equipment, among others.

Approximately 70% of all airborne cancer risk in California is associated with DPM (CARB 2000). To reduce the cancer risk associated with DPM, CARB adopted a diesel risk reduction plan in 2000 (CARB 2000). Because it is part of $PM_{2.5}$, DPM also contributes to the same non-cancer health effects as $PM_{2.5}$ exposure. These effects include premature death; hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma; increased respiratory symptoms; and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies (CARB n.d.). Those most vulnerable to non-cancer health effects are children, whose lungs are still developing, and the elderly, who often have chronic health problems.

Odorous Compounds

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor, and recognition may only occur with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors.

3.2.1.3 Regional and Local Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations 10 feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. The most recent background ambient air quality data from 2015 to 2017 are presented in Table 3.2-1. The Livermore–Patterson Pass monitoring station, located at 13224 Patterson Pass Road, Livermore, California 94550, is the nearest air quality monitoring station to the project site, located approximately 10 miles south of the project site. Air quality data for O_3 and NO_2 from this monitoring station are provided in Table 3.2-1. Because the Livermore–Patterson Pass monitoring station does not measure all pollutants, CO, PM_{10}, and SO_2 measurements were taken from the Bethel Island monitoring station (5551 Bethel Island Road, Bethel Island, California 94511, approximately 12 miles north of the project site), and $PM_{2.5}$ measurements were taken from the Livermore–Rincon Avenue monitoring station (793 Rincon Avenue, Livermore, California 94550, approximately 13 miles southwest of the project site). The data collected at these stations are considered generally representative of the air quality experienced in the project vicinity. The number of days exceeding the ambient air quality standards is also shown in Table 3.2-1.

Table 3.2-1
Local Ambient Air Quality Data

Monitoring Station	Unit	Averaging Time	Agency/ Method	Ambient Air Quality Standard	Measured Concentration by Year			Exceedances by Year		
					2015	*2016*	*2017*	*2015*	*2016*	*2017*
Ozone (O_3)										
Livermore-Patterson Pass Road Station	ppm	Maximum 1-hour concentration	State	0.09	0.099	0.109	0.057	4	5	0
	ppm	Maximum 8-hour concentration	State	0.070	0.083	0.087	0.051	6	15	0
			Federal	0.070	0.082	0.087	0.051	5	15	0
Nitrogen Dioxide (NO_2)										
Livermore-Patterson Pass Road Station	ppm	Maximum 1-hour concentration	State	0.18	0.018	0.023	0.012	0	0	0
			Federal	0.100	0.0189	0.0239	0.0129	0	0	0
	ppm	Annual concentration	State	0.030	ND	ND	ND	—	—	—
			Federal	0.053	—	—	—	—	—	—
Carbon Monoxide (CO)										
Bethel Island – Bethel Island Road Station	ppm	Maximum 1-hour concentration	State	20	—	—	—	—	—	—
			Federal	35	1.1	2.0	1.6	0	0	0
	ppm	Maximum 8-hour concentration	State	9.0	—	—	—	—	—	—
			Federal	9	0.9	1.0	1.0	0	0	0
Sulfur Dioxide (SO_2)										
Bethel Island – Bethel Island Road Station	ppm	Maximum 1-hour concentration	Federal	0.075	0.0088	0.0047	0.0053	0	0	0
	ppm	Maximum 24-hour concentration	Federal	0.14	0.0019	0.003	0.0035	0	0	0
	ppm	Annual concentration	Federal	0.030	0.00101	0.00149	0.00154	0	0	0
Coarse Particulate Matter (PM_{10})[a]										
Bethel Island – Bethel Island Road Station	µg/m³	Maximum 24-hour concentration	State	50	33.0	26.0	52.0	ND (0)	ND (0)	ND (1)
			Federal	150	31.1	25.5	52.1	0.0 (0)	0.0 (0)	ND (0)
	µg/m³	Annual concentration	State	20	ND	ND	ND	—	—	—
Fine Particulate Matter ($PM_{2.5}$)[a]										
Livermore – Rincon Avenue Station	µg/m³	Maximum 24-hour concentration	Federal	35	31.1	22.3	41.5	0.0 (0)	0.0 (0)	2.0 (2)
	µg/m³	Annual concentration	State	12	8.8	7.5	8.4	—	—	—
			Federal	12.0	8.7	7.4	8.4	—	—	—

Sources: CARB 2018; EPA 2018b.

Notes: ppm = parts per million; ND = insufficient data available to determine the value; — = data not available; µg/m³ = micrograms per cubic meter.

Data taken from CARB iADAM (http://www.arb.ca.gov/adam) and EPA AirData (http://www.epa.gov/airdata/) represent the highest concentrations experienced over a given year.
Exceedances of federal and state standards are only shown for O_3 and particulate matter. Daily exceedances for particulate matter are estimated days because PM_{10} and $PM_{2.5}$ are not monitored daily. All other criteria pollutants did not exceed federal or state standards during the years shown. There is no federal standard for 1-hour ozone, annual PM_{10}, or 24-hour SO_2, nor is there a state 24-hour standard for $PM_{2.5}$.
Livermore Monitoring Stations are located at 13224 Patterson Pass Road and 793 Rincon Avenue, Livermore, California 94550.
Bethel Island Monitoring Station is located at 5551 Bethel Island Road, Bethel Island, California 94511.

[a] Measurements of PM_{10} and $PM_{2.5}$ are usually collected every 6 days and every 1 to 3 days, respectively. Number of days exceeding the standards is a mathematical estimate of the number of days concentrations would have been greater than the level of the standard had each day been monitored. The numbers in parentheses are the measured number of samples that exceeded the standard.

3.2.1.4 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. People most likely to be affected by air pollution include children, the elderly, athletes, and people with cardiovascular and chronic respiratory diseases. Facilities and structures where these air pollution–sensitive people live or spend considerable amounts of time are known as sensitive receptors. Land uses where air pollution–sensitive individuals are most likely to spend time include schools and schoolyards, parks and playgrounds, daycare centers, nursing homes, hospitals, and residential communities (sensitive sites or sensitive land uses) (CARB 2005). Proximate sensitive receptors to the project site include several residences along Byron Hot Springs Road, the nearest of which is located approximately 300 feet to the east of the project site.

3.2.2 Relevant Plans, Policies, and Ordinances

Federal

Criteria Air Pollutants

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The EPA is responsible for implementing most aspects of the Clean Air Act, including setting National Ambient Air Quality Standards (NAAQS) for major air pollutants; setting hazardous air pollutant (HAP) standards; approving state attainment plans; setting motor vehicle emission standards; issuing stationary source emission standards and permits; and establishing acid rain control measures, stratospheric O_3 protection measures, and enforcement provisions. Under the Clean Air Act, NAAQS are established for the following criteria pollutants: O_3, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead.

The NAAQS describe acceptable air quality conditions designed to protect the health and welfare of the citizens of the nation. The NAAQS (other than for O_3, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not to be exceeded more than once per year. NAAQS for O_3, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are based on statistical calculations over 1- to 3-year periods, depending on the pollutant. The Clean Air Act requires the EPA to reassess the NAAQS

at least every 5 years to determine whether adopted standards are adequate to protect public health based on current scientific evidence. States with areas that exceed the NAAQS must prepare state implementation plans that demonstrate how those areas will attain the standards within mandated time frames.

Pursuant to the 1990 federal Clean Air Act amendments, the EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutant, based on whether the NAAQS have been achieved. Generally, if the recorded concentrations of a pollutant are lower than the standard, the area is classified as attainment for that pollutant. If an area exceeds the standard, the area is classified as nonattainment for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified" or "unclassifiable." The designation of "unclassifiable/attainment" means that the area meets the standard or is expected to meet the standard despite a lack of monitoring data. Areas that achieve the standards after a nonattainment designation are redesignated as maintenance areas and must have approved maintenance plans to ensure continued attainment of the standards.

Hazardous Air Pollutants

The 1977 federal Clean Air Act amendments required the EPA to identify national emission standards for HAPs to protect public health and welfare. HAPs include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 federal Clean Air Act amendments, which expanded the control program for HAPs, 189 substances and chemical families were identified as HAPs.

State

Criteria Air Pollutants

The federal Clean Air Act delegates the regulation of air pollution control and the enforcement of the NAAQS to the states. In California, the task of air quality management and regulation has been legislatively granted to CARB, with subsidiary responsibilities assigned to air quality management districts and air pollution control districts at the regional and county levels. CARB, which became part of the California Environmental Protection Agency in 1991, is responsible for ensuring implementation of the California Clean Air Act of 1988, responding to the federal Clean Air Act, and regulating emissions from motor vehicles and consumer products.

CARB has established California Ambient Air Quality Standards (CAAQS), which are generally more restrictive than the NAAQS. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered in attainment if pollutant levels are continuously below the CAAQS and violate the

standards no more than once each year. The CAAQS for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, PM_{10}, and $PM_{2.5}$ and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

The California Clean Air Act, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on CAAQS rather than the NAAQS. The NAAQS, CAAQS, and attainment classifications for the criteria pollutants are outlined in Table 3.2-2.

Table 3.2-2
State and Federal Ambient Air Quality Standards and Attainment Status

Pollutant	Averaging Time	California Standards[a]		National Standards[b]	
		Standard	*Attainment Status*	*Standard*	*Attainment Status*
Ozone (O_3)	1 hour	0.09 ppm	N	NA	NA
	8 hour	0.07 ppm	N	0.070 ppm	N/Marginal[c]
Carbon Monoxide (CO)	1 hour	20 ppm	A	35 ppm	A
	8 hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	A	0.075 ppm	A
	24 hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Coarse Particulate Matter (PM_{10})	24 hour	50 µg/m^3	N	150 µg/m^3	U
	Annual	20 µg/m^3	N	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24 hour	NA	NA	35 µg/m^3	N[d]
	Annual	12 µg/m^3	N	12 µg/m^3	U/A[e]
Sulfates	24 hour	25 µg/m^3	A	NA	NA
Lead	30 day	1.5 µg/m^3	NA	NA	A
	Cal. Quarter	NA	NA	1.5 µg/m^3	A
	Rolling 3-Month Average	NA	NA	0.15 µg/m^3	U/A
Hydrogen Sulfide	1 hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8 hour	[f]	U	NA	NA

Source: BAAQMD 2017b.

Notes: ppm = parts per million by volume; N = Nonattainment; NA = not applicable (no applicable standard); A = Attainment; U = Unclassified; µg/m^3 = micrograms per cubic meter; PM_{10} = particulate matter with an aerodynamic diameter less than or equal to 10 microns; $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than or equal to 2.5 microns.

a California standards for O_3, CO, SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter (PM_{10}, $PM_{2.5}$), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. CAAQS are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

b National standards shown are the "primary standards" designed to protect public health. NAAQS (other than O_3, NO_2, SO_2, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once per year. The O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than

the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than 1. For $PM_{2.5}$, the 24-hour standard is attained when 98% of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

[c] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm. The U.S. Environmental Protection Agency (EPA) will make recommendations on attainment designations by October 1, 2016, and issue final designations October 1, 2017. Nonattainment areas will have until 2020 to late 2037 to meet the health standard, with attainment dates varying based on the ozone level in the area.

[d] On January 9, 2013, the EPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ national standard. This EPA rule suspends key SIP requirements as long as monitoring data continues to show that the Bay Area attains the standard. Despite this EPA action, the Bay Area will continue to be designated as "nonattainment" for the national 24-hour $PM_{2.5}$ standard until such time as the Bay Area Air Quality Management District (BAAQMD) submits a "redesignation request" and a "maintenance plan" to the EPA, and the EPA approves the proposed redesignation.

[e] In December 2012, the EPA strengthened the annual $PM_{2.5}$ NAAQS from 15.0 to 12.0 µg/m^3. In December 2014, the EPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

[f] Statewide visibility reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70%. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Toxic Air Contaminants

The state Air Toxics Program was established in 1983 under AB 1807 (Tanner). The California TAC list identifies more than 700 pollutants, of which carcinogenic and noncarcinogenic toxicity criteria have been established for a subset of these pollutants pursuant to the California Health and Safety Code. In accordance with AB 2728, the state list includes the (federal) HAPs. In 1987, the legislature enacted the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) to address public concern over the release of TACs into the atmosphere. AB 2588 requires facilities emitting toxic substances to provide local air pollution control districts with information that will allow an assessment of the air toxics problem, identification of air toxics emissions sources, location of resulting hotspots, notification of the public exposed to significant risk, and development of effective strategies to reduce potential risks to the public over 5 years. TAC emissions from individual facilities are quantified and prioritized. High-priority facilities are required to perform health risk assessments, and if specific thresholds are exceeded, facility operators are required to communicate the results to the public in the form of notices and public meetings.

In 2000, CARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines (CARB 2000). The regulation is anticipated to result in an 80% decrease in statewide diesel health risk in 2020 compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel, including the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Off-Road Diesel Vehicle Regulation, and the New Off-Road Compression-Ignition (Diesel) Engines and Equipment Program. These regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel-powered equipment. There are several Airborne Toxic Control Measures that reduce diesel emissions, including General Requirements for In-Use Off-Road Diesel-Fueled Fleets (13 CCR 2449 et seq.) and the Regulation to Reduce

Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use On-Road Diesel-Fueled Vehicles (13 CCR 2025).

The SFBAAB is designated as a nonattainment area for federal and state O_3 and $PM_{2.5}$ standards. The SFBAAB is also designated as a nonattainment area for the state PM_{10} standards. The SFBAAB is designated as unclassified or attainment for all other criteria air pollutants. Notably, unclassified areas cannot be classified based on available information as meeting or not meeting the ambient air quality standard for the pollutant.

Local

Bay Area Air Quality Management District

The BAAQMD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the SFBAAB, where the project site is located. The clean air strategy of the BAAQMD includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, issuance of permits for stationary sources of air pollution, inspection of stationary sources of air pollution and response to citizen complaints, monitoring of ambient air quality and meteorological conditions, and implementation of programs and regulations required by the federal and California Clean Air Acts.

On April 19, 2017, the BAAQMD adopted the Spare the Air: Cool the Climate Final 2017 Clean Air Plan (BAAQMD 2017c). The 2017 Clean Air Plan provides a regional strategy to protect public health and protect the climate. To protect public health, the 2017 Clean Air Plan includes all feasible measures to reduce emissions of O3 precursors (ROG and NOx) and reduce O3 transport to neighboring air basins. In addition, the 2017 Clean Air Plan builds on BAAQMD efforts to reduce PM2.5 and TACs. To protect the climate, the 2017 Clean Air Plan defines a vision for transitioning the region to a post-carbon economy needed to achieve ambitious greenhouse gas (GHG) reduction targets for 2030 and 2050 and provides a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets.

BAAQMD establishes and administers a program of rules and regulations to attain and maintain state and national air quality standards and regulations related to TACs. The rules and regulations that may apply to the project include the following:

- **Regulation 2, Rule 1 – Permits.** This rule specifies the requirements for authorities to construct and permits.

- **Regulation 6, Rule 1 – Particulate Matter.** This rule limits the quantity of particulate matter in the atmosphere through the establishment of limitations on emission rates, concentration, visible emissions, and opacity.
- **Regulation 8, Rule 1 – General Provisions.** This rule limits the emission of organic compounds into the atmosphere.

Contra Costa County

The Conservation Element of the Contra Costa County General Plan contains the following air quality goals and policies that would apply to the project (Contra Costa County 2005):

Goal 8-AA To meet Federal Air Quality Standards for all air pollutants.

Goal 8-AB To continue to support Federal, State, and regional efforts to reduce air pollution in order to protect human and environmental health.

Goal 8-AC To restore air quality in the area to a more healthful level.

Goal 8-AD To reduce the percentage of Average Daily Traffic (ADT) trips occurring at peak hours.

Policy 8-98 Development and roadway improvements shall be phased to avoid congestion.

Policy 8-99 The free flow of vehicular traffic shall be facilitated on major arterials.

Policy 8-100 Vehicular emissions shall be reduced throughout the County.

Policy 8-101 A safe, convenient, and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.

Policy 8-102 A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

Policy 8-103 When there is a finding that a proposed project might significantly affect air quality, appropriate mitigation measures shall be imposed.

Policy 8-104 Proposed projects shall be reviewed for their potential to generate hazardous air pollutants.

Policy 8-105 Land uses which are sensitive to air pollution shall be separated from sources of air pollution.

Policy 8-106 Air quality planning efforts shall be coordinated with other local, regional, and State agencies.

3.2.3 Thresholds of Significance and Methodology

The significance criteria used to evaluate the project impacts to air quality are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to air quality would occur if the project would:

1. Conflict with or obstruct implementation of the applicable air quality plan.
2. Result in a cumulatively considerable new increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.
3. Expose sensitive receptors to substantial pollutant concentrations.
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The BAAQMD adopted updated CEQA Air Quality Guidelines, including new thresholds of significance, in June 2010 (BAAQMD 2010), and revised them in May 2011. The CEQA Air Quality Guidelines advise lead agencies on how to evaluate potential air quality impacts, including establishing quantitative and qualitative thresholds of significance. The BAAQMD resolutions adopting and revising the significance thresholds in 2011 were set aside by a judicial writ of mandate on March 5, 2012. In May 2012, the BAAQMD updated its CEQA Air Quality Guidelines to continue to provide direction on recommended analysis methodologies, but without recommended quantitative significance thresholds (BAAQMD 2012). On August 13, 2013, the First District Court of Appeal ordered the trial court to reverse the judgment and upheld the BAAQMD's CEQA thresholds. The BAAQMD CEQA Air Quality Guidelines were recently re-released in May 2017 and include the same thresholds as in the 2010 and 2011 guidelines for criteria air pollutants, TACs, and GHGs (BAAQMD 2017a). The guidelines also address the Supreme Court's December 2015 opinion (*California Building Industry Association v. Bay Area Air Quality Management District* [2015] 62 Cal. 4th 369). BAAQMD significance thresholds are summarized in Table 3.2-3.

In general, the BAAQMD significance thresholds for ROG, NO_x, PM_{10}, $PM_{2.5}$, and CO address the first two air quality significance criteria. The BAAQMD maintains that these thresholds are intended to maintain ambient air quality concentrations of these criteria air pollutants below state and federal standards and to prevent a cumulatively considerable contribution to regional

nonattainment with ambient air quality standards. The TAC thresholds (cancer and noncancer risks) and local CO thresholds address the third significance criterion, and the BAAQMD odors threshold addresses the fourth significance criterion.

Table 3.2-3
Thresholds of Significance

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs/day)	*Average Daily Emissions (lbs/day)*	*Maximum Annual Emissions (tons/year)*
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best management practices	None	
Local CO	None	9.0 ppm (8-hour average, 20.0 ppm (1-hour average)	
Risks and Hazards (individual project)	Compliance with Qualified Community Risk Reduction Plan or Increased cancer risk of >10.0 in a million Increased noncancer risk of >1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase >0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from property line of source or receptor		
Risks and Hazards (cumulative)	Compliance with Qualified Community Risk Reduction Plan or Cancer risk of >100 in a million (from all local sources) Noncancer risk of >10.0 Hazard Index (chronic, from all local sources) Ambient $PM_{2.5}$ >0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from property line of source or receptor		
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous material located near receptors or new receptors located near stored or used acutely hazardous materials considered significant	
Odors	None	Five confirmed complaints to BAAQMD per year averaged over 3 years	

Source: BAAQMD 2017a.
Notes: lbs/day = pounds per day; tons/year = tons per year; ROG = reactive organic gases; NO_x = oxides of nitrogen; PM_{10} = particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; $PM_{2.5}$ = fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; CO = carbon monoxide; ppm = parts per million; µg/m^3 = micrograms per cubic meter; BAAQMD = Bay Area Air Quality Management District.

3.2.3.1 Methodology

Construction

Non-Aviation and Aviation-Related Uses

For the land use development component of the project (i.e., aviation and non-aviation uses), emissions from construction activities were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2. CalEEMod is a statewide computer model developed in cooperation with air districts throughout the state to quantify criteria air pollutant and GHG emissions (discussed in Section 3.6, Greenhouse Gas Emissions) associated with the construction and operational activities from a variety of land use projects, such as residential, commercial, and industrial facilities. CalEEMod input parameters, including the project land use type and size and construction schedule were based on information provided by the project proponent, or default model assumptions if project specifics were unavailable.

To estimate project emissions, it was assumed that construction of the project would take approximately 10 years until build-out, from 2019 through 2028.[3] It is assumed that the non-aviation-related uses would be constructed during the first 5 years, and that non-aviation-related uses would be constructed during the final 5 years. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

Non-Aviation Uses

- Site preparation: 2 months (January 2019–February 2019)
- Grading: 5 months (February 2019–July 2019)
- Building construction: 47 months (July 2019–June 2023)
- Paving: 3 months (June 2023–September 2023)
- Architectural coating: 3 months (September 2023–December 2023)

Aviation Uses

- Site preparation: 1 month (January 2024–February 2024)
- Grading: 5 months (February 2024–June 2024)
- Building construction: 48 months (June 2024–July 2028)

[3] Note that this is a conservative estimate, as air quality modelling assumes that emissions generally improve over time. Therefore, estimated emissions would not increase due to delays in the start of construction and may actually be reduced.

- Paving: 3 months (July 2028–October 2028)
- Architectural coating: 3 months (October 2028–December 2028)

For the analysis, it was generally assumed that heavy construction equipment would be operating at the site 5 days per week (22 days per month) during project construction. In addition to construction equipment operation, emissions from worker trips and vendor trucks (i.e., delivery trucks) were estimated based on CalEEMod defaults. Vendor trucks transporting building materials were assumed for building construction. No haul trucks were assumed since demolition would not be required, and soils would be balanced on site.

Average daily emissions were computed by dividing the total construction emissions by the number of active construction days. The construction equipment mix and estimated hours of equipment operation per day used for the air emissions modeling of the project are based on model defaults, except that a trencher was adding during the grading activity to account for utility installation. Assumptions are summarized in Table 3.2-4, with additional details regarding construction assumptions are provided in the modeling output (Appendix C).

Table 3.2-4
Non-Aviation and Aviation Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Average Daily Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Non-Aviation Uses						
Site Preparation	18	0	0	Rubber-Tired Dozers	3	8
				Tractors/Loaders/Backhoes	4	8
Grading	20	0	0	Excavators	2	8
				Graders	1	8
				Rubber-Tired Dozers	1	8
				Scrapers	2	8
				Tractors/Loaders/Backhoes	2	8
				Trenchers	1	8
Building Construction	427	173	0	Cranes	1	7
				Forklifts	3	8
				Generator Sets	1	8
				Tractors/Loaders/Backhoes	3	7
				Welders	1	8
Paving	15	0	0	Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
Architectural Coatings	85	0	0	Air Compressors	1	6

Table 3.2-4
Non-Aviation and Aviation Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Vendor Truck Trips*	*Average Daily Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Aviation Uses						
Site Preparation	18	0	0	Rubber-Tired Dozers	3	8
				Tractors/Loaders/Backhoes	4	8
Grading	23	0	0	Excavators	2	8
				Graders	1	8
				Rubber-Tired Dozers	1	8
				Scrapers	2	8
				Tractors/Loaders/Backhoes	2	8
				Trenchers	1	8
Building Construction	387	151	0	Cranes	1	7
				Forklifts	3	8
				Generator Sets	1	8
				Tractors/Loaders/Backhoes	3	7
				Welders	1	8
Paving	15	0	0	Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
Architectural Coatings	77	0	0	Air Compressors	1	6

Source: Appendix C.

Roadway Expansion and Water Infrastructure

Emissions from the roadway expansion and water infrastructure construction activities were estimated using the Road Construction Emissions Model Version 9.0.0 (SMAQMD 2018). These construction activities are related to the implementation of mitigation measures for transportation and utilities (see Section 3.13, Transportation, and Section 3.14, Utilities).

For the purposes of modeling, it was assumed that the roadway expansion and water infrastructure activities would both commence in January 2019 for durations of 15 days and 35 days, respectively. In regards to the 0.89-mile roadway expansion, it was estimated that approximately 1 acre total would be disturbed, and that approximately 2,030 cubic yards of asphalt mix would be imported for paving. In regards to the 2.6-mile pipeline installation, it was estimated that approximately 1.5 acres total would be disturbed, that approximately 2,974 cubic yards of demolition debris would be exported, and that 2,965 cubic yards of asphalt mix would be imported for paving. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

Roadway Expansion

- Grubbing/land clearing: 2 days (January 2019)
- Grading/excavation: 6 days (January 2019)
- Drainage/utilities/sub-grade: 5 days (January 2019)
- Paving: 2 days (January 2019)

Water Infrastructure Installation

- Grubbing/land clearing: 4 days (January 2019)
- Grading/excavation: 11 days (January 2019)
- Drainage/utilities/sub-grade: 16 days (January 2019–February 2019)
- Paving: 5 days (January 2019–February 2019)

The construction equipment mix, worker trips, and water truck trips used for estimating the construction emissions of these activities are based on model defaults, with the addition of a trencher to the drainage/utilities/sub-grade phase of the water infrastructure analysis. Assumptions are depicted in Table 3.2-5.

Table 3.2-5
Roadway Expansion and Water Infrastructure Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Water Truck Trips*	*Average Daily Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
Roadway Expansion						
Grubbing/Land Clearing	14	10	0	Crawler Tractors	1	8
				Excavators	2	8
				Signal Boards	2	8
Grading/Excavation	44	10	0	Crawler Tractors	1	8
				Excavators	3	8
				Graders	2	8
				Rollers	2	8
				Rubber-Tired Loaders	1	8
				Scrapers	2	8
				Signal Boards	2	8
				Tractors/Loaders/Backhoes	4	8
Drainage/Utilities/ Sub-Grade	30	10	38	Air Compressors	1	8
				Generator Sets	1	8
				Graders	1	8
				Plate Compactors	1	8

Table 3.2-5
Roadway Expansion and Water Infrastructure Construction Scenario Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	*Average Daily Water Truck Trips*	*Average Daily Haul Truck Trips*	*Equipment Type*	*Quantity*	*Usage Hours*
				Pumps	1	8
				Rough Terrain Forklifts	1	8
				Scrapers	1	8
				Signal Boards	2	8
				Tractors/Loaders/Backhoes	3	8
Paving	24	10	38	Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
				Signal Boards	2	8
				Tractors/Loaders/Backhoes	3	8
Water Infrastructure Installation						
Grubbing/Land Clearing	24	10	26	Crawler Tractors	1	8
				Excavators	2	8
				Signal Boards	6	8
Grading/Excavation	54	10	26	Crawler Tractors	1	8
				Excavators	3	8
				Graders	2	8
				Rollers	2	8
				Rubber-Tired Loaders	1	8
				Scrapers	2	8
				Signal Boards	6	8
				Tractors/Loaders/Backhoes	4	8
Drainage/Utilities/ Sub-Grade	40	10	24	Air Compressors	1	8
				Generator Sets	1	8
				Graders	1	8
				Plate Compactors	1	8
				Pumps	1	8
				Rough Terrain Forklifts	1	8
				Scrapers	1	8
				Signal Boards	6	8
				Tractors/Loaders/Backhoes	3	8
Paving	34	10	24	Pavers	1	8
				Paving Equipment	1	8
				Rollers	2	8
				Signal Boards	6	8
				Tractors/Loaders/Backhoes	3	8

Notes: Appendix C.

For the analysis, it was assumed that heavy construction equipment would be operating for 8 hours per day, 5 days per week (22 days per month) during project construction.

Operations

Emissions from the operational phase of the project were estimated using CalEEMod. Operational year 2029 was assumed based on the first full year of operations. During long-term operations, the project would generate air pollutants from mobile, energy, and area sources. Traffic trips were estimated based on the land uses specified in Chapter 2, Project Description, of this Environmental Impact Report (EIR), and by adjusting default weekday trip rates in CalEEMod to match those included in the Transportation Impact Analysis Report (GHD 2019) for the land use types.[4] The same adjustment factors used for the weekday trip generation were applied to the default Saturday and Sunday trip rates in CalEEMod. Increased trip lengths for potential customers based on the rural location of the project, as well as the project specific vehicle-miles-traveled (VMT) for employees, as described in Chapter 3.13, Transportation, of this EIR. Non-work trip lengths were increased to account for potentially greater travel distance for deliveries. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Default CalEEMod assumptions were used for natural gas combustion and area sources (i.e., landscaping, consumer products, and architectural coatings for building maintenance). Notably, energy use associated with the airport storage facilities was assumed to be equivalent to an unrefrigerated warehouse.

In addition, per the CEC Impact Analysis for the 2019 Update to the California Energy Efficiency Standards for Residential and Non-Residential Buildings, the first-year savings for newly constructed nonresidential buildings are 197 gigawatt hours of electricity, 76.6 megawatt of demand, and 0.27 million therms of gas, representing reductions from the 2016 Title 24 standard of 10.7%, 9%, and 1%, respectively (CEC 2018a). To take into account energy reductions associated with compliance with 2019 Title 24, the CalEEMod Title 24 electricity and natural gas values were reduced by 10.7% and 1%, respectively, for all project buildings. The applied reductions are anticipated to be conservative as in general, nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018b).

3.2.4 Impacts Analysis

Impact 3.2-1. The project would conflict with or obstruct implementation of the applicable air quality plan. (Potentially Significant)

[4] The Logistics/ Warehouse/ Distribution land use was modeled in CalEEMod with "Unrefrigerated Warehouse – No Rail" and "Unrefrigerated Warehouse – With Rail" in order to delineate fleet mix and trip lengths for employees versus haul trucks, with 69% of trips assumed to be employees and 31% assumed to be trucks, based on the "Warehouse Truck Trip Study Data Results and Usage" (South Coast Air Quality Management District 2014).

An area is designated as in attainment when it is in compliance with the federal and/or state standards. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or public welfare with a margin of safety. The project site is located within the SFBAAB, which is designated non-attainment for the federal 8-hour O_3 and 24-hour $PM_{2.5}$ standards. The area is in attainment or unclassified for all other federal standards. The area is designated non-attainment for state standards for 1-hour and 8-hour O_3, 24-hour PM_{10}, annual PM_{10}, and annual $PM_{2.5}$.

On April 19, 2017, the BAAQMD adopted the Spare the Air: Cool the Climate Final 2017 Clean Air Plan (BAAQMD 2017c). The BAAQMD CEQA Air Quality Guidelines identify a three-step methodology for determining a project's consistency with the current Clean Air Plan. If the responses to these three questions can be concluded in the affirmative and those conclusions are supported by substantial evidence, then the BAAQMD considers the project to be consistent with air quality plans prepared for the Bay Area.

The first question to be assessed in this methodology is "does the project support the goals of the Air Quality Plan?" The BAAQMD-recommended measure for determining project support for these goals is consistency with BAAQMD thresholds of significance. If a project would not result in significant and unavoidable air quality impacts, after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 Clean Air Plan. As indicated in the following discussion with regard to air quality Impact 3.2-2 and Impact 3.2-3, the project would result in potentially significant operational emission impacts associated with NO_x and PM_{10}, primarily from mobile sources. Therefore, the project would be considered to potentially conflict with or obstruct implementation of the current Clean Air Plan.

The second question to be assessed in this consistency methodology is "does the project include applicable control measures from the Clean Air Plan?" The 2017 Clean Air Plan contains 85 control measures aimed at reducing air pollution in the Bay Area. Projects that incorporate all feasible air quality plan control measures are considered consistent with the Clean Air Plan. The control strategies of the 2017 Clean Air Plan include measures in the categories of stationary sources, the transportation sector, the buildings sector, the energy sector, the agriculture sector, natural and working lands, the waste sector, the water sector, and super-GHG pollutant measures. Depending on the control measure, the tools for implementation include leveraging the BAAQMD rules and permitting authority, regional coordination and funding, working with local governments to facilitate best policies in building codes, outreach and education, and advocacy strategies. The project would comply with all applicable BAAQMD rules and would meet state standards and/or local building codes and would not conflict with any applicable control measures from the 2017 Clean Air Plan.

The third question to be assessed in this consistency methodology is "does the project disrupt or hinder implementation of any control measures from the Clean Air Plan?" Examples of how a project may cause the disruption or delay of control measures include a project that precludes an extension of a transit line or bike path or proposes excessive parking beyond parking requirements. The project would not create any barriers or impediments to planned or future improvements to transit or bicycle facilities in the area, nor would it include excessive parking. Therefore, the project would not hinder implementation of 2017 Clean Air Plan control measures.

In summary, based on the substantial increase in operational emissions of NO_x and PM_{10}, the project would potentially conflict with or obstruct implementation of the 2017 Clean Air Plan. This is a **potentially significant** impact.

Impact 3.2-2. The project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard. (Potentially Significant)

Past, present, and future development projects may contribute to the SFBAAB adverse air quality impacts on a cumulative basis. Per BAAQMD's CEQA Air Quality Guidelines, by its nature air pollution is largely a cumulative impact; no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be considered cumulatively considerable, resulting in a significant adverse air quality impact to the region's existing air quality conditions. Therefore, if the project's emissions are below the BAAQMD thresholds or screening criteria, then the project would not result in a cumulatively considerable net increase of any criteria air pollutant.

Construction

The project would potentially involve the construction and operation of up to 274,000 square feet of logistics/warehouse/distribution buildings, 213,000 square feet of light industry/business park, 81,000 square feet of office uses, 91,000 square feet of commercial uses, 128,000 square feet of airport storage, 154,000 square feet of aviation use buildings, and associated parking. In addition, the project would require 0.89 miles of roadway expansion and 2.6 miles of water infrastructure installation. Construction is anticipated to begin in 2019 and take approximately 10 years to complete. Sources of emissions would include off-road construction equipment exhaust, on-road vehicle exhaust and entrained road dust (i.e., material delivery trucks and worker vehicles), fugitive dust associated with site preparation and grading activities, and paving and architectural coating activities. Detailed assumptions associated with project construction are included in Appendix C.

Average daily emissions were computed by dividing the total construction emissions by the number of active construction days, which were then compared to the BAAQMD construction thresholds of significance. Table 3.2-6 shows average daily construction emissions of O_3 precursors (ROG and NO_x), PM_{10} exhaust, and $PM_{2.5}$ exhaust during project construction.[5]

Table 3.2-6
Average Daily Unmitigated Construction Emissions – Non-Aviation and Aviation Uses, Roadway Expansion, and Water Infrastructure Installation

Year	ROG	NO_x	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
	pounds per day			
2019–2028 Construction	7.4	33.8	1.0	0.9
BAAQMD Construction Thresholds	*54*	*54*	*82*	*54*
Exceed Threshold?	**No**	**No**	**No**	**No**

Source: Appendix C.
Note: ROG = reactive organic gases; NOx = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; BAAQMD = Bay Area Air Quality Management District.
The values shown are average daily emissions based on total overall tons of construction emissions associated with the development of the non-aviation and aviation uses, roadway expansion, and water infrastructure installation, converted to pounds, and divided by 2,609 active workdays.

As shown in Table 3.2-6, construction of the project would not exceed BAAQMD significance thresholds. Criteria air pollutant emissions during construction would be less than significant.[6] Although the BAAQMD does not have a quantitative significance threshold for fugitive dust, the BAAQMD's CEQA Guidelines recommend that projects determine the significance of fugitive dust through application of best management practices. Without adequate controls, fugitive dust during construction could be a short-term, but **potentially significant** impact.

Operations

Operation of the project would generate criteria pollutant (including ROG, NO_x, PM_{10}, and $PM_{2.5}$) emissions from mobile sources (vehicular traffic), area sources (consumer products, architectural coatings, landscaping equipment), and energy sources (natural gas appliances, space and water heating). CalEEMod was used to estimate daily emissions from project-related operational sources, as previously described in Section 3.2.3, Thresholds of Significance and Methodology.

[5] Fuel combustion during construction and operations would also result in the generation of sulfur dioxide (SO_2) and CO. These values are included in Appendix C. However, since the SFBAAB is in attainment of these pollutants, the BAAQMD has not established a quantitative mass-significance threshold for comparison and are not included in the project-generated emissions tables in this document. Notably, the BAAQMD does have screening criteria for operational localized CO, which are discussed in more detail below.

[6] Construction emissions are based on the assumption of a five-year construction period for all non-aviation uses. It should be noted that the buildout of the warehousing component, approximately 274,000 square feet of building space, could be accomplished in a two-year period without exceeding the significance thresholds. The estimated unmitigated construction emissions for the warehousing component would be ROG 10.6 lbs./day, NOx 48.2 lbs./day, PM10 1.4 lbs./day, and PM2.5 1.3 lbs./day.

Table 3.2-7 summarizes the daily mobile, energy, and area emissions of criteria pollutants that would be generated by project operations in the year 2029 (assumed as the first full year of operations after build-out) and compares the emissions to BAAQMD operational thresholds.

Table 3.2-7
Daily Unmitigated Operational Emissions – Project Buildout

Source	ROG	NO_x	PM_{10}	$PM_{2.5}$
	pounds per day			
Area	23.3	0.0	0.0	0.0
Energy	0.3	2.8	0.2	0.2
Mobile	14.1	72.2	99.7	27.1
Total	**37.7**	**75.0**	**99.9**	**27.3**
BAAQMD Operational Thresholds	*54*	*54*	*82*	*54*
Exceed Threshold?	**No**	**Yes**	**Yes**	**No**

Source: Appendix C.
Note: ROG = reactive organic gases; NOx = oxides of nitrogen; PM_{10} = coarse particulate matter; $PM_{2.5}$ = fine particulate matter; BAAQMD = Bay Area Air Quality Management District.
Totals may not round due to rounding. The values shown are the maximum summer or winter daily emissions results from California Emissions Estimator Model.

As indicated in Table 3.2-7, project-related operational emissions of ROG and $PM_{2.5}$ would not exceed the BAAQMD significance thresholds during operations. However, project-related emissions of NO_x and PM_{10}, primarily from mobile sources, would exceed the BAAQMD significance thresholds. As such, the project would have a **potentially significant** impact in relation to regional operational emissions.

Impact 3.2-3. The project could expose sensitive receptors to substantial pollutant concentrations. (Potentially Significant)

Toxic Air Contaminants

The BAAQMD has adopted project and cumulative thresholds for three risk-related air quality indicators to sensitive receptors: cancer risks, noncancer health effects, and increases in ambient air concentrations of $PM_{2.5}$. These impacts are addressed on a localized, rather than regional, basis in relation to sensitive receptors identified for the project. Sensitive receptors are groups of individuals, including children, older adults, the acutely ill, and the chronically ill, that may be more susceptible to health risks due to chemical exposure. Sensitive-receptor population groups are likely to be located at hospitals, medical clinics, schools, playgrounds, childcare centers, residences, and retirement homes. Proximate sensitive receptors to the project include several residences along Byron Hot Springs Road, the nearest of which is located approximately 300 feet to the east of the project.

TACs and $PM_{2.5}$ can cause cancer and noncancer chronic and acute health impacts such as birth defects, neurological damage, asthma, bronchitis, and genetic damage, and short-term acute affects such as eye watering, respiratory irritation, running nose, throat pain, and headaches. State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program and aimed at TACs that are a problem in California. The state currently regulates hundreds of compounds as TACs, including the federal HAPs, and continues to adopt control measures for sources of these TACs. CARB has classified DPM as a TAC. The following measures are required by state law to reduce DPM emissions:

- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-Use Off-Road Diesel Vehicles (13 CCR 2449) to reduce DPM and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13 of the California Code of Regulations, Section 2485, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading must be limited to 5 minutes; electric auxiliary power units should be used whenever possible.

The greatest potential for TAC emissions during construction would be DPM emissions from heavy equipment operations and heavy-duty trucks. Since the project construction would be phased based on market conditions, with activities in multiple areas across the project site, the project would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of any proximate individual sensitive receptor to TACs. However, based on the proximity of existing sensitive receptors to project construction, this impact would be **potentially significant**.

Regarding long-term operations, the project would include uses that would likely generate substantial diesel truck traffic, including the logistics/warehouse/distribution buildings. In regards to distribution centers, the CARB Air Quality and Land Use Handbook (CARB 2005) has the following recommendations:

- Avoid siting new sensitive land uses within 1,000 feet of a distribution center that:
    - Accommodates more than 100 trucks per day, or
    - Accommodates more than 40 trucks with operating transport refrigeration units (TRUs) per day, or
    - Where TRU operations exceed 300 hours per week.

Based on preliminary site plans, it is possible that the project would result in distribution (or similar) facilities within 1,000 feet of existing off-site residential receptors. Since operational

parameters, such as truck trip generation and TRU usage, are unknown at this time, the potential health risk from exposure to DPM would be speculative. However, based on the proposed land uses and the proximity to sensitive receptors, this impact would be **potentially significant**.

Carbon Monoxide Hotspots

According to the BAAQMD, a proposed project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met (BAAQMD 2017a):

1. The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.
2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.
3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The project would generate new traffic trips, but not to a level that would result in an exceedance of the BAAQMD screening criteria. Accordingly, project-related traffic would not exceed CO standards and therefore, no further analysis was conducted for CO impacts. This CO emissions impact would be **less than significant** on a project-level and cumulative basis.

Health Impacts of Other Criteria Air Pollutants

Construction and operation of the project would not result in emissions that exceed the BAAQMD emission thresholds for any criteria air pollutants.

ROG and NO_x are precursors to O_3, for which the SFBAAB is designated as nonattainment with respect to the NAAQS and CAAQS. The health effects associated with O_3 are generally associated with reduced lung function. The contribution of ROG and NO_x to regional ambient O_3 concentrations is the result of complex photochemistry. The increases in O_3 concentrations in the SFBAAB due to O_3 precursor emissions tend to be found downwind from the source locations to allow time for the photochemical reactions to occur. However, the potential for exacerbating excessive O_3 concentrations would also depend on the time of year that the ROG emissions would occur because exceedances of the O_3 NAAQS and CAAQS tend to occur between April and October when solar radiation is highest. The holistic effect of a single project's emissions of O_3 precursors is speculative due to the lack of quantitative methods to assess this impact. That being said, because the project would exceed the BAAQMD NO_x threshold during operations, the project could contribute to health effects associated with O_3.

Health effects associated with NO_x and NO_2 include lung irritation and enhanced allergic responses (see Section 3.2.1.2) (CARB 2019a). Although Project-related NO_x emissions would exceed the BAAQMD mass daily thresholds during operations, because the SFBAAB is a designated attainment area for NO_2 (and NO_2 is a constituent of NO_x) and the existing NO_2 concentrations in the area are well below the NAAQS and CAAQS standards,[7] it is not anticipated that the project would cause an exceedance of the NAAQS and CAAQS for NO_2 or result in potential health effects associated with NO_2 and NO_x. Nonetheless, because the project would exceed the BAAQMD NO_x threshold during operations, the project could contribute to health effects associated with NO_x and NO_2.

Health effects associated with CO include chest pain in patients with heart disease, headache, light-headedness, and reduced mental alertness (see Section 3.2.1.2) (CARB 2019b). CO tends to be a localized impact associated with congested intersections. The potential for CO hotspots was discussed above and determined to be less than significant. Thus, the project's CO emissions would not contribute to significant health effects associated with CO.

Health effects associated with PM_{10} include premature death and hospitalization, primarily for worsening of respiratory disease (see Section 3.2.1.2) (CARB 2017). Operation of the project would exceed the BAAMQD threshold for PM_{10}. As such, the project would potentially contribute to exceedances of the NAAQS and CAAQS for particulate matter and obstruct the SFBAAB from coming into attainment for this pollutant. Because the project has the potential to contribute substantial particulate matter during operation, the project could result in associated health effects.

The California Supreme Court's *Sierra Club v. County of Fresno* (2018) 6 Cal. 5th 502 decision (referred to herein as the Friant Ranch decision) (issued on December 24, 2018), addresses the need to correlate mass emission values for criteria air pollutants to specific health consequences, and contains the following direction from the California Supreme Court: "The Environmental Impact Report (EIR) must provide an adequate analysis to inform the public how its bare numbers translate to create potential adverse impacts or it must explain what the agency *does* know and why, given existing scientific constraints, it cannot translate potential health impacts further" (Italics original). Currently, BAAQMD, CARB, and EPA have not approved a quantitative method to reliably, meaningfully, and consistently translate the mass emission estimates for the criteria air pollutants resulting from the project to specific health effects. In addition, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days.

In connection with the judicial proceedings culminating in issuance of the Friant Ranch decision, the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD) filed amicus briefs attesting to the extreme difficulty of

[7] See Table 3.2-1, which shows that ambient concentrations of NO_2 at the Livermore-Patterson Pass Road monitoring station have not exceeded the NAAQS or CAAQS between 2015 and 2017.

correlating an individual project's criteria air pollutant emissions to specific health impacts. Both the SJVAPCD and the SCAQMD have among the most sophisticated air quality modeling and health impact evaluation capabilities of the air districts in the state. The key, relevant points from the SCAQMD and SJVAPCD briefs is summarized herein.

In requiring a health impact type of analysis for criteria air pollutants, it is important to understand how O_3 and PM is formed, dispersed, and regulated. The formation of O_3 and PM in the atmosphere, as secondary pollutants,[8] involves complex chemical and physical interactions of multiple pollutants from natural and anthropogenic sources. The O_3 reaction is self-perpetuating (or catalytic) in the presence of sunlight because NO_2 is photochemically reformed from nitric oxide (NO). In this way, O_3 is controlled by both NO_x and VOC emissions (NRC 2005). The complexity of these interacting cycles of pollutants means that incremental decreases in one emission may not result in proportional decreases in O_3 (NRC 2005). Although these reactions and interactions are well understood, variability in emission source operations and meteorology creates uncertainty in the modeled O_3 concentrations to which downwind populations may be exposed (NRC 2005). Once formed, O_3 can be transported long distances by wind and due to atmospheric transport, contributions of precursors from the surrounding region can also be important (EPA 2008). Because of the complexity of O_3 formation, a specific tonnage amount of VOCs or NO_X emitted in a particular area does not equate to a particular concentration of O_3 in that area (SJVAPCD 2015). PM can be divided into two categories: directly emitted PM and secondary PM. Secondary PM, like O_3, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as SO_x and NO_x (SJVAPCD 2015). Because of the complexity of secondary PM formation, including the potential to be transported long distances by wind, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area (SJVAPCD 2015). This is especially true for individual projects, like the project, where project-generated criteria air pollutant emissions are not derived from a single "point source," but from construction equipment and mobile sources (passenger cars and trucks) driving to, from and around the project site.

Another important technical nuance is that health effects from air pollutants are related to the concentration of the air pollutant that an individual is exposed to, not necessarily the individual mass quantity of emissions associated with an individual project. For example, health effects from O_3 are correlated with increases in the ambient level of O_3 in the air a person breathes (SCAQMD 2015). However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient O_3 levels over an entire region (SCAQMD 2015). The lack of link between the tonnage of precursor pollutants and the concentration of O_3 and $PM_{2.5}$ formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects; rather, it is the concentration of resulting O_3 that causes these effects (SJVAPCD 2015). Indeed,

[8] Air pollutants formed through chemical reactions in the atmosphere are referred to as secondary pollutants.

the ambient air quality standards, which are statutorily required to be set by EPA at levels that are requisite to protect the public health, are established as concentrations of O_3 and $PM_{2.5}$ and not as tonnages of their precursor pollutants (EPA 2018c). Because the ambient air quality standards are focused on achieving a particular concentration region-wide, the tools and plans for attaining the ambient air quality standards are regional in nature. For CEQA analyses, project-generated emissions are typically estimated in pounds per day or tons per year and compared to mass daily or annual emission thresholds. While CEQA thresholds are established at levels that the air basin can accommodate without affecting the attainment date for the AAQS, even if a project exceeds established CEQA significance thresholds, this does not mean that one can easily determine the concentration of O_3 or PM that will be created at or near the project site on a particular day or month of the year, or what specific health impacts will occur (SJVAPCD 2015).

In regard to regional concentrations and air basin attainment, the SJVAPCD emphasized that attempting to identify a change in background pollutant concentrations that can be attributed to a single project, even one as large as the entire Friant Ranch Specific Plan, is a theoretical exercise. The SJVAPCD brief noted that it "would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have" (SJVAPCD 2015). The situation is further complicated by the fact that background concentrations of regional pollutants are not uniform either temporally or geographically throughout an air basin but are constantly fluctuating based upon meteorology and other environmental factors. SJVAPCD noted that the currently available modeling tools are equipped to model the impact of all emission sources in the San Joaquin Valley Air Basin on attainment (SJVAPCD 2015). The SJVAPCD brief then indicated that, "Running the photochemical grid model used for predicting O_3 attainment with the emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NO_x and VOC in the Valley) is not likely to yield valid information given the relative scale involved" (SJVAPCD 2015).

SCAQMD and SJVAPCD have indicated that it is not feasible to quantify project-level health impacts based on existing modeling (SCAQMD 2015; SJVAPCD 2015). Even if a metric could be calculated, it would not be reliable because the models are equipped to model the impact of all emission sources in an air basin on attainment and would likely not yield valid information or a measurable increase in O_3 concentrations sufficient to accurately quantify O_3-related health impacts for an individual project.

Nonetheless, following the Supreme Court's Friant Ranch decision, some EIRs where estimated criteria air pollutant emissions exceeded applicable air district thresholds have included a quantitative analysis of potential project-generated health effects using a combination of a regional photochemical grid model (PGM)[9] and the EPA Benefits Mapping and Analysis Program (BenMAP or BenMAP–

[9] The first step in the publicly available HIAs includes running a regional PGM, such as the Community Multiscale Air Quality (CMAQ) model or the Comprehensive Air Quality Model with extensions (CAMx) to estimate the increase in concentrations of O_3 and $PM_{2.5}$ as a result of project-generated emissions of criteria and precursor

Community Edition [CE]).[10] To date, the publicly available health impact assessments (HIAs) typically present results in terms of an increase in health incidences and/or the increase in background health incidence for various health outcomes resulting from the project's estimated increase in concentrations of O_3 and $PM_{2.5}$, and have each concluded that the potential health impacts are negligible and potentially within the models' margin of error.[11]

As explained in the SJVAPCD brief and noted previously, running the PGM used for predicting O_3 attainment with the emissions solely from an individual project like the Friant Ranch project or the proposed project is not likely to yield valid information given the relative scale involved. The publicly available HIAs support the SJVAPCD's brief contention that consistent, reliable, and meaningful results may not be provided by methods applied at this time. Accordingly, additional work in the industry and more importantly, air district participation, is needed to develop a more meaningful analysis to correlate project-level mass criteria air pollutant emissions and health effects for decision makers and the public. Furthermore, at the time of writing, no HIA has concluded that health effects estimated using the PGM and BenMAP approach are substantial provided that the estimated project-generated incidences represent a very small percentage of the number of background incidences, potentially within the models' margin of error.

In summary, operation of the project could result in exceedances of the BAAQMD significance thresholds for NO_x and PM_{10} and the project would potentially result in health effects associated with those pollutants. Because construction of the project would not exceed any BAAQMD thresholds, and operation of the project would not exceed the MDAQMD thresholds for ROG or $PM_{2.5}$, and because the BAAQMD thresholds are based on levels that the SFBAAB can accommodate without affecting the attainment date for the AAQS and the AAQS are established to protect public health and welfare, the project is not anticipated to result in health effects associated with ROG or $PM_{2.5}$.

pollutants. Air districts use photochemical air quality models for regional air quality planning. These photochemical models are large-scale air quality models that simulate the changes of pollutant concentrations in the atmosphere using a set of mathematical equations characterizing the chemical and physical processes in the atmosphere (EPA 2017).

[10] After estimating the increase in concentrations of O_3 and $PM_{2.5}$, the second step in the five examples includes use of BenMAP or BenMAP-CE to estimate the resulting associated health effects. BenMAP estimates the number of health incidences resulting from changes in air pollution concentrations (EPA 2018d). The health impact function in BenMAP-CE incorporates four key sources of data: (i) modeled or monitored air quality changes, (ii) population, (iii) baseline incidence rates, and (iv) an effect estimate. All of the five example HIAs focused on O_3 and $PM_{2.5}$.

[11] The following CEQA documents included a quantitative HIA to address Friant Ranch: (1) California State University Dominguez Hills 2018 Campus Master Plan EIR (CSU Dominguez Hills 2019), (2) March Joint Powers Association K4 Warehouse and Cactus Channel Improvements EIR (March JPA 2019), (3) Mineta San Jose Airport Amendment to the Airport Master Plan EIR (City of San Jose 2019), (4) City of Inglewood Basketball and Entertainment Center Project EIR (City of Inglewood 2019), and (5) San Diego State University Mission Valley Campus Master Plan EIR (SDSU 2019).

Notably, there are numerous scientific and technological complexities associated with correlating criteria air pollutant emissions from an individual project to specific health effects or potential additional nonattainment days, and methods available to quantitatively evaluate health effects may not be appropriate to apply to emissions associated with the project, which cannot be estimated with a high-level of accuracy. Notwithstanding, because operation of the project could result in exceedances of BAAQMD significance thresholds for NO_x and PM_{10}, even after implementation of MM-AQ-3, the potential health effects associated with criteria air pollutants are conservatively considered significant and unavoidable.

Impact 3.2-4. The project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. (Less than Significant)

BAAQMD has identified typical sources of odor in the CEQA Air Quality Guidelines, a few examples of which include manufacturing plants, rendering plants, coffee roasters, wastewater treatment plants, sanitary landfills, and solid waste transfer stations. While sources that generate objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.

Odors would be potentially generated from vehicles and equipment exhaust emissions during construction of the project. Potential odors produced during construction would be attributable to concentrations of unburned hydrocarbons from tailpipes of construction equipment. Such odors would disperse rapidly from the project site and generally occur at magnitudes that would not affect substantial numbers of people. In regards to long-term operations, the project uses are not among the land uses that the BAAQMD has identified as a prime source of odors discussed above. Therefore, project-related odor impacts during construction and operations would be **less than significant.**

3.2.5 Mitigation Measures

MM-AQ-1 The project contractor would be required as conditions of approval to implement the following best management practices that are required of all projects:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off site shall be covered.
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California Airborne Toxics Control Measure, 13 CCR 2485). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.

MM-AQ-2 The project shall implement the following measures for all facilities in order to reduce operational air pollutant emissions to the extent feasible. To the extent that the measures below are addressed by MM-AQ-4 as part of any health risk assessment that is prepared, the measures in MM-AQ-4 shall take precedence.

- Only haul trucks meeting model year 2010 engine emission standards shall be used for the on-road transport of materials to and from the project site.
- Legible, durable, weather-proof signs shall be placed at truck access gates, loading docks, and truck parking areas that identify applicable anti-idling regulations. At a minimum, each sign shall include: 1) instructions for truck drivers to shut off engines when not in use; 2) instructions for drivers of diesel trucks to restrict idling to no more than 5 minutes once the vehicle is stopped, the transmission is set to "neutral" or "park," and the parking brake is engaged; and 3) telephone numbers of the building facilities manager and the CARB to report violations.
- Prior to tenant occupancy, the facility operator shall provide documentation to Contra Costa County demonstrating that occupants/tenants of the project site have been provided documentation on funding opportunities, such as

the Carl Moyer Program, that provide incentives for using cleaner-than-required engines and equipment.

- The minimum number of automobile electric vehicle (EV) charging stations required by the California Code of Regulations Title 24 shall be provided. In addition, the buildings shall include electrical infrastructure sufficiently sized to accommodate the potential installation of additional auto and truck EV charging stations in the future.
- Conduit shall be installed to tractor trailer parking areas in logical locations determined by the facility operator during construction document plan check, for the purpose of accommodating the future installation of EV truck charging stations at such time this technology becomes commercially available.

MM-AQ-3 For non-aviation facilities with construction proposed within 1,000 feet of off-site residential receptors, a construction health risk assessment shall be prepared to assess exposure of existing sensitive receptors to toxic air contaminants (TACs) during project construction. If the health risk assessment determines that cancer and non-cancer impacts would be less than significant, no additional measures are needed. Alternatively, the results of the health risk assessment may necessitate implementation of TAC exposure reduction strategies in order to reduce potential risk to less-than-significant levels, which could include, but are not limited to, the following:

- Portable equipment used during construction shall be powered by electricity from the grid instead of diesel-powered generators, to the maximum amount feasible.
- Equip heavy-duty diesel-powered construction equipment with Tier 4 Interim or better diesel engines, except where Tier 4 Interim or better engines are not available for specific construction equipment. Contra Costa County shall verify and approve all pieces within the construction fleet that would not meet Tier 4 Interim standards. At a minimum, Tier 3 engines shall be required if Tier 4 engines are not available.
- All conditions of approval/mitigations shall be placed on construction drawings and part of any construction contract. Physical copies of the plans shall be available at the on-site job trailer.

MM-AQ-4 For non-aviation uses, a health risk assessment of long-term operations shall be prepared if the proposed facility is within 1,000 feet of off-site residential receptors and would result in any of the following:

- Accommodate more than 100 trucks per day, or

- Accommodate more than 40 trucks with operating transport refrigeration units (TRUs) per day, or
- Where TRU operations exceed 300 hours per week.

Results of the health risk assessment may necessitate implementation of toxic air contaminant (TAC) exposure reduction strategies in order to reduce potential risk to less-than-significant levels, which could include, but are not limited to, the following:

- Idling of diesel equipment of any type shall be strictly prohibited at the premises. The facility operator shall inform all business partners, visitors, etc., of the Zero-Idling Rule in effect for the subject property and area streets. Highly visible signs prohibiting idling shall be posted at each entrance and exist. Violators of this zero-idling rule are subject to fines and or criminal charges.
- Within 90 days of occupying the space, the facility operator shall submit to the Airports Division and the Department of Conservation and Development (DCD) the first of an annual inventory of all equipment that generates criteria pollutant, TACs, and greenhouse gas (GHG) emissions operated at the subject location throughout the life of the project up to year 2035. The equipment inventory shall include the year, make, and model of the equipment that was used in the previous year, including annual hours of operation for each piece of equipment, including but not limited to heavy-duty drayage and non-drayage trucks, yard equipment, bulk material handling equipment (forklifts, etc.), and any other type of material handling equipment. The purpose of the inventory is to track emissions/equipment and to assist in technology reviews.
- The facility operator shall purchase/lease or otherwise acquire zero-emission vehicles/equipment (including: light/heavy duty trucks, drayage equipment, forklifts, and generators) when commercially available as the attrition of gasoline/diesel equipment occurs. The facility operator is encouraged to utilize any or all of the funding opportunities offered by California Air Resources Board (CARB) and other available programs. The availability of zero-emission equipment shall be determined in a joint effort between the Airports Division and the facility operator as part of an annual technology review.
- The facility operator shall adhere to the findings of the annual technologies review for reducing air emissions as part of the County Climate Action Plan

and long-range sustainability goals, which encourage property owners and tenants to use cleaner technologies over time as they become available. A priority goal of the review shall be the replacement of older equipment in operation at the subject site that generates the highest levels of criteria pollutant, TAC, and GHG emissions. The equipment to be replaced shall be determined based on the level of emissions and cost-effectiveness of the emissions reduction (e.g., biggest reduction per dollar), and identify implementation mechanisms including, but not limited to, tenant-based improvements, grant programs, or a combination thereof, based on regulatory requirements and the feasibility analysis performed by the Airports Division. The Carl Moyer Program, or similar cost-effectiveness criteria, shall be used to assess the economic feasibility (e.g., cost effectiveness) of the identified new technologies. Zero-emission equipment employed pursuant to this mitigation may be replaced by other technologies or other types of equipment as long as the replacement equipment achieves the same or greater criteria pollutant, TAC, and GHG emission reductions as compared to the equipment identified as part of the technology review.

- Every California-based TRU and electronic-TRU (E-TRU) operational at the site must be registered with the Air Resource Board Equipment Registration and shall be labeled with a CARB Identification Number. Facility operators handling TRUs shall install charging infrastructure and encourage E-TRUs on site and require those non-E-TRUs to plug in while stationary at the facility.
- Prior to occupancy the facility operator shall demonstrate compliance with all newly adopted Ordinances/Statutes/Plans and requirements passed by all responsible agencies in relation to traffic, diesel emissions and air quality improvement measures.

3.2.6 Level of Significance After Mitigation

By exceeding the BAAQMD operational thresholds for NO_x and $PM_{10,}$ despite implementation of feasible mitigation measures, described below, the project would conflict with the 2017 Clean Air Plan and Impact 3.2-1 would be **significant and unavoidable**.

Implementation of MM-AQ-1 would reduce the effect of fugitive dust to less than significant. Although mitigation measures have been recommended to minimize operational-related air quality impacts, per MM-AQ-2, no feasible mitigation measures or project design features beyond those already identified exist that would reduce these emissions to levels that are less than significant. The majority of the project's NO_X and PM_{10} emissions are derived from vehicle usage, which

neither the project applicant nor the County can substantively or materially affect reductions in project mobile source emissions beyond what is already required. Therefore, even with the incorporation of mitigation, long-term impacts associated with a cumulatively considerable net increase of criteria pollutants for which the project region is non-attainment remain significant. Therefore Impact 3.2-2 would be **significant and unavoidable**.

Implementation of MM-AQ-3 and MM-AQ-4 would reduce the potential exposure of existing sensitive residential receptors to TACs from project construction and operations and would ensure that health risk levels would be below the BAAQMD thresholds. Thus, Impact 3.2-3 would be **less than significant** after mitigation.

3.2.7 Cumulative Impacts

Cumulative air quality impacts are addressed in Impact 3.2-2, above. The project would result in a cumulatively considerable impact to air quality.

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3.3 BIOLOGICAL RESOURCES

This section describes the existing biological resources of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures to reduce the project's potentially significant impacts to less-than-significant levels. This section is based on the Biological Resources Assessment for the Byron Airport Project prepared by Dudek in December 2018 (Appendix D).

3.3.1 Existing Conditions

This section describes the existing conditions in the project site and also identifies the resources that could be affected by construction and/or operation of the project.

3.3.1.1 Project Location

The project site is located in southeastern Contra Costa County (County), approximately 2.5 miles south of the community of Byron, California. The project site consists of the Byron Airport property south of Armstrong Road, which is approximately 1,307 acres, and the 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. The airport also owns an additional 120 acres north of Armstrong Road that is not considered part of the project site. The project site is relatively flat land that contains several buildings, two nonintersecting runways each with a parallel taxiway, several connector taxiways, and aircraft storage areas. The airport is located on the western edge of the flat Central Valley agricultural lands, giving way to rolling hills and grasslands west of the airport. Clifton Court Forebay is located less than 2 miles east of the site, Bethany Reservoir is approximately 3 miles to the south, and Los Vaqueros Reservoir is 5 miles to the west. The project site is characterized as open grassland combined with developed/disturbed areas. Vegetation surrounding the site consists of ruderal ornamental landscaping, ruderal grassland adjacent to runways, annual grassland with scattered vernal pools and seasonal wetlands, and alkali grasslands. The project site historically supported agricultural fields from at least 1949 until 1966, when a portion of it was graded to establish a smaller airfield. Approximately 814 acres of airport property to the south and west of the airfield (south of Armstrong Road) are set aside as for habitat management/conservation (Conservation lands).

The following sections consider the biological study area, which is based on the potential development area identified in the Byron Airport Master Plan (Contra Costa County 2005a). Within this larger study area, the proposed project considers development in two areas: a 46.6-acre non-aviation area east of the main runway, and a 23.5-acre aviation area adjacent to the existing aviation facilities west of the main runway (Figure 3.3-1, Field-Verified Land Cover Map). The areas shown as "Development Reserve" on Figure 3.3-1 were considered for potential development in the Byron Airport Master Plan but have since been removed from the proposed project.

3.3.1.2 Vegetation Communities and Land Cover Types

Four terrestrial, and four aquatic land cover types exist in the study area, as shown in Figure 3.3-1 and Table 3.3-1. The majority of the area is made up of annual grassland habitat with urban areas that include the buildings, paved areas, and ornamental landscaping associated with operation of the airport. The remaining portion of the project site consists of annual and alkali grasslands interspersed with seasonal and alkali wetlands, as well as vernal pools. Seasonal wetlands are prevalent in the annual grassland in the northwestern and western areas of the project site. Several drainages also cross through the project site. These drainages appear to be intermittent in nature, carrying water only during the wet season. These land cover types are described in detail below.

Table 3.3-1
Vegetation Communities and Land Cover Types
Within the Study Area and Proposed Development Footprint

Macrogroup	Vegetation Community/ Land Cover Type[1]	Acres					
		Non-Aviation	*Aviation*	*Development Reserve*	*Low Intensity Use*	*No Impact*	*Total*
Terrestrial							
Grassland	Annual Grassland	39.12	16.42	51.94	29.87	40.13	177.48
	Alkali Grassland	—	0.29	1.16	—	—	1.45
	Ruderal Grassland	—	6.31	10.35	—	—	16.66
Developed	Urban	—	—	1.37	0.28	0.96	2.61
	Subtotal	*39.12*	*23.02*	*68.42*	*30.94*	*59.73*	*221.23*
Aquatic							
Wetland	Seasonal Wetland	—	—	1.54	0.79	2.35	4.69
	Alkali Wetland	—	—	2.05	—	16.28	18.33
Stream	Intermittent Stream – Brushy Creek	0.34 (602.08 linear feet)	—	—	0.35 (602.09 linear feet)	5.68 (9,890.55 linear feet)	6.37 (11,094.72 linear feet)
	Intermittent Stream – Tributary to Brushy Creek	—	—	0.50 (862.92 linear feet)	0.59 (142.74 linear feet)	7.93 (14,686.35 linear feet)	9.02 (15,692.01 linear feet)
	Subtotal	*0.34*	—	*0.50*	*0.94*	*13.61*	*15.39*
	Total	**39.46**	**23.02**	**68.92**	**31.88**	**73.34**	**236.62**

[1] Vegetation communities and land cover types coincide with those described in the Habitat Conservation Plan/Natural Community Conservation Plan (ECCCHCPA 2006).

Grasslands

Annual Grasslands

Annual grassland is the predominant vegetation community mapped during the surveys and is present throughout the site. Annual grassland within the site is dominated by a dense to sparse cover of annual, non-native grasses and forbs. Common species include soft brome (*Bromus hordeaceus* and *B. diandrus*), wild oat (*Avena fatua*), mouse barley (*Hordeum murinum*), filaree (*Erodium* spp.), and others. However, native species are also present in this grassland, including bulbs (*Dichelostemma* spp. and *Brodiaea* spp.), legumes such lupines (*Lupinus nanus* and *L. succulentus*), and some grasses such as blue wildrye (*Elymus glaucus*). Ruderal species are also often present in grasslands, especially along the margins of grasslands and in areas that have been historically disturbed.

Dominant species observed on site within the grassland community included slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*), and soft brome. Several ruderal and other non-native species were also present, including curly dock (*Rumex crispus*) and garden vetch (*Vicia sativa*).

Alkali Grasslands

Alkali grasslands were similar in species composition to annual grasslands except for the decreased cover of non-native grasses and increased cover of species with an affinity for alkaline soils. Species adapted for greater alkalinity observed in alkali grasslands on site included salt grass (*Distichlis spicata*), alkali heath (*Frankenia salina*), wild barley (*Hordeum* spp.), and a few scattered stands of iodine bushes (*Allenrolfea occidentalis*).

Ruderal Grasslands

Ruderal grasslands were mapped in association with the airport facilities. These areas appear to be maintained on an annual or semi-annual basis to control wildlife and weeds within the airport enclosure. Dominant species in the ruderal grassland are similar to those in the annual grassland; however, the occurrence of native grasses and forbs is much reduced. Black mustard (*Brassica nigra*), field mustard (*B. rapa*), wild radish (*Raphanus sativa*), and Russian thistle (*Salsola tragus*) were common amongst the wild oats in this habitat type.

Developed

Urban

Urban areas are those dominated by human-made structures. In the project site, urban areas consist of roadways, runways, hangars, other airport buildings, and a residence and shop. Vegetation in these areas is sparse to absent, consisting primarily of cultivated plants in planters.

Wetlands

Seasonal Wetlands

Seasonal wetlands were prevalent in the annual grassland in the northwestern and western areas of the project site. Species commonly noted within the seasonal wetlands included Italian rye grass (*Festuca perennis*), seaside barley (*Hordeum marinum*), small fescue (*Festuca microstachys*), and perennial pepperweed (Lepidium lati*folium*). Several small stands of red willow (*Salix laevigata*) were also noted along the margins of the seasonal wetlands in the western portion of the site.

Alkali Wetlands

Alkali wetlands consisted of seasonal wetlands within alkali grassland. The alkali wetlands generally consisted of barren areas where water remains inundated for prolonged periods of time during the growing season. Species similar to those found in seasonal wetlands occur along the margins of the alkali wetlands in addition to salt grass, silverscale saltbush (*Atriplex argentea*), and spikeweed (*Centromadia* ssp.).

Streams

Intermittent Drainages

Several drainages cross the project site. These drainages appear to be intermittent in nature, carrying water only during the wet season. The banks of the drainages are generally dominated by non-native grasses similar to those described in annual grassland, above. The top of banks are dominated by black mustard and Italian thistle (*Carduus pycnocephalus*).

Brushy Creek travels through the project site from the southwest and exits on the northern end at Armstrong Road. The creek holds more water than the other drainages; however, it is considered intermittent because it maintains flows only when rainwater provides adequate surface and subsurface flow. An unnamed tributary to Brushy Creek flows through the eastern portion of the project site, draining rainwater runoff from the hills south of the project site north to eventually meet with Brushy Creek northeast of the project site. These features maintain flow only when there is adequate water in the system from rainfall or groundwater and are typically dry during dry periods.

3.3.1.3 Special-Status Species

A total of 33 species of vascular plants were recorded during site surveys (see Appendix D). Of these 33 species, 13 are native to California. The remainders are non-native species which have become adapted to annual grasslands in California. It should be noted that the first site survey was conducted very early in the growing season, at a time when most plants are not evident and identifiable, and the

second survey was performed in winter; as such, floristic surveys conducted at the appropriate time of the growing season would likely yield a greater number of identifiable species.

During the field surveys, 17 wildlife species or signs of such were observed: red-winged blackbird (*Agelaius phoeniceus*), tricolored blackbird (*Agelaius tricolor*), western meadowlark (*Sturnella neglecta*), Say's phoebe (*Sayornis saya*), house finch (*Haemorhous mexicanus*), vesper sparrow (*Pooecetes gramineus*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), loggerhead shrike (*Lanius ludovicianus*), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), meadow vole (*Microtus pennsylvanicus*), and coyote (*Canis latrans*).

For the purposes of this Environmental Impact Report (EIR), special-status wildlife species are those listed as threatened or endangered under the federal Endangered Species Act (FESA) or California Endangered Species Act (CESA), listed as Fully Protected or a Species of Special Concern by the California Department of Fish and Wildlife (CDFW), or listed by the California Native Plant Society as rare, threatened, or endangered (California Rare Plant Ranks 1B.1 and 1B.2). A search of the California Natural Diversity Database (CDFW 2019), the IPaC report (USFWS 2016), and the California Native Plant Society Inventory of Rare and Endangered Plants (CNPS 2018) was conducted for the Byron Hot Springs U.S. Geological Survey 7.5-minute quadrangle and the surrounding eight quadrangles in 2016 and again in 2018 to determine special-status species within the project area (Appendix D).

Special-Status Wildlife

Results of the California Natural Diversity Database and U.S. Fish and Wildlife Service (USFWS) searches revealed 25 listed or special-status wildlife species, or species proposed for listing as rare, threatened, or endangered by either the CDFW or the USFWS. Of these, 14 were removed from consideration due to lack of suitable habitat within or adjacent to the project site, or due to the project site being outside of the species' known range. Of the 11 remaining species, three were observed during the field visit. These were loggerhead shrike, golden eagle, and tricolored blackbird. Suitable nesting and foraging habitat exists for these species on or adjacent to the site. The eight remaining species have a moderate to high potential to occur on the site due to the availability of suitable habitat on the site or due to the site occurring within the species' known range. These include California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool tadpole shrimp (*Lepidurus packardi*), Swainson's hawk, and burrowing owl (*Athene cunicularia*).

All raptor species found in California are protected by California Fish and Game Code Section 3503.5 and may use the study area for nesting or foraging. Several raptors were observed on or flying over the project site during the surveys. Although raptor species have the potential to nest and forage on the project site and adjacent to the site, the study area does not provide substantially important habitat, due to its small size, that would affect raptor species from continuing to exist within the area.

Special-Status Plants

Results of the California Natural Diversity Database and California Native Plant Society searches revealed 44 special-status plant species that have potential to occur in the vicinity of the project site. Of these, 27 were removed from consideration due to lack of suitable habitat within the project site, or due to the project site being outside of the species' known range (refer to Appendix D). Eight special-status plant species have low potential to occur at the project site due to lack of appropriate soil substrates or have no documented occurrences in the vicinity. Nine special-status plant species have moderate to high potential to occur at the project site. These include alkali milk-vetch (*Astragalus tener* var. *tener*), brittlescale (*Atriplex depressa*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), and Contra Costa goldfields (*Lasthenia conjugens*).

Spiny-sepaled button-celery, recurved larkspur, brittlescale, and alkali milk-vetch have been previously documented at the Byron Airport Habitat Management Lands within the project site. There is a high level of continuity between the wetlands where these species have been previously documented and the wetlands present on the site; thus, there is a high likelihood these special-status plant species occur within suitable habitat on the project site. No special-status plants were observed during the field survey; however, the site survey was conducted at a time when special-status plants would not be evident and identifiable.

3.3.1.4 Sensitive Resources and/or Habitats

Five sensitive resources or habitats occur within the study area, including vernal pools, seasonal wetlands, alkali wetlands, alkali grassland, and drainages, all of which are described above in Section 3.3.1.2. The study area is located directly adjacent to the Byron Airport Habitat Management Lands, which are an approximately 814-acre conservation easement. Numerous sensitive resources have been documented within the Byron Airport Habitat Management Lands.

3.3.1.5 Wildlife Corridors and Habitat Linkages

Wildlife corridors are landscape features, usually linear in shape, that facilitate movement of animals (or plants) over time between two or more patches of otherwise disjunct habitat. Corridors can be small and even human-made (e.g., highway underpasses, culverts, bridges), narrow linear habitat areas (e.g., riparian strips, hedgerows), or wider landscape-level extensions of habitat that ultimately connect even larger core habitat areas. Depending on the size and extent, wildlife corridors can be used during animal migration, foraging events, and juvenile dispersal, and ultimately serve to facilitate genetic exchange between core populations, provide avenues for plant seed dispersal, enable increased biodiversity and maintenance of ecosystem integrity within habitat patches, and help offset the negative impacts of habitat fragmentation. Although the site is a non-linear feature, it has value as a potential wildlife corridor or habitat linkage between areas of open grassland and agricultural habitat. Brushy Creek flows from the uplands southwest of the site, through the site, and eventually drains to the San Joaquin River Delta to the northeast of project site, providing important aquatic linkages between upland and aquatic habitat. Habitat management lands on the project site have interconnected vernal pool and wetland complexes that extend onto the study area.

3.3.1.6 Aquatic Habitats and Jurisdictional Wetlands and Waters

The project site is located in the Lower Sacramento River watershed, within the San Joaquin Delta hydrologic unit (Hydrologic Unit Code 1804003). Aquatic features within the site include numerous seasonal wetlands, alkali wetlands, swales, and drainages that are scattered throughout the site. Brushy Creek passes through the site from the southwest and exits the site at the northern extent where it eventually flows into Italian Slough which in turn flows into Old River and the San Joaquin River Delta to the northeast of the project site. Most of these features occur in the northern and western portions of the site (Figure 3.3-1). Based on historic aerial photography and visual inspection during the site surveys, these features are only periodically inundated and tend to remain inundated for short periods, depending on the amount of rainfall in a given year.

A current wetland delineation has not been completed for the site. However, based on the site assessments, several potentially jurisdictional areas were identified and are discussed above. These features are most likely considered waters of the United States and the State of California, and would therefore require permits from the CDFW, U.S. Army Corps of Engineers (ACOE), and Regional Water Quality Control Board (RWQCB) if impacts to these features from development of the property are unavoidable.

3.3.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Endangered Species Act

The FESA prohibits the taking, possession, sale, or transport of endangered species. Pursuant to the requirements of FESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the project site and determine whether the project would have a potentially significant impact on such species. In addition, federal agencies are required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], 1536[4]). Projects that would result in "take" of any federally listed threatened or endangered species are required to obtain authorization from the National Marine Fisheries Service and/or USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 of the Code of Federal Regulations, Section 10.13. The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 of the Code of Federal Regulations, Section 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).

Federal Clean Water Act (Section 404)

The objective of the federal Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Under Section 404 of the CWA, the ACOE has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the United States. The ACOE implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or function.

Federal Clean Water Act (Section 401)

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, the Porter-Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The Central Valley RWQCB is the appointed authority for Section 401 compliance in the project area. A request for certification or waiver is submitted to the regional board at the same time that an application is filed with the ACOE.

State

California Endangered Species Act

Under the CESA, the California Fish and Game Commission has the responsibility of maintaining a list of threatened species and endangered species. The CDFW also maintains lists of species of special concern. A Species of Special Concern is a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated (extinct) from the state or, in the case of birds, is in its primary seasonal or breeding role;
- is federally listed, but not state-listed, as threatened or endangered;
- meets the state definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for state threatened or endangered status.

CESA prohibits the take of California-listed animals and plants in most cases, but CDFW may issue incidental take permits under special conditions. Pursuant to the requirements of CESA, a state agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the project site and determine whether the project would have a potentially significant impact on such species.

California Fish and Game Code Sections 3503, 3511, 3513

California Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. California Fish and Game Code Section 3503.5 protects all birds of prey (raptors) and their eggs and nests. Section 3511 states fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the MBTA.

Streambed Alteration Agreement

Under Sections 1600-1616 of the California Fish and Game Code, the CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit" (California Fish and Game Code Section 1601). In practice, the CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

Wetlands Protection Regulations

CDFW derives its authority to oversee activities that affect wetlands from state legislation. This authority includes Sections 1600–1616 of the California Fish and Game Code (lake and streambed alteration agreements), CESA (protection of state-listed species and their habitats, which could include wetlands), and the Keene-Nejedly California Wetlands Preservation Act of 1976 (states a need for an affirmative and sustained public policy program directed at wetlands preservation, restoration, and enhancement). In general, the CDFW asserts authority over wetlands within the state either through review and comment on ACOE Section 404 permits, review and comment on California Environmental Quality Act (CEQA) documents, preservation of state-listed species, or through stream and lakebed alteration agreements.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the SWRCB and each RWQCB as the principal state agencies for coordinating and controlling water quality in California. Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The Central Valley RWQCB has regulatory authority over the project area.

The Porter-Cologne Water Quality Control Act provides that "all discharges of waste into the waters of the State are privileges, not rights." Waters of the state are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "any surface water or groundwater, including

saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter-Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The Central Valley RWQCB has authority to implement water quality protection standards through issuance of permits for discharges to waters at locations within its jurisdiction, which would include the project site. As noted above, the Central Valley RWQCB is the appointed authority for Section 401 compliance in the project area. If the ACOE determines that they have no regulatory authority in the project area and also that a CWA Section 404 permit is not required, the project proponent could still be responsible for obtaining the appropriate CWA Section 401 permit or waiver from Central Valley RWQCB for impacts to waters of the state.

California Environmental Quality Act

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals, and allows a public agency to undertake a review to determine if a significant effect on a species that has not yet been listed by either the USFWS or CDFW (i.e., species of concern) would occur. Whether a species is rare, threatened, or endangered can be legally significant because, under CEQA Guidelines Section 15065, an agency must find an impact to be significant if a project would "substantially reduce the number or restrict the range of an endangered, rare, or threatened species." Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Local

Contra Costa County General Plan

The 2005–2020 Contra Costa County General Plan was adopted in 2005. The General Plan Land Use Element Map (Contra Costa County 2005b) designates the project site as a combination of Public-Semi-Public and Open Space (indicating the habitat management lands). The private acquisition parcel located on Armstrong Road is designated Agricultural Lands. See Figure 3.9-2, Existing General Plan, in Section 3.9, Land Use and Planning, for the existing General Plan land use designations for the project site.

The General Plan's Conservation and Open Space elements include numerous goals and policies that apply to biological resources (Contra Costa County 2005c, 2005d).

Conservation Element

Vegetation and Wildlife Goals, Policies, and Implementation Measures

Goal 8-D To protect ecologically significant lands, wetlands, plant and wildlife habitats.

Goal 8-E To protect rare, threatened and endangered species of fish, wildlife and plants, significant plant communities, and other resources which stand out as unique because of their scarcity, scientific value, aesthetic quality, or cultural significance. Attempt to achieve a significant net increase in wetland values and functions within the county over the life of the General Plan. The definition of rare, threatened, and endangered includes those definitions provided by the Federal Endangered Species Act, California Endangered Species Act, California Native Plant Protection Act, and California Environmental Quality Act.

Goal 8-F To encourage preservation and restoration of the natural characteristics of the San Francisco Bay/Delta estuary and adjacent lands, and recognize the role of Bay vegetation and water area in maintaining favorable climate, air and water quality, and fisheries and migratory waterfowl.

Policy 8-6 Significant trees, natural vegetation, and wildlife populations generally shall be preserved.

Policy 8-7 Important wildlife habitats which would be disturbed by major development shall be preserved, and corridors for wildlife migration between undeveloped lands shall be retained.

Policy 8-9 Areas determined to contain significant ecological resources, particularly those containing endangered species, shall be maintained in their natural state and carefully regulated to the maximum legal extent. Acquisition of the most ecologically sensitive properties within the county by appropriate public agencies shall be encouraged.

Policy 8-10 Any development located or proposed within significant ecological resource areas shall ensure that the resource is protected.

Policy 8-13 The critical ecological and scenic characteristics of rangelands, woodlands, and wildlands shall be recognized and protected.

Policy 8-15 Existing vegetation, both native and non-native, and wildlife habitat areas shall be retained in the major open space areas sufficient for the maintenance of a healthy balance of wildlife populations.

Policy 8-17 The ecological value of wetland areas, especially the salt marshes and tidelands of the Bay and Delta, shall be recognized. Existing wetlands in the county shall be identified and regulated. Restoration of degraded wetland areas shall be encouraged and supported whenever possible.

Policy 8-21 The planting of native trees and shrubs shall be encouraged in order to preserve the visual integrity of the landscape, provide habitat conditions suitable for native wildlife, and ensure that a maximum number and variety of well-adapted plants are sustained in urban areas.

Policy 8-22 Applications of toxic pesticides and herbicides shall be kept at a minimum and applied in accordance with the strictest standards designed to conserve all the living resources of the county. The use of biological and other non-toxic controls shall be encouraged.

Policy 8-23 Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands. In addition, berms, gutters, or other structures should be required at the outer boundary of the buffer zones to divert runoff to sewer systems for transport out of the area.

Policy 8-24 The County shall strive to identify and conserve remaining upland habitat areas which are adjacent to wetlands and are critical to the survival and nesting of wetland species.

Policy 8-25 The County shall protect marshes, wetlands, and riparian corridors from the effects of potential industrial spills.

Policy 8-27 Seasonal wetlands in grassland areas of the county shall be identified and protected.

Measure 8-e Prior to approval of discretionary permits involving parcels within a significant ecological resource area as described in Implementation Measure 8-a, the County shall

require a biotic resources evaluation based upon field reconnaissance performed at the appropriate time of year to determine the presence or absence of rare, threatened or endangered species of plants or animals. Such evaluation will consider the potential for significant impact on these resources, and measures proposed to mitigate such impacts, where feasible, or indicate why mitigation if not feasible.

Measure 8-g Require the environmental impact analysis of all significant grassland land sites proposed for development to include an early spring site reconnaissance to determine the presence of vernal pools and rare species associated with vernal pools, and document the use of any seasonal wetlands by water bird species. A general observation of such sites during the dry portion of the year shall be deemed insufficient for environmental review. Significant grasslands include generally parcels of more than 40 acres which are located in an area dominated by native or introduced grass species.

Measure 8-j A setback from the edge of any wetland area may be required for any new structure. The breadth of any such setback shall be determined by the County after environmental review examining (a) the size and habitat value of the potentially affected wetland, and (b) potential impacts on the wetland, and adjacent uplands, arising out of the development and operation of the new structure. Unless environmental review indicates that greater or lesser protection is necessary or adequate, setbacks generally will be between 50 and 100 feet in breadth. Expansions or other modifications of non-habitable agriculturally-related structures existing as of 1990 shall be exempt from this setback requirement. Parcels which would be rendered un-buildable by application of this standard shall also be exempt.

Measure 8-l The County shall require avoidance, minimization and/or compensatory mitigation techniques to be employed with respect to specific development projects having a potential to affect a wetland. In evaluating the level of compensation to be required with respect to any given project, (a) on-site mitigation shall be preferred to off site and in-kind mitigation shall be preferred to out-of-kind, (b) functional replacement ratios may vary to the extent necessary to incorporate a margin of safety reflecting the expected degree of success associated with the mitigation plan, and (c) acreage replacement ratios may vary depending on the relative functions and values of those wetlands being lost and those being supplied. To the extent permitted by law, the County may require 3:1 compensatory mitigation of any project affecting a "Significant Wetland."

General Water Resources Policies

Policy 8-74 Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.

Policies to Protect and Maintain Riparian Zones

Policy 8-78 Where feasible, existing natural waterways shall be protected and preserved in their natural state, and channels which already are modified shall be restored. A natural waterway is defined as a waterway which can support its own environment of vegetation, fowl, fish and reptiles, and which appears natural.

Policy 8-79 Creeks and streams determined to be important and irreplaceable natural resources shall be retained in their natural state whenever possible to maintain water quality, wildlife diversity, aesthetic values, and recreation opportunities.

Policy 8-91 Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

Open Space Element

Goal 9-A To preserve and protect the ecological, scenic, cultural/historic, and recreational resource lands of the county.

Goal 9-B To conserve the open space and natural resources of the county through control of the direction, extent, and timing of urban growth.

Goal 9-C To achieve a balance of open space and urban areas to meet the social, environmental, and economic needs of the county now and for the future.

Policy 9-2 Historic and scenic features, watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced.

Contra Costa County Tree Protection and Preservation Ordinance

Division 816 of the Contra Costa County Ordinance Code defines protected trees and outlines measures that must be implemented if these trees are to be adversely affected or removed. The ordinance requires site plans for development projects to accurately depict the location, species, tree dripline, and trunk circumference of all trees with a trunk circumference of 20 inches (50 centimeters) or more, measured 4.5 feet (1.37 meters) above the ground, whose tree trunks lie within 50 feet (15.2 meters) of proposed grading or other proposed improvements or other proposed development activity (e.g., stockpiling of construction materials, fill). The ordinance also requires the site plan to clearly indicate whether individual trees are proposed to be removed, altered, or otherwise affected. Trees proposed for preservation on a site are to be fenced during construction activities. The Tree Protection Ordinance requires a tree permit for removal of 6.5-inch-diameter at breast height trees in or adjacent to riparian, foothill woodland, or oak savanna areas, or that are part of a stand of four or more trees (protected trees). Furthermore, the ordinance requires a tree permit to trench, grade, or fill within the dripline of protected trees. Accidental destruction requires adequate restitution.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

The East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) was adopted in August 2007. The HCP/NCCP offers a framework for regional conservation and development, providing for the protection of natural resources while streamlining the permitting process for take of federally and state-listed species and for mitigating impacts on sensitive habitats and resources. The County is a co-permittee of the HCP/NCCP, which is overseen by the East Contra Costa County Habitat Conservancy. The HCP/NCCP provides 30-year species permits for urban development and rural infrastructure projects in eastern Contra Costa County. Impacts from these projects are offset by contributions to a Preserve System that will be managed for the benefit of 28 covered species and their habitats (ECCCHCPA 2006).

The land surrounding the project site is in the HCP/NCCP's Acquisition Analysis Zone 5 (ECCCHCPA 2006). These lands provide conservation benefits, and acquisition of these lands for the Preserve System would achieve the biological goals and objectives of the HCP/NCCP.

The approximately 300-acre development of Byron Airport is a covered activity under the HCP/NCCP. Permits issued in 1992 and 1993 by the USFWS and the CDFW, respectively, authorized take of San Joaquin kit fox (*Vulpes macrotis mutica*) resulting from construction of the Byron Airport (ECCCHCPA 2006). These permits covered approximately 200 acres of impacts to natural land cover types. Approximately 112 acres of land were developed at that time and approximately 88 acres of take coverage for San Joaquin kit fox remains for the airport under these earlier permits. Chapter 5 of the HCP/NCCP notes that future development at Byron Airport may

be mitigated through the implementation of an avoidance and preservation program in and around the airport property (rather than the County paying the mitigation fees) due to the habitat values of lands at Byron Airport (ECCCHCPA 2006). These lands are an important part of the connectivity of the HCP/NCCP Preserve System, and provide an important connection between habitat in Contra Costa County and Alameda County.

3.3.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to biological resources are based on Appendix G of the CEQA Guidelines. According to Appendix G, a significant impact related to biological resources would occur if the project would:

1. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife [formerly California Department of Fish and Game] or U.S. Fish and Wildlife Service.
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.
3. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
5. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.3.4 Impacts Analysis

Impact 3.3-1. The project may have a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Potentially Significant)

Impacts to Special-Status Wildlife from Construction

Three special-status wildlife species were detected during the surveys conducted for the project site, as discussed in Section 3.3.1.3. These species include loggerhead shrike, golden eagle, and tricolored blackbird. Several other special-status species have the potential to utilize the project site for nesting, foraging, cover and/or local migration routes. Although the study area has few mature trees, the project site and adjacent lands have potential nesting habitat for Swainson's hawk and several common raptor species found in California, such as northern harrier and red-tailed hawk (*Buteo jamaicensis*), and also common passerine species such as western meadowlark. Annual grassland within the study area provides suitable nesting habitat for Burrowing owl.

While no suitable nesting trees were identified in the proposed development areas, project construction could affect nesting raptors up to 1,000 feet away from project activities. Mature eucalyptus trees along the eastern border of the project site provide suitable nesting habitat for raptors and are within direct line of sight of the proposed project activities. Increased noise, light, and vibration associated with construction activities could negatively affect nesting success if such activities occur during the nesting season (generally March 15 through September 15, depending on species). This is a **potentially significant** impact. Mitigation Measure (MM) BIO-1 requires that a nesting bird survey be conducted and nests be avoided during construction.

Additionally, six remaining special-status wildlife species have a moderate to high potential to occur on site due to the availability of suitable habitat or because the site is located within the species' known range. These include California red-legged frog, California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp. While seasonal wetland habitat suitable for longhorn fairy shrimp, venal pool fairy shrimp, conservancy fairy shrimp, and vernal pool tadpole shrimp is located outside the proposed aviation and non-aviation Areas, there is potential for indirect impacts to suitable habitat through sediment and water runoff into wetlands. This is a **potentially significant** impact.

Ground-disturbing activities in grassland habitat has potential to cause direct impacts to suitable nesting and upland refuge habitat for burrowing owl, California red-legged frog, and California tiger salamander. This is a **potentially significant** impact. MM-BIO-2, MM-BIO-3, and MM-BIO-4 would require focused surveys to be conducted prior to project construction for burrowing owl, California red-legged frog, and California tiger salamander, respectively. Avoidance measures would be implemented if these species are detected.

Impacts to Special-Status Wildlife from Operation

While the proposed build-out of the project would result in removal of habitat for resident and migratory wildlife, proposed operational activities would be consistent with current aviation activities at the Byron Airport. Potential commercial and industrial activities would occur on the

eastern edge of the project site, near Runway 12/30 and existing agricultural and residential uses. There would be no significant increase in effects on wildlife on surrounding lands, including lands managed for habitat. Following any disruptions caused by construction, project operations would not further affect the amphibian species discussed above, while special status bird species may continue to utilize the majority of the project site for nesting, foraging, cover and/or local migration routes. Thus, impacts associated with the operation of the airport on special-status wildlife would be **less than significant**.

Impacts to Special-Status Plant Species from Construction

No special-status plant species were observed on the project site during the surveys; however, the site surveys was conducted when the plants were not evident or identifiable. Because there is suitable habitat for special-status plant species at the project site, and four special-status plant species have been previously documented on the adjacent Byron Airport Habitat Management Lands, there is potential for these species to be present. These include alkali milk-vetch, brittlescale, big tarplant, round-leaved filaree, Congdon's tarplant, recurved larkspur, spiny-sepaled button-celery, diamond-petaled poppy, and Contra Costa goldfields. Grading activity and heavy machinery could potentially trample, damage, and/or remove special-status plant species and their associated seed banks. Destruction of aquatic habitat such as wetlands and vernal pools that support special-status plant species would also remove seed banks and individual plants, and altered hydrology due to project activities could affect the health of plants in the future. Thus, project-related impacts on special status plant populations would be **potentially significant**.

Impacts to Special-Status Plant Species from Operations

Operational activities associated with the build-out of the proposed project would be consistent with current activities at Byron Airport and would include maintenance of grassland habitat in airport-related areas through mowing. Operation of the proposed project is anticipated to result in **no impact** to special-status plant species.

Impact 3.3-2. The project would have a substantial adverse effect on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. (Potentially Significant)

Potential impacts from the project would occur to all land cover types present on site. Most areas directly adjacent to the existing airport and to the north and east of the existing runways consist of non-native annual grassland. While grasslands are not a sensitive natural community, the HCP/NCCP considers certain types of grassland, such as alkali grassland, to be sensitive. As described further in Impact 3.3-6, below, expansion of Byron Airport is a covered activity. As such, participation in the HCP/NCCP would provide for the mitigation of grassland conversion.

Sensitive vegetation communities, including wetlands and alkali grasslands, occur within the project site and, under the HCP/NCCP, would require either avoidance or other mitigation. Sensitive resources and habitats include vernal pools, seasonal wetlands, alkali wetlands, and drainages, all of which are potentially jurisdictional features regulated by CDFW, USFWS, and ACOE. Construction of the proposed project could result in direct habitat destruction or modification, which is a **potentially significant impact**. MM-BIO-6 requires that a wetlands delineation is performed and avoidance buffers around potentially jurisdictional resources are established prior to construction, and also implements a setback from Brushy Creek. MM-BIO-7 requires that alkali grassland on site is avoided to the extent feasible. Implementation of MM-BIO-6 and MM-BIO-7 would reduce impacts to sensitive natural communities to a **less-than-significant** level.

Impact 3.3-3. The project would have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. (Potentially Significant)

Although a current wetland delineation has not been completed for the project site, the Biological Constraints Report completed for the project indicates that all of the seasonal wetlands, swales, drainages, and vernal pools on the site are most likely under the joint regulation of the ACOE, RWQCB, and CDFW (Appendix D). In consideration of this, MM-BIO-6 requires a detailed jurisdictional delineation to be performed by a qualified biologist or wetland scientist prior to project development activities. If jurisdictional features would be impacted by the project, authorization from the resource agencies listed above would be required in the form of wetland permits (e.g., 404 Nationwide Permit, 401 Water Quality Certification, and 1602 Streambed Alteration Agreement respectively). Required compensatory mitigation would provide no net loss of jurisdictional habitats. With implementation of MM-BIO-6 and necessary permitting, impacts to protected wetlands would be reduced to a **less-than-significant** level.

Impact 3.3-4. The project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. (Less than Significant)

As described previously in Section 3.3.1.5, Brushy Creek provides a corridor from the uplands southwest of the project site to Italian Slough, Old River, and the greater San Joaquin River Delta to the northeast of the site. Adjacent conservation lands have interconnected vernal pool and wetland complexes that extend onto the site. Additionally, the project site offers a habitat linkage between areas of open grassland and agricultural habitat. The mitigation lands on airport property are included in the HCP/NCCP to provide a corridor between habitat in Alameda and Contra Costa

counties. The development areas on the airport were considered in the development of the acquisition areas, including on-airport mitigation lands. Therefore, development of the airport consistent with the Byron Airport Master Plan and the HCP/NCCP would not substantially interfere with a wildlife corridor. The impact would be **less than significant.**

Impact 3.3-5. The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. (Less than Significant)

As discussed in Section 3.3.2, the County maintains ordinances, policies, and codes protecting sensitive species, habitats, and trees. The proposed project is not likely to affect trees protected by County policy. Scattered trees are present on the 11.7-acre acquisition parcel, but their potential removal would occur after acquisition by the County and would not require a permit under the County tree protection and preservation ordinance. Impacts to special-status species, wetlands, and vegetation communities would be avoided or mitigated as described in MM-BIO-1 through MM-BIO-9. Thus, the project would comply with County General Plan goals and policies to analyze and protect biological resources. The project would not conflict with any local policies or ordinances protecting biological resources, and impacts would be **less than significant.**

Impact 3.3-6. The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. (Less than Significant)

The project site is within the area covered by the HCP/NCCP. The majority of the County-owned property at Byron Airport, approximately 934 acres, is managed by the County Airports Division as habitat. The conservation easements for the airport predate the HCP/NCCP, but are generally consistent with the HCP/NCCP's guiding principles. The project would not affect the adjacent lands preserved under the conservation easement.

Additional build-out and development of Byron Airport is identified as a covered activity in the HCP/NCCP. Permits issued in 1992 and 1993 by the USFWS and the CDFW, respectively, authorized take of San Joaquin kit fox resulting from construction of the Byron Airport (ECCCHCPA 2006). These permits covered approximately 200 acres of impacts to natural land cover types. Approximately 112 acres of land was developed at that time and approximately 88 acres of take coverage for San Joaquin kit fox remains for the airport under these earlier permits. The HCP/NCCP details that development above 66 acres of the aforementioned 88 acres would be mitigated at a level of 2.4 acres per acre developed. The HCP/NCCP details the implementation of an avoidance and preservation program and identifies the land that would be impacted, avoided, and preserved in perpetuity. In addition to conservation of land occurring within airport property, the avoidance and preservation program requires conservation of land off-site as well. In addition, the

proposed construction and operational activities analyzed in this EIR would comply with the conditions of the HCP/NCCP. Therefore, the potential for conflict with an approved HCP/NCCP is **less than significant**.

3.3.5 Mitigation Measures

Coverage under the HCP/NCCP is the primary mechanism for mitigating impacts to species and habitats covered by the HCP/NCCP. MM-BIO-1a, MM-BIO-2, MM-BIO-3, MM-BIO-4, MM-BIO-5, MM-BIO-8, and MM-BIO-9 conform to the avoidance and minimization measures in the HCP/NCCP. Other project-specific mitigation measures have been developed consistent with state and federal regulations and standards.

MM-BIO-1

a. Swainson's Hawk Pre-Construction Survey, Avoidance, Minimization, and Construction Monitoring. Prior to any ground disturbance related to covered activities that occurs during the nesting season (March 15–September 15), a qualified biologist will conduct a preconstruction survey no more than 1 month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. If potentially occupied nests within 1,000 feet are off the project site, then their occupancy will be determined by observation from public roads or by observations of Swainson's hawk activity (e.g., foraging) near the project site. If nests are occupied, minimization measures and construction monitoring are required (see below).

During the nesting season (March 15–September 15), covered activities within 1,000 feet of occupied nests or nests under construction will be prohibited to prevent nest abandonment. If site-specific conditions or the nature of the covered activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the East Contra Costa County Habitat Conservancy will coordinate with the California Department of Fish and Wildlife (CDFW)/U.S. Fish and Wildlife Service (USFWS) to determine the appropriate buffer size.

If young fledge prior to September 15, covered activities can proceed normally. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the project proponent can apply to the East Contra Costa County Habitat Conservancy for a waiver of this avoidance measure. Any waiver must also be approved by USFWS and CDFW. While the nest is occupied, activities outside the buffer can take place.

All active nest trees will be preserved on site, if feasible. Nest trees, including non-native trees, lost to covered activities will be mitigated by the project proponent according to the requirements below.

Mitigation for Loss of Nest Trees

The loss of non-riparian Swainson's hawk nest trees will be mitigated by the project proponent by:

- If feasible on-site, planting 15 saplings for every tree lost with the objective of having at least 5 mature trees established for every tree lost according to the requirements listed below.

  AND either

  1. Pay the Implementing Entity an additional fee to purchase, plant, maintain, and monitor 15 saplings on the HCP/NCCP Preserve System for every tree lost according to the requirements listed below, OR

  2. The project proponent will plant, maintain, and monitor 15 saplings for every tree lost at a site to be approved by the Implementing Entity (e.g., within an HCP/NCCP Preserve or existing open space linked to HCP/NCCP preserves), according to the requirements listed below.

The following requirements will be met for all planting options:

- Tree survival shall be monitored at least annually for 5 years, then every other year until year 12. All trees lost during the first 5 years will be replaced. Success will be reached at the end of 12 years if at least 5 trees per tree lost survive without supplemental irrigation or protection from herbivory. Trees must also survive for at least three years without irrigation.
- Irrigation and fencing to protect from deer and other herbivores may be needed for the first several years to ensure maximum tree survival.
- Native trees suitable for this site should be planted. When site conditions permit, a variety of native trees will be planted for each tree lost to provide trees with different growth rates, maturation, and life span, and to provide a variety of tree canopy structures for Swainson's hawk. This variety will help to ensure that nest trees will be available in the short term (5-10 years for cottonwoods and willows) and in the long term (e.g., Valley oak, sycamore). This will also minimize the temporal loss of nest trees.

- Riparian woodland restoration conducted as a result of covered activities (i.e., loss of riparian woodland) can be used to offset the nest tree planting requirement above, if the nest trees are riparian species.
- Whenever feasible and when site conditions permit, trees should be planted in clumps together or with existing trees to provide larger areas of suitable nesting habitat and to create a natural buffer between nest trees and adjacent development (if plantings occur on the development site).
- Whenever feasible, plantings on the site should occur closest to suitable foraging habitat outside the UDA.
- Trees planted in the HCP/NCCP preserves or other approved offsite location will occur within the known range of Swainson's hawk in the inventory area and as close as possible to high-quality foraging habitat.

b. Migratory Bird Treaty Act Nesting Bird Avoidance. As part of the pre-construction survey for Swainson's hawk, the qualified biologist approved by USFWS/CDFW shall also survey for native nesting birds protected by the Migratory Bird Treaty Act. If any active nests are observed during surveys, a suitable avoidance buffer from the nests shall be determined and flagged by the qualified biologist based on species, location, and planned construction activity. Consultation with CDFW may be required to determine appropriate buffer distances. These nests shall be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. Habitat (i.e., trees and brush) may not be removed during the breeding bird season.

MM-BIO-2 ***Western Burrowing Owl Pre-Construction Survey, Avoidance, Minimization, and Construction Monitoring***. In accordance with Conditions on Covered Activities described in the East Contra Costa County HCP/NCCP, prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)/California Department of Fish and Wildlife (CDFW)-approved biologist shall conduct a preconstruction survey in areas identified as having potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFG 1995).

On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 500-foot radius from the perimeter of the proposed footprint to identify burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. All burrows or burrowing owls will be

identified and mapped. Surveys will take place no more than 30 days prior to construction. During the breeding season (February 1–August 31), surveys will document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1–January 31), surveys will document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

This measure incorporates avoidance and minimization guidelines from CDFW's *Staff Report on Burrowing Owl Mitigation* (California Department of Fish and Game 1995).

If burrowing owls are found during the breeding season (February 1–August 31), the project proponent will avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1–January 31), the project proponent should avoid the owls and the burrows they are using, if possible. Avoidance will include the establishment of a buffer zone (described below).

During the breeding season, buffer zones of at least 250 feet in which no construction activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary construction fencing.

If occupied burrows for burrowing owls are not avoided, passive relocation will be implemented. Owls should be excluded from burrows in the immediate impact zone and within a 160-foot buffer zone by installing one-way doors in burrow entrances. These doors should be in place for 48 hours prior to excavation. The project area should be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation (CDFG 1995). Plastic tubing or a similar structure should be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

MM-BIO-3 ***California Red-Legged Frog Minimization***. Written notification to U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the East Contra Costa County Habitat Conservancy, including, photos and a breeding habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent shall also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individuals, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate California red-legged frog within 14 days of receiving notice from the project proponent. The project proponent must allow USFWS or CDFW access to the site prior to construction if they request it.

There are no restrictions under the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individual California red-legged frogs within the required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individual California red-legged frogs.

USFWS and CDFW shall be allowed 45 days to translocate individual California red-legged frogs from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW).

MM-BIO-4 ***California Tiger Salamander Minimization.*** Written notification to U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and the East Contra Costa County Habitat Conservancy, including photos and breeding habitat assessment, is required prior to disturbance of any suitable breeding habitat. The project proponent will also notify these parties of the approximate date of removal of the breeding habitat at least 30 days prior to this removal to allow USFWS or CDFW staff to translocate individual California Tiger Salamander, if requested. USFWS or CDFW must notify the project proponent of their intent to translocate California tiger salamanders within 14 days of receiving notice from the project proponent. The project proponent must allow USFWS or CDFW access to the site prior to construction if they request it.

There are no restrictions under the HCP/NCCP on the nature of the disturbance or the date of the disturbance unless CDFW or USFWS notify the project proponent of their intent to translocate individual California tiger salamanders within the

required time period. In this case, the project proponent must coordinate the timing of disturbance of the breeding habitat to allow USFWS or CDFW to translocate the individuals. USFWS and CDFW shall be allowed 45 days to translocate individuals from the date the first written notification was submitted by the project proponent (or a longer period agreed to by the project proponent, USFWS, and CDFW).

MM-BIO-5 ***Rare Plant Surveys and Mitigation.*** Prior to commencement of any project-related construction activity, Contra Costa County shall retain a qualified biologist/botanist to conduct protocol-level special-status plant surveys of the undisturbed areas of the project site for alkali milk-vetch (*Astragalus tener* var. *tener*), brittlescale (*Atriplex depressa*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled poppy (*Eschscholzia rhombipetala*), and Contra Costa goldfields (*Lasthenia conjugens*), and any other required surveys from the HCP/NCCP application for coverage

As part of the East Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) application for coverage, the surveys shall be conducted during the appropriate blooming periods. The surveys shall be conducted by a qualified biologist knowledgeable of the plant species in the region. These plant surveys shall be conducted in accordance with 2009 California Department of Fish and Wildlife (CDFW) rare plant survey protocols.

If any special-status plant species are observed during surveys, the project proponent shall notify the HCP/NCCP Implementing Entity (i.e., East Contra Costa County Habitat Conservancy) of the construction schedule so as to allow the HCP/NCCP Implementing Entity the option to salvage the population(s) in accordance with HCP/NCCP Conservation Measure 3.10 (Plant Salvage when Impacts are Unavoidable) described below. Additionally, the project proponent shall confirm with the HCP/NCCP Implementing Entity that the take limits of the HCP/NCCP for the species identified have not been reached.

The following special-status plant species with potential to occur on the project site are covered by the HCP/NCCP: brittlescale, big tarplant, round-leaved filaree, and recurved larkspur. Alkali milk-vetch, diamond-petaled poppy, and Contra Costa goldfields are analyzed in the HCP/NCCP but are "no take" species, and avoidance is the only acceptable mitigation measure.

Congdon's tarplant and spiny-sepaled button-celery are not addressed in the HCP/NCCP. For these plants, mitigation shall consist of, in order of preference, (1)

avoidance, (2) salvage and transplant as described below, or (3) off-site habitat enhancement or restoration in consultation with CDFW.

Plant Salvage when Impacts are Unavoidable (Covered Species)

Perennial Covered Plants

Where impacts to covered plant species cannot be avoided and plants will be removed by approved covered activities, the HCP/NCCP Implementing Entity has the option of salvaging the covered plants. Salvage methods for perennial species will be tested for whole individuals, cuttings, and seeds. Salvage measures will include the evaluation of techniques for transplanting as well as germinating seed in garden or greenhouse and then transplanting to suitable habitat sites in the field.

Techniques will be tested for each species, and appropriate methods will be identified through research and adaptive management. Where plants are transplanted or seeds distributed to the field they shall be located in preserves in suitable habitat to establish new populations. Field trials will be conducted to evaluate the efficacy of different methods and determine the best methods to establish new populations. New populations will be located such that they constitute separate populations and do not become part of an existing population of the species, as measured by the potential for genetic exchange among individuals through pollen or propagule (e.g., seed, fruit) dispersal.

Transplanting within the preserves will only minimally disturb existing native vegetation and soils. Supplemental watering may be provided as necessary to increase the chances of successful establishment, but must be removed following initial population establishment. See also "All Covered Plants," below.

Annual Covered Plants

For annual covered plants, mature seeds will be collected from all individuals for which impacts cannot be avoided (or if the population is large, a representative sample of individuals). If storage is necessary, seed storage studies shall be conducted to determine the best storage techniques for each species. If needed, studies will be conducted on seed germinated and plants grown to maturity in garden or greenhouse to propagate larger numbers of seed. Seed propagation methods will ensure that genetic variation is not substantially affected by propagation (i.e., selection for plants best adapted to cultivated conditions). Field studies will be conducted through the Adaptive Management Program to determine the efficacy and best approach to dispersal of seed into suitable habitat. Where

seeds are distributed to the field, they will be located in preserves in suitable habitat to establish new populations. If seed collection methods fail (e.g., due to excessive seed predation by insects), alternative propagation techniques shall be necessary. See also "All Covered Plants," below.

All Covered Plants

All salvage operations will be conducted by the East Contra Costa County Habitat Conservancy. To ensure enough time to plan salvage operations, project proponents will notify the East Contra Costa County Habitat Conservancy of their schedule for removing the covered plant population.

The East Contra Costa County Habitat Conservancy may conduct investigations into the efficacy of salvaging seeds from the soil seed bank for both perennial and annual species. The soil seed bank may add to the genetic variability of the population. Covered species may be separated from the soil though garden/greenhouse germination or other appropriate means. Topsoil taken from impact sites will not be distributed into preserves because of the risk of spreading new non-native and invasive plants to preserves.

The HCP/NCCP Implementing Entity will transplant new populations such that they constitute separate populations and do not become part of an existing population of the species, as measured by the potential for genetic exchange among individuals through pollen or propagule (e.g., seed, fruit) dispersal. Transplanting or seeding "receptor" sites (i.e., habitat suitable for establishing a new population) should be carefully selected on the basis of physical, biological, and logistical considerations (Fiedler and Laven 1996); some examples of these are listed below:

- Historic range of the species.
- Soil type.
- Soil moisture.
- Topographic position, including slope and aspect.
- Site hydrology.
- Mycorrhizal associates (this may be important for Mount Diablo manzanita).
- Presence or absence of typical associated plant species.
- Presence or absence of herbivores or plant competitors.

- Site accessibility for establishment, monitoring, and protection from trampling by cattle or trail users.

MM-BIO-6

a. Wetlands and Waters of the United States or State. Prior to commencement of any project-related construction activity, Contra Costa County (County) shall retain a qualified biologist or wetland scientist to prepare a jurisdictional delineation of the project site to determine the extent of potentially jurisdictional features within the project disturbance area. Impacts to wetlands and other waters of the United States or waters of the state shall require authorization from the U.S. Army Corps of Engineers in the form of a Clean Water Act (CWA) Section 404 Permit, from the Regional Water Quality Control Board in the form of a CWA Section 401 Water Quality Certification, and the California Department of Fish and Wildlife in the form of a California Fish and Game Code Section 1602 Streambed Alteration Agreement. Such permits typically include measures to avoid and minimize or mitigate impacts. Where avoidance of jurisdictional wetlands or waters is not feasible, replacement of resources is required in the form of restoration or creation. The project shall seek coverage under the East Contra Costa County HCP/ NCCP and will mitigate for impacts to jurisdictional waters or wetlands. If neither avoidance nor coverage under the HCP/NCCP is feasible, the County shall comply with the requirements of the 404 permit coverage for on- or off-site mitigation, at a replacement ration of no less than 1:1.

b. Brushy Creek Setback. Per the requirements of the HCP/NCCP and Contra Costa County General Plan policy, a development setback of 75 feet from Brushy Creek (measured from top of bank) is required. Note that a lesser setback (for an area less than 300 linear feet) may be approved in consultation with the East Contra Costa County Habitat Conservancy.

MM-BIO-7 ***Alkali Grassland Avoidance and Mitigation.*** A portion of the aviation development area, adjacent to the existing facilities, includes alkali grassland. Ultimate development of this site shall require either avoidance, or establishment of like alkali grassland outside of the development area, which shall be made under consultation with the East Contra Costa County Habitat Conservancy. Because this area is relatively disturbed, is isolated from similar habitat, and is maintained on an on-going basis by airport staff, it does not represent an exemplary patch of alkali grassland. Thus, mitigation ratios shall not exceed 1:0.5 (acres disturbed, acres restored/created).

MM-BIO-8 ***San Joaquin Kit Fox Preconstruction Surveys, Avoidance and Minimization, and Construction Monitoring.*** Prior to any ground disturbance related to covered activities, a USFWS/ CDFW-approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999).

Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities.

If San Joaquin kit foxes and/or suitable dens are identified in the survey area, the measures described below will be implemented.

- If a San Joaquin kit fox den is discovered in the proposed development footprint, the den will be monitored for 3 days by a USFWS/CDFW–approved biologist using a tracking medium or an infrared beam camera to determine if the den is currently being used.
- Unoccupied dens should be destroyed immediately to prevent subsequent use.
- If a natal or pupping den is found, USFWS and CDFW will be notified immediately. The den will not be destroyed until the pups and adults have vacated and then only after further consultation with USFWS and CDFW.
- If kit fox activity is observed at the den during the initial monitoring period, the den will be monitored for an additional 5 consecutive days from the time of the first observation to allow any resident animals to move to another den while den use is actively discouraged. For dens other than natal or pupping dens, use of the den can be discouraged by partially plugging the entrance with soil such that any resident animal can easily escape. Once the den is determined to be unoccupied it may be excavated under the direction of the biologist. Alternatively, if the animal is still present after 5 or more consecutive days of plugging and monitoring, the den may have to be

excavated when, in the judgment of a biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities).

If dens are identified in the survey area outside the proposed disturbance footprint, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential dens will be at least 50 feet and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

MM-BIO-9 ***Eastern Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) Covered Shrimp Preconstruction Survey, Avoidance and Minimization, and Construction Monitoring.*** Prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)-approved biologist will conduct a preconstruction survey in areas identified in the planning surveys as having suitable shrimp habitat. The surveys will establish the presence or absence of covered shrimp and/or habitat features and evaluate use by listed shrimp in accordance with modified USFWS survey guidelines (USFWS 1996b). Project proponents are required to conduct USFWS protocol surveys in 1 year (rather than 2) to determine presence or absence of listed shrimp species. If covered shrimp are absent from the site, there are no further requirements related to covered shrimp. If covered shrimp are present, the following avoidance and minimization and construction monitoring measures are required.

To the maximum extent practicable, impacts on occupied habitat of covered shrimp will be avoided by implementing the following measures based on existing mitigation standards (USFWS 1996a).

- If suitable habitat for covered shrimp will be retained on site, establish a buffer (described below) from the outer edge of all hydric vegetation associated with seasonal wetlands occupied by covered shrimp. Alternatively, at the request of the project proponent, representatives of the East Contra Costa County Habitat Conservancy and USFWS may conduct site visits to inspect the particular characteristics of specific project sites and may approve reductions of the buffer. Buffer reductions may be approved for all or portions of the site whenever reduced setbacks will maintain the hydrology of the seasonal wetland and achieve the same or greater habitat values as would be achieved by the original buffer.

- Activities inconsistent with the maintenance of seasonal wetlands within the buffers and disturbance of the on-site watershed will be prohibited. Inconsistent activities include altering existing topography; placing new structures within the buffers; dumping, burning, and/or burying garbage or any other wastes or fill materials; building new roads or trails; removing or disturbing existing native vegetation; installing storm drains; and using pesticides or other toxic chemicals.
- Filling of seasonal wetlands, if unavoidable, will be delayed until pools are dry and samples from the top 4 inches of wetland soils are collected. Soil collection will be sufficient to include a representative sample of plant and animal life present in the wetland by incorporating seeds, cysts, eggs, spores, and similar inocula. The amount of soil collected will be determined by the size of the wetland filled and the variation in physical and biological conditions within the wetland. The number and size of samples will be sufficient to capture this variation. For very small wetlands it may be most cost effective to simply collect all topsoil. These samples will be provided to the East Contra Costa County Habitat Conservancy so that the soil can be translocated to suitable habitat within the inventory area unoccupied by covered shrimp or used to inoculate newly created seasonal wetlands on preserve lands.
- Seasonal wetlands occupied by covered shrimp that are filled will be offset by preserving or acquiring seasonal wetlands occupied by the covered shrimp species and restoring habitat suitable for the covered shrimp species in accordance with Conservation Measure 3.8. Such mitigation will supersede requirements for mitigation of impacts on wetland habitat when covered species are present.

If suitable habitat for covered shrimp will be retained on site, project proponents will establish a buffer from the outer edge of all hydric vegetation associated with seasonal wetlands occupied (or assumed to be occupied) by covered shrimp. This buffer zone will be determined in the field by the biologists as the immediate watershed feeding the seasonal wetland or a minimum of 50 feet, whichever is greater. Buffers will be marked by brightly colored fencing or flagging throughout the construction process. Activities will be prohibited within this buffer in accordance with the minimization measure above.

Construction personnel will be trained to avoid affecting shrimp. A qualified biologist approved by USFWS will inform all construction personnel about the life history of

covered shrimp, the importance of avoiding their habitat, and the terms and conditions of the HCP/NCCP related to avoiding and minimizing impacts on covered shrimp.

MM-BIO-10 ***Eastern Contra Costa County Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) Permit Coverage and Take Authorization.*** Prior to construction or any ground disturbance, the project proponent shall obtain permit coverage under the HCP/NCCP. The applicant will receive take authorization under the County's incidental take permit from the United States Fish and Wildlife Service (USFWS) issued pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act (permit number: TE 160958-0) and the County's incidental take permit from the California Department of Fish and Wildlife (CDFW) issued pursuant to California Fish and Wildlife Code Section 2835 (permit number 2835-2007-01-03). The project proponent shall comply with all applicable HCP/NCCP requirements, including, but not limited to, submitting a complete HCP/NCCP application package (see Chapter 6.2 of the HCP/NCCP), complying with applicable avoidance, minimization and mitigation measures (see Chapter 6.4 of the HCP/NCCP), and paying the HCP/NCCP development fee (see Chapter 9.3.1 of the HCP/NCCP).

Prior to construction or any ground disturbance, the HCP/NCCP mitigation fees as detailed in the approved HCP/NCCP application package will be paid. However, rather than pay applicable fees, the County may choose to mitigate impacts from future development at the Byron Airport by implementing an avoidance and preservation program in and around the airport property as detailed in the HCP/NCCP.

Prior to construction or any ground disturbance, and in accordance with the approved HCP/NCCP application package, a construction monitoring plan shall be submitted to CDD and the East Contra Costa County Habitat Conservancy for review and approval in accordance with the HCP/NCCP.

3.3.6 Level of Significance After Mitigation

Implementation of MM-BIO-1 through MM-BIO-5, MM-BIO-8, and MM-BIO-9 would reduce Impact 3.3-1 to **less than significant**. Implementation of MM- BIO-6 and MM-BIO-7 would reduce Impact 3.3-2 to **less than significant**. Implementation of MM-BIO-6 would reduce Impact 3.3-3 to **less than significant**. Overall, with implementation of mitigation measures, project impacts to special-status species, sensitive natural communities, and wetlands would be **less than significant**.

3.3.7 Cumulative Impacts

Development of the proposed project would result in the potential removal of, conversion of, or other impacts to 137.35 acres of annual grassland, 1.45 acres of alkali grassland, 16.66 acres of ruderal grassland, 2.33 acres of seasonal wetland, 2.05 acres of alkali wetland, 1.65 acres of urban habitat, and 1.27 acres of stream habitat.

Uses of the additional build-out at the airport would be consistent with on-going activities at the current airport and would not significantly increase operational noise, light, or other indirect factors that may affect local and migratory wildlife.

In conclusion, the proposed project would not result in significant or unavoidable cumulative impacts when considered on a regional scale.

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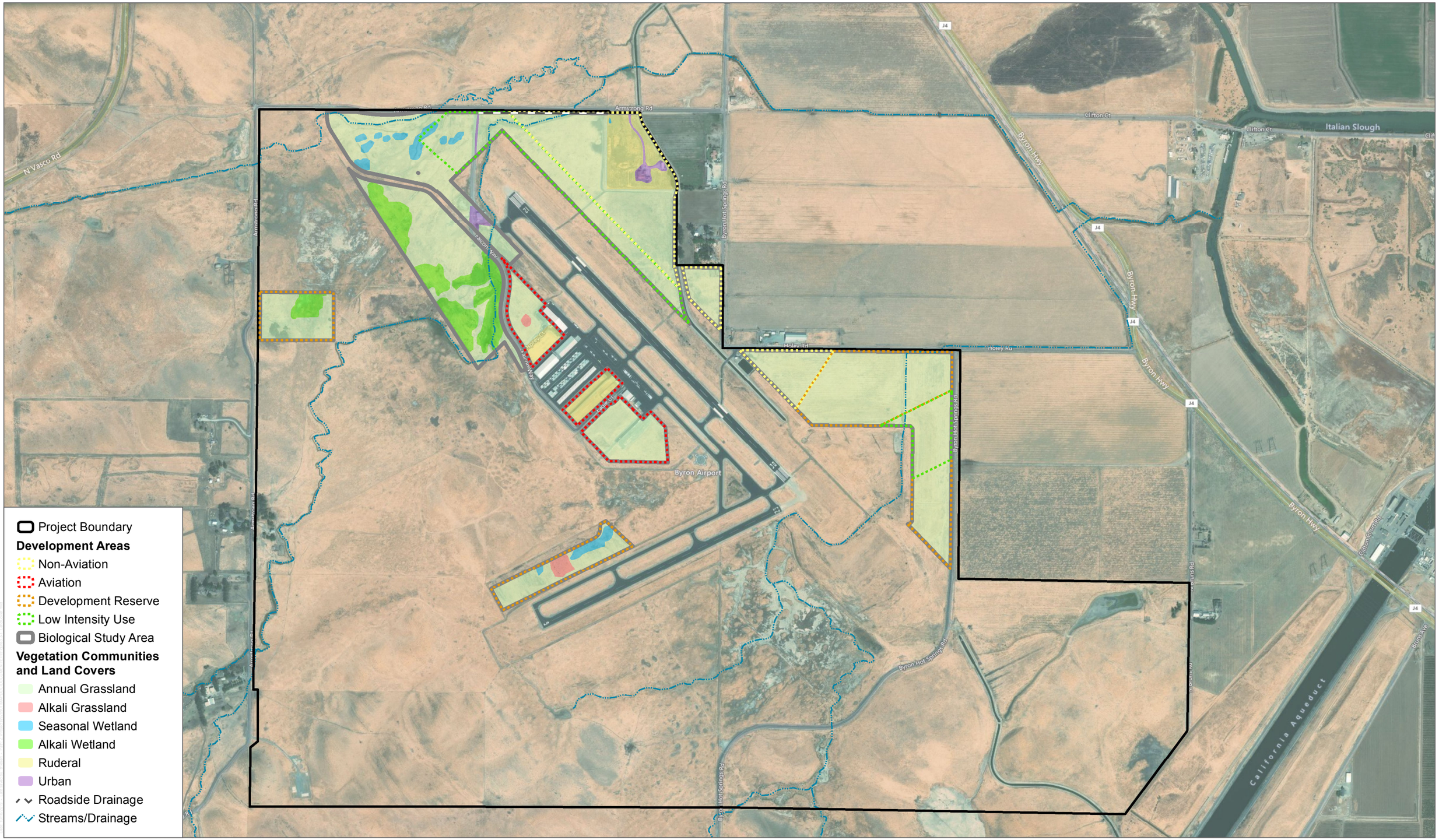

SOURCE: Bing Maps 2018, Mead & Hunt 2015

DUDEK

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FIGURE 3.3-1

Field-Verified Land Cover Map

Byron Airport Development Program EIR

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3.4 CULTURAL RESOURCES

This section describes the existing cultural resources of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures to reduce the proposed project's potentially significant impacts to less-than-significant levels. Prehistoric resources include sites and artifacts associated with the indigenous, non-Euro-American population, generally prior to contact with people of European descent. Historical resources consist of structures, features, artifacts, and sites that date from Euro-American settlement of the region.

This section is based on the Cultural Resources Inventory Report prepared for the project by Dudek in May 2019 (Appendix E).

3.4.1 Existing Conditions

The 1,319-acre project site is located in southeastern Contra Costa County, approximately 2.5 miles south of the community of Byron, California. Byron Airport is located on the western edge of the flat Sacramento–San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. The project site is relatively flat land that contains two nonintersecting runways, each with a parallel taxiway and several connector taxiways. Aviation facilities are generally concentrated in the "V" formed by the two runways, with approximately 10 acres of aircraft storage area, 4 acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these facilities were constructed when the airport was built in the early 1990s. The project site historically supported agricultural fields from at least 1949 until 1966, when the project site was graded for roads and runways for a previous private airport facility. On-site elevations range from 30 to 100 feet above mean sea level. Approximately 814 acres of airport property south and west of the airfield are set aside as a wildlife preserve. An existing residence is located within the northeast corner of the project site, between the existing airport property and the Byron Bethany Irrigation District Canal. The airport owns an additional 120 acres north of Armstrong Road that is not considered part of the project site or the cultural resources study area.

3.4.1.1 Prehistory Background

In general, the archaeology and prehistory of the Central Valley are not well understood. In addition, much of the archaeological material from the valley area has not been found in context, having been scavenged from the surface and placed in private collections. Early and widespread agricultural use of the valley floor has destroyed much of the bottomland archaeology, and siltation has most likely buried many resources well below the surface sediments. On the valley floor, in the southern Central Valley, fluted projectile points were found at the Witt Site, suggesting possible Clovis occupation in the region earlier than 11,000 years ago, during the

Pleistocene. Other evidence for Early Holocene occupation around valley lakes has been recovered from Buena Vista Lake (Appendix E).

More than two decades ago, a general chronological framework was provided by Moratto (1984) that encompasses the Central Valley. Since then, numerous additional studies have provided data to supplement and refine this framework. Building on this previous research, the following chronology contains four general time frames with associated periods, dates, and marker traits: Paleoindian (Paleoindian Period), Early Archaic (Early Period), Middle Archaic (Middle Period), and Late Archaic (Late Period). A description of each of these periods is presented in Appendix E.

The region surrounding the project site would have been at the southern extent of Northern Valley Yokut tribal territory during the ethnohistoric period. This group inhabited the lower San Joaquin River watershed and its tributaries extending from Calaveras River in the north to approximately the large bend of the San Joaquin River eastward near Mendota. The lower San Joaquin River meanders through the territory making bends, sloughs, and marshes full of tule reeds as it meanders. Farther from the rivers and marshes, the valley floor would have been dry and sparsely vegetated (Appendix E).

Northern Valley Yokut habitation areas were most commonly situated in close proximity to the San Joaquin River and its major tributaries, more often on the east side of the river. West of the river populations were much sparser and concentrated in the foothills on minor waterways. This focus on waterways can also be seen in their dietary resources, which included various fish, waterfowl, antelope, elk, acorns, tule roots, and various seeds. In particular, and in contrast to their San Joaquin Valley Yokut neighbors, salmon was an abundant food during the fall spawning and in springtime. The focus on fishing is also seen in the material culture consisting of net sinkers and harpoons, likely used from rafts constructed from tule reed bundles (Appendix E).

Traditional village were perched on top of low mounds on or near riverbanks. Northern Valley Yokut dwellings were constructed of tule reed woven mats placed over a pole frame oval or round structure. They were usually 25–40 feet in diameter and would belong to a single family. This is in contrast to the larger multifamily dwellings erected sometimes by the Southern Yokuts. In addition to dwellings, earth covered ceremonial sweat lodges were constructed. There was a high level of sedentism due to abundant riverine resources, though there were times of seasonal disbandment for harvesting wild plant resources such as acorns and seeds (Appendix E).

The Northern Valley Yokuts saw sharp and devastating decline from disease and relocation to coastal missions nearly immediately after Spanish contact. This only increased with the large influx of cattle ranching and Anglos Americans after the gold rush.

3.4.1.2 History of the Project Area

The following sections describe the relevant history of California, the region, and the project vicinity.

Spanish Period (1769–1822)

Gaspar de Portolá entered San Francisco Bay in 1769. Additional explorations of San Francisco Bay and the plains to the east were conducted by Captain Pedro Fages in 1772 and Juan Bautista De Anza in 1776. In 1808, Lieutenant Gabriel Moragain led the first Spanish expedition into the Sacramento Valley. This group explored areas in the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, and Stanislaus river watersheds. The most recent Spanish expedition into this region was conducted by Luis Arguello in 1817. This group traveled up the Sacramento River to the mouth of the Feather River.

Spanish missionization of Alta California was initiated at San Diego in 1769. A total of 21 missions were constructed by the Dominican and Franciscan orders between 1769 and 1823. Missions in the region included San Francisco de Asís (1776), Santa Clara de Asís (1776), San José de Guadalupe (1797 in Alameda County), San Rafael Arcángel (1817 in Marin County), and San Francisco Solano (1823 in Sonoma County) (Grunsky 1989). While missionization had a detrimental effect on tribes throughout the region, there is no record of forcible transport of Nisenan communities by the Spanish to the missions.

Mexican Period (1822–1848)

Mexico's separation from the Spanish empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to native populations. Following establishment of the Mexican republic, the government seized many of the lands belonging to Native Americans, providing them as parts of larger land grants to affluent Mexican citizens and rancheros. Captain John Sutter was granted the two largest areas of land in the Sacramento Valley area. Sutter founded New Helvetia, a trading and agricultural empire, in 1839. The headquarters was located within Valley Nisenan territory at the confluence of the Sacramento and American rivers. The 1833 Secularization Act passed by the Mexican Congress ordered half of all mission lands to be transferred to the Native Americans, and the other half to remain in trust and managed by an appointed administrator. These orders were never implemented due to several factors that conspired to prevent the Native Americans from regaining their patrimony.

American fur trappers and traders conducted a number of exploratory intrusions into west Sierra Nevada Mexican territory. Notably, in 1826, Jedediah Smith led a small party of trappers in an expedition along the Sierra Nevada range, eventually entering the Sacramento Valley in 1827. This group covered the area along the American and Cosumnes rivers. From these travels, maps

of this inhospitable terrain were created and disseminated, providing for the waves of European prospectors, ranchers, and settlers who would come in the following decades.

American Period (Post-1848)

California has been inexorably shaped by the mining of precious metals and other minerals. The discovery of gold in January of 1848 at Sutter's Mill in Coloma, on the South Fork of the American River, led to extensive and enduring changes to California's physical and cultural landscapes. The California gold rush, prompted by news of the find at Sutter's Mill, led to what has been characterized as the greatest mass migration in American history. Within months of the initial discovery, gold was being collected in the gravel bars of the North, Middle, and South Forks of the American River, and extensive placer mining was occurring in nearly every adjacent gulch and ravine. The effects of these activities are still evident in the form of tailings, ditches, and other mining features scattered throughout these areas. Mining can also be credited for the location and names of most of the towns and communities in the region, the placement of early transportation and communication corridors between the western Sierra Nevada, Sacramento, and San Francisco, and the subsequent development of agriculture and ranching throughout the foothills and valley (Appendix E).

As the allure of gold mining declined, agriculture and ranching in the Central Valley became more prominent and productive economic pursuits in the region (Davis 1975). Stockton, located approximately 20 miles from the project site, turned into the valley's major agricultural shipping point. With the grain exporting opportunities of World War II, the city accelerated in growth (Haslam et al. 1993) to become the prominent urban center in the vicinity of the project site. In 1868, Orange Risdon Jr. and Lewis Risdon Mead took initial steps to develop and market the Byron Hot Springs into a rural health resort. The town of Byron was founded in 1878, concurrently with the introduction of track laid through the area by the San Pablo and Tulare Railroad Company (East County Historical Society). A hotel, which remarkably for the time had hot and cold water, was constructed at the site of the hot springs in 1888. This initial hotel burned down in 1901 and, again, a re-built hotel burned in 1912 (Kyle 2002). The third hotel, having enjoyed decades of popularity, closed in 1938 following broader trends of diminished public interest in mineral springs as health destinations. In 1969, 2,200 acres of land were inundated next to the project site to create a temporary storage pool and regulating reservoir within the tidally influenced region of the Sacramento-San Joaquin Delta for the California Aqueduct, creating the Clifton Court Forebay (Kano 1990).

3.4.1.3 Records Search

A records search was completed for a 0.5-mile radius around the project site by staff at the Northwest Information Center at Sonoma State University, California, on March 22, 2016. The

records search indicated that 55 previous cultural resources technical investigations have been conducted in this area. Of these studies, nine cover all or a portion of the project site. The records search identified one cultural resource, P-07-002547 (Byron Bethany Irrigation District Main Canal No. 9), within the project development area; four cultural resources (P-07-000320, P-07-000321, P-07- 002707, and P-07-002708) located within the Byron Airport parcel boundary; and an additional seven cultural resources occur within the 0.5-mile search radius of the project site. Of the 12 previously recorded resources, there is one prehistoric artifact scatter, seven historic-age canals/aqueducts, one historic railroad segment, one historic road segment, one historic rock foundation, and one unknown resource due to missing record. Two (P-07-002547 and P-07-000813) of the 12 cultural resources have been evaluated and were determined not eligible for National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) listing.

P-07-000320/CA-CCO-550

This historic site was originally recorded by L.K. Napton and E.A. Greathouse in 1987 as part of the cultural resource investigation of the East Contra Costa County Airport Five-Year Development Plan Project. The site consists of a rock foundation composed of 54 large sandstone rocks with associated historic refuse. The crew reported site disturbance and attributed the disturbances to rodent bioturbation activities. In 2005, Sean Dexter and Armando Cuellar revisited the site as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The crew observed that the site had been entirely destroyed by construction of a Byron Airport runway and taxiway. No evidence of the site remains.

P-07-000321/CA-CCO-551

This prehistoric site was originally recorded by L.K. Napton and E.A. Greathouse in 1987 as part of the cultural resource investigation of the East Contra Costa County Airport Five-Year Development Plan Project. The site consists of a hammerstone, core, hand stone fragment, and lithic flakes. The crew noted that the site had been disturbed by washes, drainage overflow, and possibly impacted from previous gas line construction for the airport. Miller, Crabtree, Oshins, and Chavez revisited the site in 1990. They did not relocate the original lithic flakes or core; however, the crew did observe a hammerstone fragment, possible hand stone, and fire-affected rock fragments with charcoal. In 2005, Sean Dexter and Armando Cuellar revisited the site as part of the cultural resources reconnaissance for the Byron Airport Master Plan. It was observed that the site had been disturbed by construction of Falcon Way and construction activities associated with the gas line found within the site boundary. Despite the disturbances, there is still potential for the site to contain an undisturbed component that could be significant. The archaeologists recommended archaeological testing for this site to determine if the site is eligible for listing on the CRHR.

P-07-002547/CA-CCO-738

This historic resource was first recorded by Tracy Bakic and Cinder Baker in 2001. This resource consists of the Byron Bethany Irrigation District Main Canal No. 9. This segment of the canal is located on the southeast side of the California Aqueduct. Baker, of Par Environmental, conducted an evaluation of the canal to determine if the historic resource was significant. The Byron Bethany Irrigation District site was determined not eligible for listing on the CRHR or under California Environmental Quality Act (CEQA) criteria. Sean Dexter and Armando Cueller also conducted a cultural reconnaissance in 2005 for three segments of the canal located within Contra Costa County (Assessor's Parcel Numbers 001-011-011, 001-031-014, 001-031-013, and 001-031-016) as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The crew observed that Segment 2 appears to have been completely rebuilt circa 1990 for construction of the main Byron Airport runway; Segment 3 is a short segment that has been abandoned since 1990; and Segment 4 showed evidence of being partially rebuilt in 1968 and around 1990 for construction of Byron Airport. The 2005 study determined that the three segments are not eligible for listing on the CRHR or under CEQA criteria.

P-07-002707

This historic feature was recorded by Sean Dexter and Armando Cueller in 2005, as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The resource consists of an exposed 8.5-inch diameter steel pipe aqueduct which is supported on concrete cradles. This aqueduct pipe may date back to the original 1917 Byron Bethany Irrigation District system as it is depicted as emerging from the Irrigation District Main Canal No. 9 on the U.S. Geological Survey topographic map. The archaeologists recommended archaeological investigations to determine if this resource is eligible on the CRHR.

P-07-002708

This historic resource was recorded in 2005 by Sean Dexter and Armando Cueller, as part of the cultural resources reconnaissance for the Byron Airport Master Plan. This resource consists of an abandoned segment of Byron Hot Springs Road. The crew observed that the road has been stripped of all pavement and was abandoned during the construction of Byron Airport in the early 1990s. South of Runway 5-23, within the airport fencing area, a remnant of the road is still visible. The archaeologists recommended archaeological investigations to determine if this resource is eligible on the CRHR.

3.4.1.4 Sacred Lands File Search and Tribal Consultation

A search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was requested on February 22, 2016, for the project site. The NAHC results, received March 1, 2016,

did not indicate the presence of Native American cultural resources in or near the project site. The NAHC also provided a contact list of Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the project site. Following the NAHC response, letters were sent on April 8, 2016, to the listed tribal representatives to solicit information, opinions, or concerns relating to potential project impacts. These letters contain a brief description of the project, reference maps, and a summary of the NAHC SLF search results. No response to these outreach attempts has been received to date.

In addition, the County sent letters to all Native American tribes that have requested notification, per Assembly Bill (AB) 52 and Senate Bill 18. A request for consultation was received from Wilton Rancheria on August 30, 2017. The County emailed the tribal contact on September 7, 2017, and again on February 22, 2018, attempting to coordinate consultation. No response was received. Consultation is considered closed.

3.4.1.5 Pedestrian Survey

An intensive-level pedestrian survey of most of the entire project site was conducted on May 10, 2016, using standard archaeological procedures and techniques. One previously recorded resource, P-07-002547, was observed during the field survey. This resource occurs within the aviation development area. One newly identified built environment feature (temporarily designated as BA-KL-1) was identified within the project development area, located north of the intersection of Byron Hot Springs Road and Holey Road. BA-KL-1 consists of a historic wooden corral that is possibly associated with the ranch/agricultural property located directly north (outside of Byron Airport parcel boundary) of the corral.

Documentation of BA-KL-1 complied with the Office of Historic Preservation and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) and the California Office of Historic Preservation Planning Bulletin Number 4(a). Newly identified BA-KL-1 was recorded on California Department of Parks and Recreation Form DPR 523L (Series 1/95) Continuation Sheet, using the Instructions for Recording Historical Resources (Office of Historic Preservation 1995). Dudek determined that data potential for BA-KL-1 has been exhausted through field-level recordation. The resource does not have the potential to further yield information locally, regionally, or nationally beyond field level. BA-KL-1 is not eligible for listing on the CRHR or the local register and is not significant under CEQA. The Department of Parks and Recreation form will be submitted to the Northwest Information Center. No other cultural resources, historical resources, or historic properties were identified in the project site.

A subsequent pedestrian survey was conducted on November 28, 2018, of the 11.7-acre parcel for potential acquisition, and the potential off-site infrastructure locations (the seven study

intersections discussed in Section 3.13, Transportation, and the roadway segments of Armstrong Road, Byron Hot Springs Road, and Holey Road between the airport and Byron Highway). No additional cultural resources were observed in this additional area.

3.4.2 Relevant Plans, Policies, and Ordinances

The treatment of cultural resources is governed by federal, state, and local laws and guidelines. There are specific criteria for determining whether prehistoric and historic sites or objects are significant and/or protected by law. Federal and state significance criteria generally focus on the resource's integrity and uniqueness, its relationship to similar resources, and its potential to contribute important information to scholarly research. Some resources that do not meet federal significance criteria may be considered significant by state criteria. The laws and regulations seek to mitigate impacts on significant prehistoric or historic resources. The federal, state, and local laws and guidelines for protecting historic resources are summarized below.

Federal

National Historic Preservation Act

The National Historic Preservation Act of 1966 established the NRHP as the official federal list of cultural resources that have been nominated by state offices for their historical significance at the local, state, or national level. Properties listed in the NRHP, or determined eligible for listing, must meet certain criteria for historical significance and possess integrity of form, location, and setting. Under Section 106 of the act and its implementing regulations, federal agencies are required to consider the effects of their actions, or those they fund or permit, on properties that may be eligible for listing or that are listed in the NRHP. The regulations in Title 36 of the Code of Federal Regulations, Section 60.4, describe the criteria to evaluate cultural resources for inclusion in the NRHP. Properties may be listed in the NRHP if they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and they:

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

These factors are known as Criteria A, B, C, and D.

In addition, the resource must be at least 50 years old, except in exceptional circumstances. Eligible properties must meet at least one of the criteria and exhibit integrity, which is measured by the degree to which the resource retains its historical properties and conveys its historical character, the degree to which the original fabric has been retained, and the reversibility of the changes to the property. Archaeological sites are generally evaluated under Criterion D, which concerns the potential to yield information important in prehistory or history.

The Section 106 review process, typically undertaken between the U.S. Army Corps of Engineers as part of issuing a Section 404 permit and the State Historic Preservation Officer, involves a four-step procedure:

- Initiate the Section 106 process by establishing the undertaking, developing a plan for public involvement, and identifying other consulting parties.
- Identify historic properties by determining the scope of efforts, identifying cultural resources, and evaluating their eligibility for inclusion in the NRHP.
- Assess adverse effects by applying the criteria of adverse effect on historic properties (resources that are eligible for inclusion in the NRHP).
- Resolve adverse effects by consulting with the State Historic Preservation Officer and other consulting agencies, including the Advisory Council on Historic Preservation, if necessary, to develop an agreement that addresses the treatment of historic properties.

The Department of the Interior has set forth Standards and Guidelines for Archaeology and Historic Preservation. These standards and guidelines are not regulatory and do not set or interpret agency policy. A project that follows the standards and guidelines generally shall be considered mitigated to a less-than-significant level, according to Section 15064.5(b)(3) of the CEQA Guidelines (14 CCR 15000 et seq.). Because it is not a federal agency, Contra Costa County is not subject to the National Historical Preservation Act, including Section 106.

State

California Environmental Quality Act

Under CEQA, public agencies must consider the effects of their actions on both historical resources and unique archaeological resources. Pursuant to California Public Resources Code (PRC), Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC, Section 21083.2, requires agencies to determine whether proposed projects would have effects on "unique archaeological resources."

"Historical resource" is a term of art with a defined statutory meaning (PRC 21084.1; 14 CCR 15064.5[a], 15064.5[b]). The term embraces any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be historical resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1; 14 CCR 4850). Unless a resource listed in a survey has been demolished or has lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts to historical resources (PRC 21084.1; 14 CCR 15064.5[a][3]). In general, a historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

A. Is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California; and

B. Meets any of the following criteria:

    1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

    2. Is associated with the lives of persons important in our past;

    3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

    4. Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines, Section 15064.5[a][3]).

These factors are known as Criteria 1, 2, 3, and 4 and parallel Criteria A, B, C, and D under the National Historic Preservation Act. The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC 21084.1; 14 CCR 15064.5[a][4]).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and unique archaeological resources. Under CEQA, an archaeological resource is considered "unique" if it:

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2[g]).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an environmental impact report (EIR) must be prepared, and mitigation measures and alternatives must be considered. A "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (14 CCR 15064.5[b][1]).

The CEQA Guidelines Section 15064.5(c) also provides specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2.

CEQA Guidelines Section 15126.4(b) sets forth principles relevant to means of mitigating impacts on historical resources. It provides as follows:

> (1) Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995), Weeks and Grimmer, the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant.
>
> (2) In some circumstances, documentation of an historical resource, by way of historic narrative, photographs, or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur.

(3) Public agencies should, whenever feasible, seek to avoid damaging effects on any historical resource of an archaeological nature. The following factors shall be considered and discussed in an EIR for a project involving such an archaeological site:

(A) Preservation in place is the preferred manner of mitigating impacts to archaeological sites. Preservation in place maintains the relationship between artifacts and the archaeological context. Preservation may also avoid conflict with religious or cultural values of groups associated with the site.

(B) Preservation in place may be accomplished by, but is not limited to, the following:

1. Planning construction to avoid archaeological sites;
2. Incorporation of sites within parks, greenspace, or other open space;
3. Covering the archaeological sites with a layer of chemically stable soil before building tennis courts, parking lots, or similar facilities on the site.
4. Deeding the site into a permanent conservation easement.

(C) When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provision for adequately recovering the scientifically consequential information from and about the historical resource, shall be prepared and adopted prior to any excavation being undertaken. Such studies shall be deposited with the California Historical Resources Regional Information Center. Archaeological sites known to contain human remains shall be treated in accordance with the provisions of Section 7050.5 Health and Safety Code. If an artifact must be removed during project excavation or testing, curation may be an appropriate mitigation.

(D) Data recovery shall not be required for an historical resource if the lead agency determines that testing or studies already completed have adequately recovered the scientifically consequential information from and about the archaeological or historical resource, provided that the determination is documented in the EIR and that the studies are deposited with the California Historical Resources Regional Information Center.

CEQA and the California Public Records Act restrict the amount of information regarding cultural resources that can be disclosed in an EIR in order to avoid the possibility that such resources could be subject to vandalism or other damage (*Clover Valley Foundation v. City of*

Rocklin [2011] 197 Cal.App.4th 200, 219). The state CEQA Guidelines prohibit an EIR from including "information about the location of archaeological sites and sacred lands, or any other information that is subject to the disclosure restrictions of Section 6254 of the Government Code." (14 CCR 15120[d]). In turn, California Government Code (GC) Section 6254 of the California Public Records Act lists as exempt from public disclosure any records "of Native American graves, cemeteries, and sacred places and records of Native American places, features, and objects described in Sections 5097.9 and 5097.933 of the [California] Public Resources Code maintained by, or in the possession of, the Native American Heritage Commission, another state agency, or a local agency" (GC Section 6254[r]). The Public Records Act also generally prohibits disclosure of archaeological records. GC Section 6254.10 provides: "Nothing in [the California Public Records Act] requires disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of…a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency."

PRC, Sections 5097.9 and 5097.993, list the Native American places, features, and objects, the records of which are not to be publicly disclosed under the California Public Records Act: "any Native American sanctified cemetery, places of worship, religious or ceremonial site, or sacred shrine located on public property" (Section 5097.9) and any "Native American historic, cultural, or sacred site, that is listed or may be eligible for listing in the California Register of Historic Resources…, including any historic or prehistoric ruins, any burial ground, any archaeological or historic site, any inscriptions made by Native Americans at such a site, any archaeological or historic Native American rock art, or any archaeological or historic feature of a Native American historic, cultural, or sacred site" (Section 5097.993[a][1]).

CEQA Guidelines Section 15064.5(e) requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as identified in a timely manner by the NAHC. Section 15064.5 of the CEQA Guidelines directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Senate Bill 297

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction; and establishes the NAHC to resolve disputes regarding the disposition of such remains. Senate Bill 297 has been incorporated into Section 15064.5(e) of the CEQA Guidelines.

Senate Bill 18

Senate Bill 18 requires local governments to consult with tribes prior to making certain planning decisions and to provide notice to tribes at certain key points in the planning process. These consultation and notice requirements apply to adoption and amendment of general plans (defined in GC Section 65300 et seq.) and specific plans (defined in GC Section 65450 et seq.).

Assembly Bill 52

AB 52 requires consultation with Native American tribes traditionally and culturally affiliated with the geographic area in which a project requiring CEQA review is proposed if those tribes have requested to be informed of such proposed projects. The intention of such consultation is to avoid adverse impacts to tribal cultural resources (TCRs). This law is in addition to legislation protecting archaeological resources associated with California Native American tribes. In addition, AB 52 defines TCRs as a significant environmental issue under CEQA. AB 52 applies to all projects initiating environmental review in or after July 2015.

California Health and Safety Code

Section 7050.5(b) of the California Health and Safety Code specifies protocols to address any human remains that may be discovered. The code states the following:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in section 5097.98 of the Public Resources Code.

California Environmental Quality Act

Under CEQA, state and public agencies are required to investigate mitigation measures that would reduce significant environmental effects of proposed projects. If paleontological resources are identified during an environmental assessment of a project, then the sponsoring agency must take the resources into consideration when evaluating project effects.

California Public Resources Code Section 5097.5

Section 5097.5 of the PRC protects historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological sites, or any other archaeological, paleontological, or historical feature that is situated on land owned by, or in the jurisdiction of, the State of California, or any city, county, district, authority, or public corporation, or any agency thereof.

Local

Contra Costa County General Plan

The Open Space Element of the Contra Costa County General Plan contains the following goal and policies pertaining to archaeological and historic cultural resources (Contra Costa County 2005):

Goal 9-G To identify and preserve important archaeological and historic resources within the county.

Policy 9-28 Areas which have identifiable and important archaeologic or historic significance shall be preserved for such uses, preferably in public ownership.

Policy 9-29 Buildings or structures that have visual merit and historic value shall be protected.

Policy 9-30 Development surrounding areas of historic significance shall have compatible and high-quality design in order to protect and enhance the historic quality of the area.

Policy 9-31 Within the Southeast County area, applicants for subdivision or land use permits to allow non-residential uses shall provide information to the County on the nature and extent of the archaeological resources that exist in the area. The County Planning Agency shall be responsible for determining the balance between multiple use of the land and protection of resources.

3.4.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts to cultural resources and tribal cultural resources are based on Appendix G of the CEQA Guidelines. According to Appendix G, a significant impact would occur if the project would:

1. Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.
2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.
3. Disturb any human remains, including those interred outside of dedicated cemeteries.
4. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
    a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
    b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

3.4.4 Impacts Analysis

Impact 3.4-1. The project may cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5. (Potentially Significant)

The CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of a historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance. In order to best mitigate the effects of the project on cultural resources, a reasonable, good-faith effort must be applied to determining their historical character and eligibility for listing in the CRHR (PRC Section 5024.1; 14 CCR 4852).

Based on existing records (records search and historic aerials), the eastern portion of the project site was used for agriculture from approximately the early 1900s to 1993. The majority of the

Byron Airport property, except for the northwestern portion where a smaller airport was located from 1966 to 1993, was left as open grasslands until Byron Airport was built. The newly recorded historic-age resource, BA-KL-1, consists of a wooden corral. The records indicate that the corral is associated with the property located just north of the resource. According to historic topographic maps, the property served as a school from 1914 to 1948. By 1955, and on, the school was no longer being used as such. Only a building location is shown on the maps. The earliest historic aerial for the property is 1949. This photograph shows the property as being an agricultural residence/private property with the wooden corral located just south of the property. Photographs from 1949, 1959, 1966, 1968, 1979, 1993, 2005, 2009, and 2010 do not reveal any changes to the property and corral locations. The residence is outside of the project site and would not be impacted by the project.

CEQA Guidelines were used in determining the significance of BA-KL-1. It was found that BA-KL-1, while speaking to the presence and types of activities that occurred historically concerning agriculture, is not associated with any known significant events locally, regionally, or nationally (Criterion 1); the wooden corral, on its own, does not provide information that would be associated with the lives of any important people locally, regionally, or nationally (Criterion 2); it does not contain intact or individual distinction (Criterion 3); and since all data potential for BA-KL-1 has been exhausted through field-level recordation, this resource does not have the potential to further yield information locally, regionally, or nationally (Criterion 4). The resource is not eligible for listing on the CRHR or the local register and is not significant under CEQA. California Department of Parks and Recreation 523 series forms were completed for the site (confidential appendix to the Cultural Resources Study). As such, no further work is recommended for this resource.

Byron Bethany Irrigation District Main Canal No. 9 was evaluated by Par Environmental in 2001 and Condor Country Consulting in 2005 as not being eligible for listing under the NRHP or CRHR. The canal does not retain sufficient integrity after being impacted by construction of Byron Airport in the early 1990s. The canal also lacks association with any significant important people locally, regionally, or nationally. In addition to the wooden corral and Byron Bethany Irrigation District Main Canal No. 9, which were found in the project site, four cultural resources (P-07-000320, P-07-000321, P-07-002707, and P-07-002708) are recorded within the Byron Airport parcel boundary, and an additional seven cultural resources are recorded within the 0.5-mile search radius of the project site. Of the 11 previously recorded resources outside of the project site, six are historic age canals/aqueducts, one is a historic railroad segment, one is a historic road segment, one is a historic rock foundation, and one is an unknown resource due to missing record. Two (P-07-002547 and P-07-000813) of the 12 cultural resources have been evaluated and were determined not eligible for NRHP and CRHR listing. The project is not expected to impact these historic age resources as they are located outside of the project site.

Based on available information, it appears that no historical resources, as defined under CEQA, would be impacted by the project. However, due to the presence of cultural resources within the eastern portion of the project site, it is possible that additional historical resources would inadvertently be discovered during construction. This is a **potentially significant** impact.

Impact 3.4-2. The project may cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5. (Potentially Significant)

The Cultural Resources Inventory Report prepared for the project found that, although no previously recorded archaeological resources were found in the project site, four cultural resources were recorded within the Byron Airport parcel boundary, and an additional seven cultural resources were identified within the 0.5-mile search radius of the project site (Appendix E). Of these resources, one is a prehistoric artifact scatter, and another is an unknown resource due to missing record. The remaining resources are historic-age, and therefore are not considered archaeological. The NAHC SLF search did not identify cultural resources within the project site. Because the project would not impact areas outside of the project site, it would not cause a substantial adverse change to a known archaeological resource. However, the Cultural Resources Inventory Report suggests that there is moderate potential for inadvertent discovery of intact cultural deposits during earth moving activities (Appendix E). Because of this, the project would have a **potentially significant** impact on archaeological resources.

Impact 3.4-3. The project may disturb human remains, including those interred outside of dedicated cemeteries. (Potentially Significant)

No previously recorded human remains were identified during the records search or Native American consultation. The pedestrian survey also found no indication of human remains. Nevertheless, it is possible that human remains would inadvertently be discovered during construction. Disturbance of previously unidentified human remains would be a **potentially significant** impact**.**

Impact 3.4-4. The project would not cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k); or

b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. (Potentially Significant)

Dudek contacted the NAHC to request a review of the SLF. The NAHC responded to Dudek's request, stating that the SLF search was conducted with negative results. The County sent letters to all California Native American tribes traditionally and culturally affiliated with the project site requesting notification pursuant to AB 52. As discussed in Section 3.4.1.4, Wilton Rancheria requested consultation in 2017, but two attempts by the County to schedule consultation were not answered by the tribal contact. No information regarding the potential presence of a TCR was provided.

As described previously, the CHRIS records search conducted for the proposed project identified one prehistoric resource located on the project site. The presence of this resource and the proximity of Byron Hot Springs to the project site indicates there is the potential to inadvertently encounter TCRs during construction. This is a **potentially significant** impact.

3.4.5 Mitigation Measures

No historical or unique archaeological resources eligible for listing under the NRHP or CRHR have been identified on the project site. The following mitigation measures would reduce the potential for impacts on previously unidentified cultural resources or human remains.

MM-CUL-1 **Accidental Discovery of Archaeological Resources.** Prior to commencement of any construction activities involving ground disturbance, Contra Costa County, a qualified archaeologist, and the construction contractor shall be invited to meet or otherwise discuss by conference call the project site's archaeological sensitivity and determine the duration and extent of monitoring for archaeological deposits that may be uncovered during construction. Given the present disturbed condition in some locations surrounding existing airport facilities, areas of elevated potential for encountering unanticipated resources should be considered those within 500 feet of the historic-era corral and Brushy Creek, and no deeper than 4 feet below the present ground surface. An archaeological monitor shall be present for initial ground-disturbing work in these areas, after which the monitoring frequency shall be reduced to periodic spot-checks elsewhere. The monitoring strategy shall be adjusted (increased, decreased, or discontinued) based on the results of monitoring within areas of elevated archaeological sensitivity and as recommended by a qualified archaeologist meeting the Secretary of the Interior's Professional

Qualification Standards. In the event that archaeological resources are exposed, work within 100 feet of the find shall be halted or directed to another location until a qualified archaeologist can evaluate the significance of the find. If the resources are determined to be historical resources or unique (pursuant to Section 15064.5 of the CEQA Guidelines), the qualified archaeologist shall make recommendations prioritizing resource avoidance, or, where avoidance is infeasible, data recovery.

MM-CUL-2 **Accidental Discovery of Human Remains.** Pursuant to Section 5097.98 of the California Public Resources Code and Section 7050.5 of the California Health and Safety Code, as well as California Environmental Quality Act Guidelines Section 15064.5(e), in the event of the discovery of human remains, work shall be suspended within 100 feet of the find, and the Contra Costa County (County) Coroner/Sheriff shall be immediately notified. The County Coroner/Sheriff shall determine if an investigation is necessary. If the remains are determined to be Native American:

1. The Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours.
2. The NAHC shall identify the person or persons it believes to be the most likely descendant (MLD) from the deceased Native American.
3. The MLD shall have an opportunity to make a recommendation to the County for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in California Public Resources Code, Section 5097.98.

MM-CUL-3 Should a potential tribal cultural resource (TCR) be inadvertently encountered, construction activities within 100 feet of the TCR shall be halted and Contra Costa County Department of Conservation and Development (Department) notified. The Department shall notify Native American tribes that have been identified by the Native American Heritage Commission to be traditionally and culturally affiliated with the geographic area of the project. Any affected tribe shall be provided a reasonable period of time to conduct a site visit and make recommendations regarding future ground disturbance activities as well as the treatment and disposition of any discovered TCR. Depending on the nature of the potential resource and tribal recommendations, review by a qualified archaeologist may be required. Implementation of proposed recommendations shall be made based on the determination of the County that the approach is

reasonable and feasible. All activities shall be conducted in accordance with regulatory requirements.

3.4.6 Level of Significance After Mitigation

Implementation of MM-CUL-1 would reduce Impact 3.4-1 and Impact 3.4-2 to **less than significant**. Implementation of MM-CUL-2 would reduce Impact 3.4-3 to **less than significant**. Implementation of MM-CUL-3 would reduce Impact 3.4-4 to **less than significant**.

3.4.7 Cumulative Impacts

The geographic scope of the cumulative impact analysis for the evaluation of potential cumulative impacts on cultural resources is southeastern Contra Costa County (the area which reasonably relates to the historical development of the community of Byron and exceeds the normal survey area for an archaeological records search).

Subsurface prehistoric resources are expected to be confined to the territory of the Northern Valley Yokut, which includes the lower San Joaquin River watershed and its tributaries extending from Calaveras River in the north to approximately the large bend of the San Joaquin River eastward near Mendota. Historic resources and prehistoric sites have been recorded in the vicinity of Byron and could occur elsewhere in southeastern Contra Costa County. Development in the region could result in the damage or destruction of known and unknown archaeological and historical resources, as well as any existing undiscovered subsurface artifacts. The cumulative impact from past, present, and probable future projects, as well as the proposed project, is potentially significant.

As described in Section 3.4.4, Impacts Analysis, the proposed project would not impact any known historical or archaeological resources. However, the inadvertent destruction of resources during site preparation and construction of the proposed project, if not properly treated, would result in the project incrementally contributing to a significant cumulative impact.

Numerous laws, regulations, and statutes, on both the federal and state levels, seek to protect cultural resources. These would apply to development within and outside Byron. In addition, the County General Plan provides local policies that safeguard cultural resources from unnecessary impacts (Contra Costa County 2005). These policies include identification and preservation of important archaeological and historical resources and balancing land uses with protection of cultural resources. Because the project site contains a moderate likelihood for the discovery of unknown subsurface historical or prehistoric resources, the project's contribution to the cumulative loss of cultural resources is **potentially significant.** However, with implementation of MM-CUL-1 through MM-CUL-3, described above, impacts would be **less than significant.**

3.4.8 References Cited

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3.5 GEOLOGY, SOILS, AND MINERALS

This section describes the existing geological setting of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

3.5.1 Existing Conditions

The project site consists of the Byron Airport, approximately 1,307 acres south of Armstrong Road, and the approximately 12-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. The airport reference elevation is 76 feet above mean sea level. The project site is relatively flat land that contains two nonintersecting runways, each with a parallel taxiway and several connector taxiways. The project site is located in southeastern Contra Costa County (County), approximately 2.5 miles south of the community of Byron, California. The airport is located on the western edge of the flat Sacramento-San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. General aviation facilities are generally concentrated in the "V" formed by the two runways, with approximately 10 acres of aircraft storage area, 4 acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these facilities were constructed when the airport was built in the early 1990s. The project site historically supported agricultural fields from at least 1949 until 1966, when the project site was graded for roads and airport runways. On-site elevations range from 30 to 100 feet above mean sea level. Approximately 814 acres of airport property to the south and west of the airfield are set aside as a wildlife preserve.

3.5.1.1 Seismic Hazards

Faults

The project lies within a region of California that contains many active and potentially active faults and is considered an area of high seismic activity. Earthquakes are recorded by a seismographic network. Each seismic station in the network measures the movement of the ground at the site. The slip of one block of rock over another in an earthquake releases energy that makes the ground vibrate. That vibration pushes the adjoining piece of ground and causes it to vibrate, and thus the energy travels out from the earthquake in a wave. There are many different ways to measure different aspects of an earthquake. Magnitude is the most common measure of an earthquake's size. It is a measure of the size of the earthquake source and is the same number no matter where you are or what the shaking feels like. The Richter scale is an outdated method that is no longer used that measured the largest wiggle on the recording; other magnitude scales measure different parts of the earthquake (USGS 2018).

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The Modified Mercalli intensity scale is commonly used to measure earthquake damage due to ground shaking. The Modified Mercalli values for intensity range from I (earthquake not felt) to XII (damage nearly total) and intensities ranging from IV to X could cause moderate to significant structural damage. The intensity of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

The California Geological Survey (CGS) Probabilistic Seismic Hazard Assessment calculates earthquake shaking hazards through historic seismic activity and fault slip rates. Shaking from faults is expressed as the peak ground acceleration (PGA) measured as a percentage (or fraction) of acceleration due to gravity from ground motion that has a 10% probability of being exceeded in 50 years. The project site is located in an area with a PGA of 40%–50% (0.40g) (DOC 2018).

Regional Faults

The San Andreas, Hayward, and Calaveras faults pose the greatest threats of significant damage in the Bay Area according to the U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities (USGS 2003a). These three faults exhibit strike-slip orientation and have experienced movement within the last 150 years. Other principal faults capable of producing significant ground shaking in the Bay Area include the Concord–Green Valley, Marsh Creek–Greenville, and Rodgers Creek faults. Table 3.5-1 provides historic earthquake and surface faulting, known micro seismic activity, and estimated maximum probable earthquake information for the regional faults.

San Andreas Fault

The San Andreas fault zone is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates, extending from the Salton Sea in Southern California near the border with Mexico to north of Point Arena, where the fault trace extends out into the Pacific Ocean. The main trace of the San Andreas fault through the Bay Area trends northwest through the Santa Cruz Mountains and the eastern side of the San Francisco Peninsula. As the principal strike-slip boundary between the Pacific plate to the west and the North American plate to the east, the San Andreas is often a highly visible topographic feature, such as between Pacifica and San Mateo, where Crystal Springs Reservoir and San Andreas Lake clearly mark the rupture zone. Near San Francisco, the San Andreas fault trace is located immediately offshore near Daly City and continues northwest through the Pacific Ocean approximately 6 miles due west of the Golden Gate Bridge. In the San Francisco Bay Area, the San Andreas fault zone was the source of

the two major seismic events in recent history that affected the San Francisco Bay region. The 1906 San Francisco earthquake was estimated at moment magnitude (M_w) 7.9 and resulted in approximately 290 miles of surface fault rupture, the longest of any known continental strike slip fault. Horizontal displacement along the fault approached 17 feet near the epicenter. The more recent 1989 Loma Prieta earthquake, with a magnitude of M_w 6.9, resulted in widespread damage throughout the Bay Area.

Hayward Fault

The Hayward fault zone is the southern extension of a fracture zone that includes the Rodgers Creek fault (north of San Pablo Bay), the Healdsburg fault (Sonoma County) and the Maacama fault (Mendocino County). The Hayward fault trends to the northwest within the East Bay, extending from San Pablo Bay in Richmond, 60 miles south to San Jose. The Hayward fault in San Jose converges with the Calaveras fault, a similar type of fault that extends north to Suisun Bay. The Hayward fault is designated by the Alquist-Priolo Earthquake Fault Zoning Act as an active fault. Historically, the Hayward fault generated one sizable earthquake in the 1800s. In 1868, a Richter magnitude 7 earthquake on the southern segment of the Hayward fault ruptured the ground for a distance of about 30 miles. Recent analysis of geodetic data indicates surface deformation may have extended as far north as Berkeley. Lateral ground surface displacement during these events was at least 3 feet (USGS 2003a).

A characteristic feature of the Hayward fault is its well-expressed and relatively consistent fault creep. Although large earthquakes on the Hayward fault have been rare since 1868, slow fault creep has continued to occur and has caused measurable offset. Fault creep on the East Bay segment of the Hayward fault is estimated at 9 millimeters per year (Peterson et al. 1996). However, a large earthquake could occur on the Hayward fault with an estimated M_w of about 7.1. The USGS Working Group includes the Hayward–Rodgers Creek fault systems in the list of those faults that have the highest probability of generating earthquakes of magnitude 6.7 or greater in the Bay Area (USGS 2003b).

Calaveras Fault

The Calaveras fault is a major right-lateral strike-slip fault that has been active during the last 11,000 years. The Calaveras fault is located in the eastern San Francisco Bay region and generally trends along the eastern side of the East Bay Hills, west of San Ramon Valley, and extends into the western Diablo Range and eventually joins the San Andreas fault zone south of Hollister. The northern extent of the fault zone is somewhat conjectural and could be linked with the Concord fault.

The fault separates rocks of different ages, with older rocks west of the fault and younger sedimentary rocks to the east. The location of the main, active fault trace is defined by youthful geomorphic features (linear scarps and troughs, right-laterally deflected drainage, sag ponds) and

local groundwater barriers. The Calaveras fault is designated as an Alquist-Priolo Earthquake Hazard Zone (see discussion on this zone designation below). There is a distinct change in slip rate and fault behavior north and south of the vicinity of Calaveras Reservoir. North of Calaveras Reservoir, the fault is characterized by a relatively low slip rate of 5–6 millimeters per year and sparse seismicity. South of Calaveras Reservoir, the fault zone is characterized by a higher rate of surface fault creep that has been evidenced in historic times. The Calaveras fault has been the source of numerous moderate magnitude earthquakes and the probability of a large earthquake (greater than magnitude 6.7) is much lower than on the San Andreas or Hayward faults (USGS 2003b). However, this fault is considered capable of generating earthquakes with upper bound magnitudes ranging from M_w 6.6 to M_w 6.8.

Concord–Green Valley Fault

The Concord–Green Valley fault extends from Walnut Creek north to Wooden Valley (east of Napa Valley). Historical record indicates that no large earthquakes have occurred on the Concord or Green Valley faults (USGS 2003a). However, a moderate earthquake of magnitude 5.4 occurred on the Concord fault segment in 1955. The Concord and Green Valley faults exhibit active fault creep and are considered to have a small (4%) probability of causing a significant (greater than magnitude 6.7) earthquake according to the USGS.

Greenville Fault

The Greenville fault, also known as the Marsh Creek–Greenville fault, extends along the base of the Altamont Hills, which form the eastern margin of the Livermore Valley. The fault is recognized as a major structural feature and has demonstrated activity in the last 11,000 years. A magnitude 5.6 earthquake on the Greenville fault in 1980 produced a small amount of surface rupture (approximately 3 centimeters) on the fault near Vasco Road.

Table 3.5-1
Contra Costa County Inventory of Seismic Faults

Fault Name	Historic Damaging Earthquake	Historic Surface Faulting	Known Micro Seismic Activity	Estimated Maximum Probable Earthquake
San Andreas	1838, 1906	Creep and Surface Rupture	Yes	8.25
Hayward	1836, 1869	Creep and Surface Rupture	Yes	6.5
Calaveras	1861	Surface Rupture	None in Contra Costa County	6.5
Concord – Green Valley	1955	Creep	Yes	5.75
Greenville	1980	Surface Rupture	Yes	5.75

Source: Contra Costa County 2005a.

Ground Shaking

Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. Historic earthquakes have caused strong ground shaking and damage in the San Francisco Bay Area, the most recent being the magnitude 6.9 Loma Prieta earthquake in October 1989. The epicenter was more than 60 miles south of the project area, but this earthquake nevertheless caused strong ground shaking for about 20 seconds and resulted in varying degrees of structural damage throughout the Bay Area. The 1906 San Francisco earthquake, with an estimated M_w of 7.9, produced moderate shaking intensities in the project area. The 1989 Loma Prieta earthquake, with an M_w of 6.9, produced light shaking intensities in the project area (ABAG 2018).

The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the PGA. The PGA for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. The potential hazards related to ground shaking are discussed further in Section 3.5.4, Impacts Analysis.

Liquefaction and Landslide

Liquefaction is a specialized form of ground failure caused by earthquake ground motion. It is a quicksand condition occurring in water-saturated, unconsolidated, relatively clay-free sands and silts caused by hydraulic pressure (from ground motion) forcing apart soil particles and forcing them into quicksand-like liquid suspension. In the process, normally firm, but wet, ground materials take on the characteristics of liquids. Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt and some low-plasticity clay deposits.

Four kinds of ground failure commonly result from liquefaction: lateral spread, flow failure, ground oscillation, and loss of bearing strength. Liquefaction and associated failures could damage foundations, roads, underground cables, and pipelines and disrupt utility service. In addition, liquefaction can occur in unconsolidated or artificial fill sediments and other reclaimed areas along the margin of San Francisco Bay. Geologically young and water-saturated sandy sediments, such as those found in the extensive shoreline areas in western and northeastern county locations and the delta, are highly susceptible to liquefaction. Based on the County General Plan Safety Element, the project site has an estimated liquefaction potential of moderate to low (Contra Costa County 2005a).

Catastrophic ground failures may result from liquefaction, which pose a major threat to the safety of engineered structures. Major landslides, settling and tilting of buildings on level ground, and failure of water retaining structures have all been observed as a result of this type of ground failure.

It should be emphasized that great earthquakes anywhere in the Bay Area are capable of triggering liquefaction in the County.

Landslides are the downslope movement of geologic materials. Typically, such movement occurs as block glide (in which slope failure occurs along a planar surface and the mass of materials slides as a single block) or as a slump (in which slope failure occurs along single or multiple surfaces and the mass of materials slides in a rotational motion). Areas that are subject to slides and slippages from other natural causes may be very hazardous under earthquake conditions. Therefore, earthquake effects will be more extensive if a major earthquake occurs during the rainy season when ground conditions are favorable to landslides and ground slippage. According to the County General Plan Safety Element, the project site is not located in an area with landslide deposits, reclaimed area, or filled reclaimed area, nor is the site in an area in over 26% slope (Contra Costa County 2005a). The potential hazards related to liquefaction and landslides are discussed further in Section 3.5.4.

3.5.1.2 Site Geology

Regional Geology

The project site lies within the geologically complex region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Ranges province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running roughly parallel to the San Andreas fault zone. These older consolidated rocks are characteristically exposed in the mountains but are buried beneath younger, unconsolidated alluvial fan and fluvial sediments in the valleys and lowlands. In coastal and bay margins, these younger sediments commonly interfinger with a variety of marine deposits (e.g., bay mud). The geology of the County is dominated by several northwest trending fault systems which divide the County into large blocks of rock.

Site Geology

The project site is underlain by Pliocene Bedrock and Older (Pleistocene) Alluvium, which is characterized by consolidated and unconsolidated sediments and possesses potential for expansive clays, hillside earthflows, and unstable cut slopes. Soils of the project site are classified under the lowland soils classification, which means these soils are slowly to very slowly permeable, highly expansive, and corrosive, with slight erosion hazards (Contra Costa County 2005a). The project site contains soils within the C and D hydrologic soil groups. Hydrologic soil group C is typically comprised of 20%–40% clay and less than 50% sand, and group D soils have typically greater than 40% clay, less than 50% sand, and clayey textures.

Soil types located within the project site include the following (USDA 1977):

- **Altamont clay 9%–15% slopes (AbD):** The Altamont series consists of well-drained soils underlain by shale and soft, fine-grained sandstone. Permeability is slow, and the available water capacity is 6.5–10 inches. Roots can penetrate to a depth of 40–60 inches. This soil is well drained, with a moderate to low erosion potential. Runoff is slow to medium where the soil is tilled and exposed.
- **Altamont clay 15%–30% slopes (AbE):** This soil is on rolling hills, along narrow drainageways, and in depressions. Runoff is medium, and the hazard of erosion is moderate where the soil is bare.
- **Fontana-Altamont complex (Fd):** The Fontana series consists of well-drained soils underlain by calcareous, fine-grained sandstone. These soils are on uplands. Permeability is moderately slow, and the available water capacity is 3.5–6.5 inches. Roots can penetrate to a depth of 20–36 inches. This complex is on foothills in the eastern uplands of the County. It consists of about 55% Fontana silty clay loam and 30% Altamont clay. Runoff is slow to medium where the soils are tilled and exposed, and the hazard of erosion is slight to moderate.
- **Linne clay loam, 5%–15% slopes (LbD):** The Linne series consists of well-drained soils underlain by calcareous, interbedded shale and soft sandstone. Permeability is moderately slow, and the available water capacity is 4–8 inches. Roots can penetrate to a depth of 20–40 inches. This gently rolling to rolling soil is on foothills in the uplands. Runoff is slow to medium, and the hazard of erosion is slight to moderate where the soil is tilled and exposed.
- **Linne clay loam, 15%–30% slopes (LbE):** This soil is moderately steep with a runoff classification of medium, and the hazard of erosion is moderate where the soil is bare.
- **Rincon clay loam 2%–9% slopes (RbC):** The Rincon series consists of well-drained soils, formed in alluvial valley fill from sedimentary rock. This gently sloping and moderately sloping soil is on benches. These soils have a surface layer of dark reddish-brown, neutral sandy loam, and a subsoil or reddish-brown, neutral clay loam. Runoff is medium and the hazard of erosion is slight where the soil is tilled and exposed. Permeability is show and the available water capacity is 9–10 inches. Roots can penetrate to a depth of more than 60 inches.
- **San Ysidro loam 0%–5% slopes (Sc):** The San Ysidro series consists of moderately well drained soils. Permeability is very slow, and the available water capacity is 3.5–5 inches. Runoff is slow and the hazard of erosion is slight. The depth to which roots can penetrate is limited to 10–20 inches by the clay subsoil.
- **Solana loam (Sh):** The Solana series consists of somewhat poorly drained soils that formed in alluvium from sedimentary rock. Slopes are 0%–2%. Runoff is slow and the hazard of

erosion is slight. Permeability is very slow, and the available water capacity is 4–6 inches. Roots of salt-tolerant plants can penetrate to a depth of 36–48 inches.

- **Solana loam, strongly alkali (Sk):** This soil is in old valley fill near rims of basins. Slopes are 0%–2%. Runoff is slow, and the hazard of erosion is moderate.

3.5.1.3 Geologic Hazards

Expansive or Unstable Soils

Expansive soils are clay- or adobe-based soils that absorb large quantities of water and, as a result, expand. This expansion can cause building slabs to crack and buckle. Structural damage may occur over a long period of time, usually as the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. The Quaternary Alluvium underlying the project site possesses the potential for expansive clays (Contra Costa County 2005a).

Soil Erosion

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of waves, wind, and underground water. Excessive soil erosion can eventually lead to damage of building foundations and roadways. At the project site, areas that are most susceptible to erosion are any disturbed soils located on steeper terrain. Typically, the soil erosion potential is reduced once the soil is graded and vegetated, or covered with concrete, structures, asphalt, or slope protection. When erosion occurs, topsoil is lost, resulting in reduced crop productivity and sedimentation problems downstream. In turn, sedimentation can fill waterways, diminish water quality, and damage sensitive habitats. Erosion occurs when high rainfall, lack of cover, fragile soils, and steep slopes combine. Urbanization, development activities, recreation, agricultural, and logging practices increase erosion (Contra Costa County 2005a).

According to the soil survey of the County, the project site is underlain by soils characterized by well-drained, moderately well drained, and somewhat poorly drained soils. Runoff is of the underlying soils are characterized as, medium, slow to medium, and slow, and the soil's potential for erosion is slight, slight to moderate, moderate, and moderate to low (USDA 1977).

3.5.1.4 Paleontological Resources

There are nearly 15,000 Middle Miocene to Late Pleistocene vertebrate records from the County in the University of California Museum of Paleontology specimens database. The University of California Museum of Paleontology localities database did not indicate any recorded sites within the vicinity of the project site (UCMP 2018). The project site is underlain by Late Cretaceous bedrock and Older (Pleistocene) Alluvium, which is characterized by consolidated and

unconsolidated sediments. Both Alluvial fan deposits of Pleistocene age and Late Cretaceous age bedrock are considered to have a high potential to yield paleontological resources. Numerous stratigraphically important vertebrate fossils have been found within California's Pleistocene nonmarine strata, including the assemblages that define both the Rancholabrean and Irvingtonian North American Land Mammal Ages, which are used as a reference by paleontologists and stratigraphers across the country. Due to this, continental Pleistocene-age deposits are almost universally considered to be of high sensitivity for paleontological resources within California (Caltrans 2010). Late Cretaceous marine reptiles have also been discovered from the Great Valley, and the corresponding bedrock is considered to have a high potential to yield significant paleontological resources.

3.5.1.5 Mineral Resources

The CGS, formerly the California Division of Mines and Geology, has classified lands within the San Francisco Bay Region into mineral resource zones (MRZs). The classification of MRZs is based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1975. The project site is mapped by the CGS as not containing MRZs. The County General Plan Conservation Element identifies the significant mineral resources areas that are found within the County. The project site is not located within one of these mineral resource areas (Contra Costa County 2005b).

3.5.2 Relevant Plans, Policies, and Ordinances

Federal

Occupational Safety and Health Administration Regulations

Excavation and trenching are among the most hazardous construction operations. The Occupational Safety and Health Administration (OSHA) Excavation and Trenching Standard, Title 29 of the Code of Federal Regulations, Part 1926.650, covers requirements for excavation and trenching operations. OSHA requires that all excavations in which employees could potentially be exposed to cave-ins be protected by sloping or benching the sides of the excavation, supporting the sides of the excavation, or placing a shield between the side of the excavation and the work area. In California, California OSHA has responsibility for implementing federal rules relevant to worker safety, including slope protection during construction excavations. California OSHA's requirements are more restrictive and protective than federal OSHA standards.

U.S. Geological Survey Landslide Hazard Program

In fulfillment of the requirements of Public Law 106-113, the USGS created the Landslide Hazards Program in the mid-1970s. According to the USGS, the primary objective of the National

Landslide Hazards Program is to reduce long-term losses from landslide hazards by improving understanding of the causes of ground failure and suggesting mitigation strategies. The federal government takes the lead role in funding and conducting this research, whereas the reduction of losses due to geologic hazards is primarily a state and local responsibility.

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. In accordance with this act, the State Geologist established regulatory zones, called "earthquake fault zones," around the surface traces of active faults, and published maps showing these zones. Earthquake fault zones are designated by the CGS and are delineated along traces of faults where mapping demonstrates surface fault rupture has occurred within the past 11,000 years. Construction within these zones cannot be permitted until a geologic exploration has been conducted to prove that a building planned for human occupancy would not be constructed across an active fault. These types of site evaluations address the precise location and recency of rupture along traces of the faults, and are typically based on observations made in trenches excavated across fault traces.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (California Public Resources Code, Chapter 7.8, Section 2690 et seq.) directs the CGS to protect the public from earthquake-induced liquefaction and landslide hazards (these hazards are distinct from fault surface rupture hazard regulated by the Alquist-Priolo Act). This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones (i.e., zones of required investigation). Before a development permit may be granted for a site within a seismic hazard zone, a geotechnical exploration of the site must be conducted and appropriate mitigation measures incorporated into project design. Evaluation and mitigation of potential risks from seismic hazards within zones of required investigation must be conducted in accordance with the CGS Special Publication 117A, adopted March 13, 1997, by the State Mining and Geology Board (as updated in 2008).

As of 2012, Seismic Hazard Zone Maps have been prepared for portions of populated areas of Southern California and the San Francisco Bay Area; however, no seismic hazard zones have yet been delineated for the project site. As a result, the provisions of the Seismic Hazards Mapping Act would not apply to the proposed project.

California Building Code

The California Building Code (CBC) has been codified in the California Code of Regulations as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The CBC is based on the International Building Code published by the International Code Conference. The CBC contains California amendments based on the American Society of Civil Engineers Minimum Design Standards 7-05. American Society of Civil Engineers 7-05 provides requirements for general structural design and includes means for determining earthquake loads and other loads (such as wind loads) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

Paleontological Resources

Paleontological resources are afforded consideration under CEQA. Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.) includes as one of the questions to be answered in the Environmental Checklist (Appendix G, Section V, Part c) the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" California Public Resources Code, Section 5097.5, specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, California Penal Code Section 622.5 sets the penalties for damage to or removal of paleontological resources.

Local

Contra Costa County General Plan

The County General Plan Safety Element (Safety Element) contains goals and policies related to geology, soils, and seismicity that apply to development projects throughout the unincorporated County, including project. These goals and policies include the following (Contra Costa County 2005a):

Goal 10-B To reduce to a practical minimum injuries and health risks resulting from the effects of earthquake ground shaking on structures, facilities, and utilities.

Goal 10-C To protect persons and property from the life-threatening, structurally and financially disastrous effects of ground rupture and fault creep on active faults, and to reduce structural distress caused by soil and rock weakness due to geologic faults.

Policy 10-2 Significant land use decisions (General Plan amendment, rezoning, etc.) shall be based on a thorough evaluation of geologic-seismic and soils conditions and risk.

Liquefaction

The Safety Element contains a map, Estimated Liquefaction Potential, that divides the County into three categories: "generally high," "generally moderate to low," and "generally low" (Contra Costa County 2005a). This map is used as screening criteria by the County during the processing of land development applications. The County requires rigorous evaluation of liquefaction potential in areas of high potential, and less comprehensive investigations are demanded in areas falling within the moderate or low category. The classification of generally high liquefaction potential does not guarantee the presence of liquefiable sands on a parcel. The map attempts to be conservative on the side of safety, and where geologically recent alluvial and estuarine deposits are shown on soil maps of the County, the map depicts such properties within the generally high category. Site specific investigations are needed to determine if liquefiable sands are present and to provide stabilization measures where liquefiable sands are confirmed.

The Safety Element includes a number of policies indicating that at-risk areas require evaluation of liquefaction potential and effective mitigation of the hazard posed to new development (Contra Costa County 2005a). Where improvements are proposed in even the generally moderate to low category, investigation of the hazard is routinely required. Where liquefiable sands are confirmed to be present, effective measures to avoid/control damage are a prerequisite to obtaining project approvals. Because the windswept ridge crests within the project site are in the generally low category, quantitative evaluation of liquefaction potential is not required.

Ground Failure and Landslides

In 1975, the USGS issued photo-interpretation maps of landslides and other surficial deposits of the County (scale: 1 inch = 2000 feet). That mapping is presented on pages 10–24 of the Safety Element (Contra Costa County 2005a). According to the map, there are landslides within the project site.

It should be recognized that the USGS slides are mapped solely on the basis of photointerpretation, without the benefit of a site visit or any subsurface data. The landslides are not classified on the basis of the activity status (i.e., active or dormant), depth of slide plane (shallow or deep seated), or type of landslide deposit. Nevertheless, the map fulfills its function, which is to red flag sites

that may be at risk of landslide damage, where detailed geologic and geotechnical investigations are required to evaluate risks and develop measures to reduce risks to a practical minimum. The Safety Element includes a number of policies that require evaluation of geologic hazards for land development projects proposed in areas of potential hazards. The Safety Element states that geologic conditions should be a primary determinant of land use (Contra Costa County 2005a).

3.5.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to geology and soils are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to geology, soils, and minerals would occur if the project would:

1. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:
    a. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of as known fault. Refer to Division of Mines and Geology Special Publication 42.
    b. Strong seismic ground shaking.
    c. Seismic-related ground failure, including liquefaction.
    d. Landslides.
2. Result in substantial soil erosion or the loss of topsoil.
3. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
4. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.
5. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.
6. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
7. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
8. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

3.5.4 Impacts Analysis

Impact 3.5-1. The project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

a) rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of as known fault. (Refer to Division of Mines and Geology Special Publication 42) (Less than Significant)

The proposed project site is not within an Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, and no mapped active faults are known to pass through the immediate project region. Therefore, the risk of ground rupture at the site is very low. The nearest Alquist-Priolo zone encompasses traces of the Greenville fault. The Greenville fault is mapped approximately 8 miles southwest of the proposed project site; the Concord and Calaveras faults pass approximately 21–24 miles west and northwest of the project site, respectively. These faults are considered capable of generating an earthquake of magnitude 6.5 to 7.0. Additionally, a seismically active blind thrust belt underlies the Coast Range–Great Valley geomorphic boundary, and passes through the eastern portion of the County. The precise location of the Great Valley fault system and associated blind-thrust faults are not well known because the earthquakes on this fault system do not result in fault rupture at the ground surface. Earthquakes associated with the Great Valley fault system include the 1983 Coalinga earthquake and 1985 Kettleman Hills earthquake, of magnitudes 6.7 and 6.1, respectively. Additionally, two greater than 6.0 magnitude earthquakes are believed to have occurred on the fault system in 1892 near Winters and Dixon.

The active faults may produce a range of ground shaking intensities at the project site which creates a risk of structural damage. However, County building inspectors would review the proposed project plans to ensure compliance with the existing and regularly amended seismic design provisions of the 2016 CBC, in order to reduce potential impacts from seismic ground shaking, including liquefaction. Considering there are no mapped active faults on the project site, the potential for surface fault rupture to affect the project and pose a hazard to nearby structures or people would be minimal. Therefore, the potential impact of the project to expose persons or structures to risk of ground rupture along a fault line is **less than significant**.

b) strong seismic ground shaking; (Less than Significant)

As stated in Section 3.5.1, Existing Conditions, the project site is underlain by Pliocene Bedrock and Older (Pleistocene) Alluvium, which according to the Safety Element, is considered to possess "moderately low damage susceptibility" (Contra Costa County 2005a). The risk of structural damage from ground shaking is regulated by the building codes and County Grading Ordinance.

The 2016 CBC requires uses of seismic parameters that allow structural engineering analysis for buildings to be based on soil profiles types and proximity to known active faults. Compliance with building and grading regulations can be expected to keep risks within generally acceptable limits, and thus people or structures would not be exposed to potential substantial adverse effects from seismic ground shaking. Therefore, impacts associated with the proposed project would be **less than significant**.

c) seismic-related ground failure, including liquefaction; (Less than Significant)

Liquefaction potential is discussed in the Safety Element. Areas with deep water tables and those underlain by well-consolidated ground materials typically have low or moderate liquefaction potentials. The Safety Element identifies the project site as "generally moderate to low" (Figure 10-5 in Contra Costa County 2005a). As discussed under Section 3.5.1, geologically young and water-saturated sandy sediments, such as those found in the extensive shoreline areas in western and northeastern County locations and the delta, are highly susceptible to liquefaction. The project site is underlain by primarily quaternary alluvium that is sometimes considered to be expansive. The County provides liquefaction potential based on geologic conditions, and a review of soils data from a number of sources (Contra Costa County 2005a).

As previously discussed, the project is required to comply with the CBC, which outlines specific design, engineering, and development standards for structures proposed in areas with unstable soils. Additionally, all new buildings and renovations would be subject to review and plan approval by the County Conservation and Development Department, prior to construction. The County building inspectors would also review project plans to ensure compliance with the seismic design provisions of the CBC. Compliance with the current regulations would ensure that all structures are designed and built to current standards to minimize impacts associated with seismic-related ground failure, including liquefaction. Therefore, impacts would be **less than significant.**

d) landslides. (Less than Significant)

Areas at risk from landslides include areas on or close to steep hills and steep road cuts or excavations, or areas where existing landslides have occurred. The existing topography of the site is relatively level, as the site is used for aircraft runways, which require little to no slope. The overall topography of the project site has a slight downward trend to the west in the northern portion of the site and a downward trend to the east in the southern portion of the site. The County does not recognize the project site to have landslide deposits, reclaimed areas, or filled reclaimed areas, nor to have slope areas over 26% (Contra Costa County 2005a). The project site is underlain by the Pliocene Bedrock and Older (Pleistocene) Alluvium, which is not considered prone to slope failure. As such, the project site is not in an area susceptible to landslides.

As previously discussed, the project is required to comply with the CBC, which outlines specific design, engineering, and development standards for structures proposed in areas with unstable soils. Additionally, all new buildings and renovations would be subject to review and plan approval by the County Conservation and Development Department, prior to construction. The County building inspectors would also review project plans to ensure compliance with the seismic design provisions of the CBC. Compliance with the current regulations would ensure that all structures are designed and built to current standards to minimize impacts associated with seismic-related ground failure, including liquefaction. Therefore, impacts would be **less than significant.**

Impact 3.5-2. The project would not result in substantial soil erosion or the loss of topsoil. (Less than Significant)

As discussed in Section 3.5.1.2, Site Geology, the project site is underlain by soils that are characterized as well-drained, moderately well drained, and somewhat poorly drained soils (USDA 1977). Runoff potential of the underlying soils are characterized as, medium, slow to medium, and slow, and the soil's potential for erosion is slight, slight to moderate, moderate, and moderate to low (USDA 1977). Demolition and construction activities associated with the proposed project, including vegetation removal, excavations, and grading, would temporarily expose underlying soils, thereby increasing the potential to cause soil erosion or the loss of topsoil. The effects of erosion are intensified with an increase in slope (as water moves faster, it gains momentum to carry more debris) and the narrowing of runoff channels (which increases the velocity of water).

During demolition, new construction, or renovation activities, the County would be required to implement erosion control measures stipulated in a Stormwater Pollution Prevention Plan, pursuant to the National Pollutant Discharge Elimination System discharge requirements (see Section 3.8, Hydrology and Water Quality, for details regarding Stormwater Pollution Prevention Plans). Therefore, during future demolition, new construction, and renovation activities, erosion induced stormwater discharges would be reduced to levels that are less than significant.

Upon completion of project construction, structures, roadways, and landscaping or revegetated areas would eventually cover any soils exposed during construction, thus minimizing the potential for erosion-induced siltation of adjacent waterways. As a result, impacts would be **less than significant**.

Impact 3.5-3. The project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse. (Less than Significant)

Landslides and other ground failures occur during earthquakes when triggered by the strain induced in soil and rock by the ground-shaking vibrations, and during non-earthquake conditions

most frequently during the rainy season. Slopes may suffer landslides, slumping, soil slips, and rockslides. As previously discussed, the proposed project site is underlain by Pliocene Bedrock and Older (Pleistocene) Alluvium, which possess the potential for expansive clays, hillside earthflows and unstable cut slopes that range from soft sandstone and silty clay loam to firm. Soils of this type, even if saturated, are too cohesive to liquefy during earthquake shaking.

Ground failure, such as lateral spreading and subsidence, occurs when stresses in the ground exceed the resistance of earth materials to deformation or rupture. This instability can be triggered by earthquake shaking or human-made changes, such as grading a steep slope or unstable soils. Considering the soil types do not possess high liquefaction susceptibility and the relatively low slope of the site, ground failure such as lateral spreading, subsidence, and liquefaction is not deemed to be a hazard for the proposed project site. The implication of the preliminary analysis is that the proposed project would not be located on a geologic unit or soil that is unstable potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

In accordance with the County General Plan, further more detailed future investigations is required for project development. The geotechnical study would be required to comply with applicable building codes and engineering standards, including any applicable amendments to the CBC contained in the County's Municipal Code. The project structures would be designed to either avoid or accommodate without issues small-scale instabilities such as shrink/swell behavior and load-induced and long-term soil settlement, among other issues.

Impact 3.5-4. The project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property. (Potentially Significant)

The Quaternary Alluvium underlying the project site possesses the potential for expansive clays (Contra Costa County 2005a). Expansive soils shrink and swell as a result of moisture changes that can cause pavements and structures founded on shallow foundations. This impact would be **potentially significant**. Building damage due to volume changes associated with expansive soils can be reduced by placing building slabs on select, granular fill and by use of rigid mat or post-tensioned slabs. Therefore, MM-GEO-1 would require the preparation and submittal of a geotechnical study, which would include more detailed information based on final designs that identify soil conditions, recommend foundation designs, and provide recommendation to mitigate for expansive soils.

Impact 3.5-5. The project may have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater. (Potentially Significant)

The project site is currently serviced by a 3,000-gallon septic tank and lift station that pumps to a leach field located southwest of the aircraft apron. Under proposed project conditions, one or a combination of the following scenarios may occur: the existing septic tank would be expanded to support the additional development areas on the project site, the existing septic system would be converted to a package wastewater treatment plant, and/or the project site would connect to the Byron Sanitary District system. Please refer to Chapter 3.14, Utilities, for additional information on alternatives for wastewater treatment.

As previously discussed under Impact 3.5-4, the underlying soils possesses expansive potential, which would be **potentially significant**. However, the project would not generally represent a significant hazard to life or safety, and hazards would be addressed through application of modern building codes and generally accepted professional engineering geologic principles and practice. As stated in MM-GEO-1, prior to the approval of any building or improvement plans, a geotechnical study would be prepared by a registered civil or geotechnical engineer, and submitted for review and approval to the County. The geotechnical study would include more detailed information based on final designs that identify soil conditions, recommend foundation designs, and provide recommendation to mitigate for expansive soils. The geotechnical study would be required to comply with applicable building codes and engineering standards, including any applicable amendments to the CBC contained in the County's municipal code. The project structures would be designed to either avoid or accommodate without issues small-scale instabilities such as shrink/swell behavior and load-induced and long-term soil settlement, among other issues.

Impact 3.5-6. The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. (Potentially Significant)

No unique geologic features have been identified through investigation of the geology and soils (see Section 3.5.1). Additionally, as discussed in Section 3.5.1.4, Paleontological Resources, no paleontological records or sites have been identified on the project site. The project site contains sedimentary units with moderate to high paleontological resources sensitivity; resources in previously undisturbed areas may be found as shallow as 5 to 10 feet. It is possible that paleontological resources would inadvertently be discovered during construction, which would be **potentially significant**. In the event that scientifically important paleontological are unearthed during grading activities, a paleontologist should be retained to evaluate the discovery and make a significance determination, and if significant, make recommendations for conservation, in accordance with MM GEO-2.

Impact 3.5-7. The project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. (No Impact)

As discussed in Section 3.5.1.4, the project site is mapped by the CGS as not containing MRZs. Therefore, there would be no significant impacts related to known mineral resources of value to the region and the residents of the state. **No impact** would occur.

Impact 3.5-8. The project would not result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. (No Impact)

As discussed in Section 3.5.1.4, the project site is not located within a County-designated mineral resource area. Therefore, there would be no significant impacts related to locally important mineral resources. **No impact** would occur.

3.5.5 Mitigation Measures

The following mitigation measure would reduce potentially significant impacts to levels below significance.

MM-GEO-1 Prior to the approval of any building or improvement plans, a geotechnical report shall be prepared by a registered civil or geotechnical engineer and submitted to the County Department of Conservation and Development by the applicant for that project. The report shall address the specific approach to development. This report shall: (A) provide specific criteria and standards for identifying suitable imported fill materials; (B) if import fills may be expansive or corrosive, provisions shall be made for the import of fill materials; (C) if import fills may be expansive or corrosive, provisions shall be made for testing of soils on rough-graded pads and providing design measures to avoid/control damage to foundations and buried utilities; (D) provide criteria for placement of engineered fill; (E) provide further evaluation of seismic settlement and other types of seismically induced ground failure by recognized methods appropriate to soil conditions discovered during subsurface investigation; (F) provide detailed evaluation of the compressibility of the alluvial soils and forecast the anticipated amount of total settlement and timing of settlement to occur or placing a surcharge on the site to speed settlement; (G) provide California Building Code seismic parameters; and (H) outline recommendations for geotechnical observation and testing services during site preparation-, grading-and foundation-related work. Improvement, grading, and building plans shall carry out the recommendations of the approved report.

MM-GEO-2 If paleontological resources (i.e., fossil bones, teeth, shells, plants, or trace fossils) are exposed during construction activities for the project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified paleontologist, meeting the Society of Vertebrate Paleontology standards, can evaluate the significance of the find and determine whether or not additional study is warranted. The paleontologist shall be empowered to temporarily stop or redirect grading activities to allow removal of abundant or large paleontological resources. Depending upon the significance of the find, the qualified paleontologist may simply remove and record the find and allow work to continue. If the discovery proves significant under the California Environmental Quality Act, additional work, such as data recovery and extended specimen removal, may be warranted. The qualified paleontologist shall prepare a Paleontological Resources Impact Mitigation Program for the project, which outlines where paleontological monitoring is required based on the location of the discovery, geotechnical reports, and construction plans. The qualified paleontologist shall also be required to curate specimens in a repository with permanent retrievable storage and submit a final written report to the repository and lead agency for review.

3.5.6 Level of Significance After Mitigation

Implementation of MM-GEO-1, which requires the preparation and approval of a geotechnical report, would reduce Impact 3.5-4 and Impact 3.5-5 to **less than significant**. Implementation of MM-GEO-2 would reduce Impact 3.5-6 to **less than significant**.

3.5.7 Cumulative Impacts

As discussed above, the proposed project would not affect any known seismic or other geological hazards. There may be site-specific occurrences of soil that is expansive or prone to liquefaction, but the impact of these potential soil conditions would be reduced to less than significant with the implementation of MM-GEO-1. There are no projects anticipated under the County General Plan that would combine or interact with the proposed project to create a cumulative impact. Similarly, as there are no known paleontological resources in or near the project site, the potential for cumulative impacts would be **less than significant**.

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3.6 GREENHOUSE GAS EMISSIONS

This section describes the existing setting of the Byron Airport Development Program (project) site related to greenhouse gas (GHG) emissions and climate change, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

3.6.1 Existing Conditions

3.6.1.1 Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period of time (decades or longer). Earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: Short-wave radiation emitted by the Sun is absorbed by the Earth, the Earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the Earth. The greenhouse effect is a natural process that contributes to regulating Earth's temperature and creates a pleasant, livable environment on Earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the Earth's surface temperature to rise.

The scientific record of the Earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2013). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2013).

Continued emissions of GHGs will cause further warming and changes in all components of the climate system, which is discussed further in Section 3.6.3, Thresholds of Significance and Methodology, below.

3.6.1.2 Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g) for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (see also 14 CCR 15364.5).[1] Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.[2]

Carbon Dioxide

CO_2 is a naturally occurring gas and a byproduct of human activities and is the principal anthropogenic GHG that affects Earth's radiative balance. Natural sources of CO_2 include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO_2 include the combustion of fuels such as coal, oil, natural gas, and wood and changes in land use.

Methane

CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. CH_4 is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

[1] Climate forcing substances include GHGs and other substances such as black carbon and aerosols. This discussion focuses on the seven GHGs identified in the California Health and Safety Code 38505 as impacts associated with other climate forcing substances are not evaluated herein.

[2] The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (IPCC 1995), IPCC Fourth Assessment Report (2007), California Air Resources Board's Glossary of Terms Used in GHG Inventories (2018a), and EPA's Climate Change (2017).

Nitrous Oxide

N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers; manure management; industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants); vehicle emissions; and using N_2O as a propellant (such as in rockets, racecars, and aerosol sprays).

Fluorinated Gases

Fluorinated gases are powerful synthetic GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone (O_3) depleting substances (e.g., chlorofluorocarbons [CFCs], hydrochlorofluorocarbons [HCFCs], and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons:** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to O_3 depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as byproducts of industrial processes and are used in manufacturing.
- **Perfluorocarbons:** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the O_3 depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride:** SF_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** Nitrogen trifluoride is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons

CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons

HCFCs are a large group of compounds, whose structure is very close to that of CFCs—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon

Black carbon is a component of fine particulate matter, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived substance that varies spatially, which makes it difficult to quantify the global warming potential (GWP). Diesel particulate matter (DPM) emissions are a major source of black carbon and are toxic air contaminants that have been regulated and controlled in California for several decades to protect public health. In relation to declining DPM as a result of the California Air Resources Board (CARB) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

Water Vapor

The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and maintains a climate necessary for life.

Ozone

Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric O_3, which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric O_3, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

Aerosols

Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

3.6.1.3 Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the Earth (e.g., affect cloud formation or albedo) (EPA 2017). The Intergovernmental Panel on Climate Change developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO_2; therefore, GWP-weighted emissions are measured in metric tons (MT) of CO_2 equivalent (CO_2e).

The California Emissions Estimator Model (CalEEMod), Version 2016.3.2, assumes that the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2), and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC 2007).

3.6.1.4 Greenhouse Gas Inventories and Climate Change Conditions

Global Inventory

Anthropogenic GHG emissions worldwide in 2016 (the most recent year for which data is available) totaled approximately 49,300 million metric tons (MMT) of CO_2e, excluding land use change and forestry (PBL 2017). Six countries—China, the United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65% of the total global emissions, or approximately 32,255 MMT CO_2e (PBL 2017). Table 3.6-1 presents the top GHG-emissions-producing countries.

Table 3.6-1
Six Top Greenhouse Gas Producer Countries and the European Union

Emitting Countries (listed in order of emissions)	Greenhouse Gas Emissions (MMT CO2e)
China	13,010
United States	6,430
European Union	4,430
India	3,650

Table 3.6-1
Six Top Greenhouse Gas Producer Countries and the European Union

Emitting Countries (listed in order of emissions)	Greenhouse Gas Emissions (MMT CO2e)
Russian Federation	2,220
Japan	1,400
Brazil	1,115
Total	**32,255**

Source: PBL 2017.
Note: MMT CO_2e = million metric tons of carbon dioxide equivalent.

National and State Inventories

Per the U.S. Environmental Protection Agency (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2016 (EPA 2018), total United States GHG emissions were approximately 6,511.3 MMT CO_2e in 2016. The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 81.6% of total GHG emissions (5,310.9 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 93.5% of CO_2 emissions in 2016 (4,966.0 MMT CO_2e). Relative to 1990, gross United States GHG emissions in 2016 are higher by 2.4%; down from a high of 15.7% above 1990 levels in 2007. GHG emissions decreased from 2015 to 2016 by 1.9% (126.8 MMT CO_2e) and overall, net emissions in 2016 were 11.1% below 2005 levels (EPA 2018).

According to California's 2000–2016 GHG emissions inventory (2018 edition), California emitted 429.4 MMT CO_2e in 2016, including emissions resulting from out-of-state electrical generation (CARB 2018b). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high GWP substances, and recycling and waste. The California GHG emission source categories (as defined in CARB's 2008 Scoping Plan) and their relative contributions in 2016 are presented in Table 3.6-2.

Table 3.6-2
Greenhouse Gas Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO2e)	Percent of Totala
Transportation	169.38	39%
Industrial Uses[b]	89.61	21%
Electricity Generation[c]	68.58	16%
Residential and Commercial Uses	39.36	9%
Agriculture	33.84	8%
High GWP Substances	19.78	5%
Recycling and Waste	8.81	2%
Totals	**429.40**	**100%**

Source: CARB 2018b.

Notes: GHG = greenhouse gas; MMT CO_2e = million metric tons of carbon dioxide equivalent; GWP = global warming potential.
Emissions reflect 2016 California GHG inventory.

[a] Percentage of total has been rounded and total may not sum due to rounding.

[b] The Aliso Canyon natural gas leak event released 1.96 MMT CO_2e of unanticipated emissions in 2015 and 0.53 MMT CO_2e in 2016. These leak emissions will be fully mitigated according to legal settlement and are tracked separately from routine inventory emissions.

[c] Includes emissions associated with imported electricity, which account for 26.28 MMT CO_2e.

Between 2000 and 2016, per capita GHG emissions in California have dropped from a peak of 14.0 MT per person in 2001 to 10.8 MT per person in 2016, representing a 23% decrease. In addition, total GHG emissions in 2016 were approximately 12 MMT CO_2e less than 2015 emissions. The declining trend in GHG emissions, coupled with programs that will continue to provide additional GHG reductions going forward, demonstrates that California will continue to reduce emissions below the 2020 target of 431 MT CO_2e (CARB 2018b).

Contra Costa County Inventory

Total GHG emissions for the unincorporated areas of Contra Costa County (County) in 2005 and 2013 were estimated at approximately 1,403,610 MT CO_2e and 1,392,450 MT CO_2e, respectively. The 2013 inventory represents the most recent year of data, with the transportation sector as the primary contributor, generating 47% of GHG emissions. Other sources (with percentage of total GHG emissions) include residential energy (19%), landfills (14%), nonresidential energy (9%), off-road equipment (5%), agriculture (4%), solid waste (2%), water and wastewater (1%), and Bay Area Rapid Transit (less than 1%) (Contra Costa County 2015).

Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 Intergovernmental Panel on Climate Change Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, and rising sea levels (IPCC 2014).

In California, climate change impacts have the potential to affect sea level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, and electricity demand and supply (CCCC 2006). The primary effect of global climate change has been a 0.2°C rise in average global tropospheric temperature per decade, determined from meteorological measurements worldwide between 1990 and 2005. Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. A warming of about 0.2°C (0.36°F) per decade is projected, and there are identifiable signs that global warming could be taking place.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The average temperatures in California have increased, leading to more extreme hot days and fewer cold nights. Shifts in the water cycle have been observed, with less winter precipitation falling as snow, and both snowmelt and rainwater running off earlier in the year. Sea levels have risen, and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

An increase in annual average temperature is a reasonably foreseeable effect of climate change. Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada (CCCC 2012). By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1°F to 8.6°F, depending on emissions levels. Springtime warming—a critical influence on snowmelt—will be particularly pronounced. Summer temperatures will rise more than winter temperatures, and the increases will be greater in inland California, compared to the coast. Heat waves will be more frequent, hotter, and longer. There will be fewer extremely cold nights (CCCC 2012). A decline of Sierra Nevada snowpack, which accounts for approximately half of the surface water storage in California, by 30% to as much as 90% is predicted over the next 100 years (CAT 2006).

Model projections for precipitation over California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. For the first time, however, several of the improved climate models shift toward drier conditions by the mid-to-late twenty-first century in central, and most notably, Southern California. By the late century, all projections show drying, and half of them suggest 30-year average precipitation will decline by more than 10% below the historical average (CCCC 2012).

A summary of current and future climate change impacts to resource areas in California, as discussed in Safeguarding California: Reducing Climate Risk (CNRA 2014), is provided below.

Agriculture

Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought and destructive storm events; significant shifts in water availably and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species, weeds, agricultural pests, and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

Biodiversity and Habitat

Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes; range shift and novel combinations of species; pathogens, parasites and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; and threshold effects (i.e., a change in the ecosystem that results in a "tipping point" beyond which irreversible damage or loss has occurs).

Energy

Specific climate change challenges for the energy sector include temperature, fluctuating precipitation patterns, increasing extreme weather events, and sea level rise.

Forestry

The most significant climate change related risk to forests is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large scale mortalities and, combined with increasing temperatures, have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

Ocean and Coastal Ecosystems and Resources

Sea level rise, changing ocean conditions and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea level rise in addition to more frequent and severe coastal storms and erosion are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities as well as negatively impacting the coastal recreational assets such as beaches and tidal wetlands.

Public Health

Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health primarily through potential for altered water supplies and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness such as asthma and allergies.

Transportation

While the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of peoples and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

Water

Climate change could seriously impact the timing, form, amount of precipitation, runoff patterns, and frequency and severity of precipitation events. Higher temperatures reduce the amount of snowpack and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation. Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the winter time. Increased risk of flooding has a variety of public health concerns including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively affect groundwater reserves and result in increased overdraft and subsidence. The higher risk of wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

In March 2016, the California Natural Resources Agency (CNRA) released Safeguarding California: Implementation Action Plans, a document that shows how California is acting to convert the recommendations contained in the 2014 Safeguarding California plan into action (CNRA 2016). Additionally, the CNRA released Safeguarding California Plan: 2018 Update in January 2018, which provides a roadmap for state agencies to protect communities, infrastructure, services, and the natural environment from climate change impacts. The 2018 Safeguarding California Plan includes 69 recommendations across 11 sectors and more than 1,000 on-going actions and next steps developed by scientific and policy experts across 38 state agencies (CNRA 2018). As with previous state adaptation plans, the 2018 Update addresses the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming.

3.6.2 Relevant Plans, Policies, and Ordinances

Federal

Massachusetts v. EPA

In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The Administrator found that elevated concentrations of GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The Administrator further found the combined emissions of GHGs—CO_2, CH_4, N_2O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the "cause or contribute finding."

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions:

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020, and direct National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks.
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances.

Federal Vehicle Standards

In 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush administration issued Executive Order (EO) 13432 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams/mile of CO_2 in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200), and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018. The standards for CO_2 emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6%–23% over the 2010 baselines (76 FR 57106–57513).

In August 2016, the EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards are expected to lower CO_2 emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

State

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

The state has taken a number of actions to address climate change. These include EOs, legislation, and CARB plans and requirements. These are summarized below.

Executive Order S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010.

Assembly Bill 32

In furtherance of the goals established in EO S-3-05, the legislature enacted AB 32. The bill is referred to as the California Global Warming Solutions Act of 2006 (September 2006). AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state's long-range climate objectives.

Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the senate and three members of the assembly, in order to provide on-going oversight over implementation of the state's climate policies. AB 197 also added two members of the legislature to the state board as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the scoping plan.

California Air Resources Board's 2007 Statewide Limit

In 2007, in accordance with California Health and Safety Code, Section 38550, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO_2e).

California Air Resources Board's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code, Section 38561[a]), and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan. The Climate Change Proposed Scoping Plan: A Framework for Change (Scoping Plan) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
2. Achieving a statewide renewables energy mix of 33%
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 CCR Section 95480 et seq.)
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a

reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012 (CARB 2014). The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level, using more recent GWPs identified by the Intergovernmental Panel on Climate Change, from 427 MMT CO_2e to 431 MMT CO_2e.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In summer 2016, the legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In January 2017, CARB released the 2017 Climate Change Scoping Plan Update (Second Update) for public review and comment (CARB 2017a). The Second Update builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' known commitments include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the LCFS, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the cap-and-trade program and a measure to reduce GHGs from refineries by 20%.

For local governments, the Second Update replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which are developed around the scientifically based levels necessary to limit global warming below 2°C. The Second Update recognized the benefits of local government GHG planning (e.g., through climate action plans [CAPs]) and provided more information regarding tools CARB is working on to support those efforts. It also recognizes the California Environmental Quality Act (CEQA) streamlining provisions for project-level review where there is a legally adequate CAP. The Second Update was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it meets the general policies in reducing GHG emissions in order to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goal to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment.

California Air Resources Board's Regulations for the Mandatory Reporting of Greenhouse Gas Emissions

CARB's Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that EPA promulgated in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40, CFR Part 98). Specifically, Section 95100(c) of the Mandatory Reporting Regulation incorporated those requirements that EPA promulgated in the Federal Register on October 30, 2009; July 12, 2010; September 22, 2010; October 28, 2010; November 30, 2010; December 17, 2010; and April 25, 2011. In general, entities subject to the Mandatory Reporting Regulation that emit over 10,000 MT CO_2e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MT CO_2e per year threshold are required to have their GHG emission report verified by a CARB-accredited third-party.

Executive Order B-18-12

EO B-18-12 (April 2012) directed state agencies, departments, and other entities under the governor's executive authority to take action to reduce entity-wide GHG emissions by at least 10% by 2015 and 20% by 2020, as measured against a 2010 baseline. EO B-18-12 also established goals for existing state buildings for reducing grid-based energy purchases and water use.

Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO_2e. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill 605 and Senate Bill 1383

SB 605 (2014) requires CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state, and SB 1383 (2016) requires CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of short-lived climate pollutants (40% below 2013 levels by 2030 for CH_4 and HFCs, and 50% below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy in March 2017. The Short-Lived Climate Pollutant Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH_4, and fluorinated gases (CARB 2017b).

Building Energy

Title 24, Part 6

Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code [PRC], Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, in order to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California PRC, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California PRC, Section 25402[d]) and cost effectiveness (California PRC, Sections 25402[b][2] and [b][3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The current Title 24 standards are the 2019 Title 24 building energy efficiency standards, which became effective January 1, 2020.

Title 24, Part 11

In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen, and establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings and schools and hospitals. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

Title 20

Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer's demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

Senate Bill 1

SB 1 (August 2006) established a $3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the PRC, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet

minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed Go Solar California, was previously titled Million Solar Roofs.

Assembly Bill 1470 (Solar Water Heating)

This bill established the Solar Water Heating and Efficiency Act of 2007. The bill makes findings and declarations of the legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand.

Renewable Energy and Energy Procurement

Senate Bill 1078

SB 1078 (September 2002) established the Renewables Portfolio Standard program, which required an annual increase in renewable generation by the utilities equivalent to at least 1% of sales, with an aggregate goal of 20% by 2017. This goal was subsequently accelerated, requiring utilities to obtain 20% of their power from renewable sources by 2010 (see SB 107, EO S-14-08, and S-21-09).

Senate Bill 1368

SB 1368 (September 2006) required the CEC to develop and adopt regulations for GHG emission performance standards for the long-term procurement of electricity by local publicly owned utilities. These standards must be consistent with the standards adopted by the California Public Utilities Commission (CPUC).

Assembly Bill 1109

Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting and to reduce electricity consumption 50% for indoor residential lighting and 25% for indoor commercial lighting.

Executive Order S-14-08

EO S-14-08 (November 2008) focused on the contribution of renewable energy sources to meet the electrical needs of California while reducing the GHG emissions from the electrical sector. This EO required that all retail suppliers of electricity in California serve 33% of their load with renewable energy by 2020. Furthermore, the EO directed state agencies to take appropriate actions to facilitate reaching this target. The CNRA, through collaboration with CEC and the California Department of Fish and Wildlife (formerly the California Department of Fish and Game), was directed to lead this effort.

Executive Order S-21-09 and Senate Bill X1-2

EO S-21-09 (September 2009) directed CARB to adopt a regulation consistent with the goal of EO S-14-08 by July 31, 2010. CARB was further directed to work with CPUC and CEC to ensure that the regulation built upon the Renewables Portfolio Standard program and was applicable to investor-owned utilities, publicly owned utilities, direct access providers, and community choice providers. Under this order, CARB was to give the highest priority to those renewable resources that provide the greatest environmental benefits with the least environmental costs and impacts on public health and can be developed the most quickly in support of reliable, efficient, cost-effective electricity system operations. On September 23, 2010, CARB initially approved regulations to implement a Renewable Electricity Standard. However, this regulation was not finalized because of subsequent legislation (SB X1-2) signed by Governor Brown in April 2011.

SB X1-2 expanded the Renewables Portfolio Standard by establishing a renewable energy target of 20% of the total electricity sold to retail customers in California per year by December 31, 2013, and 33% by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (30 megawatts or less), digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

SB X1-2 applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must meet the renewable energy goals listed above.

Senate Bill 350

SB 350 (October 2015) further expanded the Renewables Portfolio Standard by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the CPUC, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

Senate Bill 100

SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-

carbon resources supply 100% of the retail sales of electricity to California. This bill requires that the achievement of 100% zero-carbon electricity resources does not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Mobile Sources

Assembly Bill 1493

AB 1493 (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22% in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30%.

Heavy Duty Diesel Truck and Bus Regulation

CARB adopted the final Heavy Duty Truck and Bus Regulation, Title 13, Division 3, Chapter 1, Section 2025, on December 31, 2014, to reduce DPM and oxides of nitrogen emissions from heavy-duty diesel vehicles. The rule requires DPM filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. The rule will require nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (13 CCR 2485).

Executive Order S-1-07

EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining LCFS for GHG emissions measured in CO_2e grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

Senate Bill 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional Metropolitan Planning Organizations (MPOs) to prepare a Sustainable Communities Strategy as part of their Regional Transportation Plan that will achieve the GHG reduction targets set by CARB. If an MPO is unable to devise a Sustainable Communities Strategy to achieve the GHG reduction target, the MPO must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to Government Code, Section 65080(b)(2)(K), a Sustainable Communities Strategy does not (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In September 2010, CARB adopted the SB 375 targets for the regional MPOs. CARB set a target of 7% per capita reduction by 2020 and a 15% per capita reduction by 2035 for the Bay Area. The Association of Bay Area Governments and the Metropolitan Transportation Commission, which is the MPO for the Bay Area, adopted the Plan Bay Area: Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2017– 2040 (Plan Bay Area) in July 2017 (ABAG and MTC 2017). The Plan Bay Area is a long-range plan for transportation projects within the planning area and established 13 performance targets covering three broad areas (the environment, equity, and the economy) to achieve the following goals/outcomes: climate protection, adequate housing, healthy and safe communities, open space and agricultural preservation, equitable access, economic vitality, and transportation system effectiveness. Two of these targets are mandatory to comply with SB 375, and the Plan Bay Area establishes strategies to achieve 16% reduction per capita in GHG emissions from light-trucks and cars by 2035 (climate protection goal), and plans to house 100% of the region's projected growth (from a 2010 baseline year) by income level without displacing current low-income residents (adequate housing goal).

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars Program (January 2012) is a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce

smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2012). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The Zero-Emissions Vehicle Program will act as the focused technology of the Advanced Clean Cars Program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid EVs in the 2018 to 2025 model years.

Executive Order B-16-12

EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It ordered CARB, CEC, CPUC, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Assembly Bill 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of EV charging stations, as defined, through the issuance of specified permits, unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the planning commission, as specified. The bill provided that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of EV charging stations is a matter of statewide concern. The bill required EV charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for EV charging stations, as specified. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

Water

Executive Order B-29-15

In response to the on-going drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

Solid Waste

California Integrated Solid Waste Management Act – Assembly Bill 939

Assembly Bill 939, passed in 1989, mandated a focus on the conservation of natural resources. Cities and counties were required to create comprehensive source reduction, recycling, and composting programs (Public Resources Code Section 40000 et seq.). The goal of these programs is to reduce the amount of waste sent to landfills by 50%. The focus of this bill was a major change, shifting the emphasis from landfill disposal toward waste reduction, recycling, and composting whenever possible. This approach aims to conserve natural resources, save energy, decrease pollution, and provide new jobs in the waste industry.

Assembly Bill 939 established the following priorities for waste management:

- Waste reduction
- Recycling and composting
- Controlled combustion of waste to generate electricity
- Landfilling

Mandatory Commercial Recycling— AB 341

AB 341 was adopted as part of the AB 32 Scoping Plan by the Air Resources Board pursuant to the California Global Warming Solutions Act on January 17, 2012. The legislation declares as a policy goal of the state that not less than 75% of solid waste generated be source reduced, recycled, or composted by the year 2020. The regulation requires businesses that generate 4 cubic yards or more of commercial solid waste per week and multifamily residential dwellings of five units or more to arrange for recycling services. The measure focuses on increasing commercial waste diversion to reduce greenhouse gas emissions.

Mandatory Commercial Organics Recycling—AB 1826

AB 1826 was enacted in October 2014 in order to divert commercial organic waste from landfills. The measure requires businesses and multifamily residential dwellings of five or more units to recycle organic waste on and after April 1, 2016 depending on how much solid waste they generate per week. The law includes phasing of requirements over time to ensure that the minimum threshold of organic waste generation by businesses decreases gradually.

Mandatory Organics Recycling—SB 1383

Senate Bill 1383 was passed in September 2016, which established methane emissions reduction targets to reduce emissions from short-lived climate pollutants. SB 1383 aims to achieve a 50 percent reduction in the 2014 level of statewide organic waste disposal by 2020 and a 75 percent reduction by 2025. Cities and Counties are required to implement comprehensive organic waste diversion programs that focus on recovering edible food for human consumption and diverting organic material from the landfill. The goal is to reduce greenhouse gas emissions, increase organic waste diversion from landfills, feed people, and maximize use of existing resources. SB 1383 established the following requirements for Jurisdictions:

- Mandatory organics collection program
- Container contamination minimization
- Container color requirement
- Container labeling requirement
- Edible Food Recovery Program
- Organic waste recycling capacity planning
- Procurement of recovered organic waste products
- Enforcement Program

Other State Actions

Senate Bill 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures

necessary to reduce GHG emissions to a level that is less than significant. The CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. The CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009).

With respect to GHG emissions, the CEQA Guidelines state in Section 15064.4(a) that lead agencies "should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or performance based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting, (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea level rise. Therefore, the EO directs state agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009), and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of Safeguarding California:

Implementation Action Plans followed in March 2016 (CNRA 2016). In January 2018, the CNRA released Safeguarding California Plan: 2018 Update, which communicates current and needed actions that state government should take to build climate change resiliency (CNRA 2018).

Local

Contra Costa County

Contra Costa County General Plan.

The Conservation Element of the Contra Costa County General Plan (Contra Costa County 2005) contains the following goals and policies that would apply to the project.

Goal 8-K To encourage the use of renewable resources where they are compatible with the maintenance of environmental quality.

Goal 8-L To reduce energy use in the County to avoid risks of air pollution and energy shortages which could prevent orderly development.

Goal 8-AB To continue to support Federal, State and regional efforts to reduce air pollution in order to protect human and environmental health.

Policy 8-49 Commercial wind farms shall be restricted to the south Byron Hills portion of the County.

Policy 8-51 All new wind turbine applications shall comply, at a minimum, with the site-specific criteria included in the wind energy conversion systems regulations in the County Ordinance Code.

Policy 8-100 Vehicular emissions shall be reduced throughout the County.

Policy 8-101 A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.

Policy 8-102 A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

Contra Costa County Climate Action Plan.

In 2015, the County adopted the Contra Costa County CAP, which provides a GHG emissions inventory, GHG forecast, GHG reduction target, and a set of strategies to respond to local contributions to climate change. Based on both the state CEQA Guidelines and Bay Area Air

Quality Management District (BAAQMD) criteria, the CAP is considered a qualified GHG reduction strategy (Contra Costa County 2015). The CAP establishes the County GHG reduction goal of reducing GHGs by 15% below year 2005 levels by 2020, consistent with AB 32. In addition, the CAP forecasts the potential GHG emissions and potential GHG reductions from proposed measures through year 2035. The CAP outlines the reduction efforts in six major GHG source areas, including energy efficiency and conservation, renewable energy, land use and transportation, solid waste, water conservation, and government operations. In addition, Appendix E of the County's CAP includes a consistency checklist through which projects can demonstrate consistency and thereby conclude that their impacts related to GHG emissions would be less than significant under CEQA (Appendix F of this Environmental Impact Report).

3.6.3 Thresholds of Significance and Methodology

The significance criteria used to evaluate the project impacts to GHGs/climate change are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to greenhouse gas emissions would occur if the project would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated on a project level under CEQA.

The CEQA Guidelines do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009). The State of California has not adopted emission-based thresholds for GHG emissions under CEQA. The Governor's Office of Planning and Research's

Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review* (OPR 2008) states the following:

> Public agencies are encouraged but not required to adopt thresholds of significance for environmental impacts. Even in the absence of clearly defined thresholds for GHG emissions, the law requires that such emissions from CEQA projects must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.

Furthermore, the advisory document indicates that "[i]n the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact', individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

Separate thresholds of significance have been established by the BAAQMD for operational emissions from stationary sources (e.g., generators, furnaces, boilers) and nonstationary sources (e.g., on-road vehicles) (BAAQMD 2017). The threshold for stationary sources is 10,000 MT CO_2e per year (i.e., emissions above this level may be significant). For nonstationary sources, the following three separate thresholds have been established:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be significant).
- 1,100 MT CO_2e per year (i.e., emissions above this level may be significant).
- 4.6 MT CO_2e per service population per year (i.e., emissions above this level may be significant). (Service population is the sum of residents plus employees expected for a development project.)

As discussed previously, the County CAP is considered a qualified GHG reduction strategy based on both the state CEQA Guidelines and BAAQMD criteria (Contra Costa County 2015). Using the County's current CAP consistency review checklist (Appendix E of the CAP, Appendix F of this document) as a guide, this analysis evaluates whether the proposed project would comply with the County's CAP. A "yes" or "not applicable" response to each of the CAP Consistency Review Checklist questions would result in a determination that the proposed project complies with the County's CAP. A "no" response demonstrates the project is not fully compliant with the County's CAP and additional analysis would be required.

3.6.3.1 Methodology

Construction

Emissions from project construction activities were estimated using the CalEEMod Version 2016.3.2. Construction of the project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road vendor (material delivery) trucks, and worker vehicles. All details for construction criteria air pollutants discussed in Section 3.2, Air Quality, are also applicable for the estimation of construction-related GHG emissions. As such, see Section 3.2 for a discussion of construction emissions calculation methodology and assumptions.

Operations

Emissions from the operational phase of the project were estimated using CalEEMod Version 2016.3.2. Operational year 2029 was assumed based on the first full year of operations. During long-term operations, the project would generate air pollutants from mobile, energy, and area sources. Traffic trips were estimated based on the land uses specified in Chapter 2, Project Description, of this Environmental Impact Report (EIR), and by adjusting default weekday trip rates in CalEEMod to match those included in the Transportation Impact Analysis Report (Appendix H) for the land use types.[3] The same adjustment factors used for the weekday trip generation were applied to the default Saturday and Sunday trip rates in CalEEMod. Increased trip lengths for potential customers based on the rural location of the project, as well as the project specific vehicle-miles-traveled (VMT) for employees, as described in Chapter 3.13, Transportation, of this EIR. Non-work trip lengths were increased to account for potentially greater travel distance for deliveries. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Default CalEEMod assumptions were used for building and lighting electricity use, generation of electricity associated with water supply, treatment, distribution and wastewater treatment, natural gas combustion, and area sources (i.e., landscaping, consumer products, and architectural coatings for building maintenance). Solid waste disposal was adjusted to account for a 50% solid waste diversion rate consistent with AB 939 compliance. Energy use associated with the airport storage facilities was assumed to be equivalent to a warehouse.

In addition, per the CEC Impact Analysis for the 2019 Update to the California Energy Efficiency Standards for Residential and Non-Residential Buildings, the first-year savings for newly constructed nonresidential buildings are 197 gigawatt hours of electricity, 76.6 megawatt of demand, and 0.27 million therms of gas, representing reductions from the 2016 Title 24 standard

[3] The Logistics/ Warehouse/ Distribution land use was modeled in CalEEMod with "Unrefrigerated Warehouse – No Rail" and "Unrefrigerated Warehouse – With Rail" in order to delineate fleet mix and trip lengths for employees versus haul trucks, with 69% of trips assumed to be employees and 31% assumed to be trucks, based on the "Warehouse Truck Trip Study Data Results and Usage" (South Coast Air Quality Management District 2014).

of 10.7%, 9%, and 1%, respectively (CEC 2018a). To take into account energy reductions associated with compliance with 2019 Title 24, the CalEEMod Title 24 electricity and natural gas values were reduced by 10.7% and 1%, respectively, for all project buildings. The applied reductions are anticipated to be conservative as in general, nonresidential buildings built to the 2019 standards are anticipated to use an estimated 30% less energy than those built to the 2016 standards (CEC 2018b).

3.6.4 Impacts Analysis

Impact 3.6-1. The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. (Potentially Significant)

The project would involve the construction and operation of approximately 274,000 square feet of logistics/warehouse/distribution buildings, 213,000 square feet of light industry/business park, 81,000 square feet of office uses, 91,000 square feet of commercial uses, 128,000 square feet of airport storage, 154,000 square feet of aviation-related buildings, and associated parking. In addition, the project would require 0.89 miles of roadway expansion and 2.6 miles of water infrastructure installation. Construction is anticipated to take approximately 10 years to complete. Total construction GHG emissions were estimated for all project components, including roadway improvements and water infrastructure, and amortized assuming a 30-year project lifetime. Long-term operational emissions would occur over the life of the project, with complete project build-out operations beginning in year 2029. CalEEMod was used to estimate GHG emissions from motor vehicle trips, grid electricity usage, solid waste, and other sources (including area sources and water/wastewater conveyance). These emissions are depicted in Table 3.6-3 for disclosure, with detailed model outputs and assumptions included in Appendix C.

Table 3.6-3
Estimated Annual Operational Greenhouse Gas Emissions

Emissions Source	CO2e (MT/yr)
Project Construction	
Amortized Construction Emissions	451.26
Project Operations	
Area	0.04
Energy	1,321.98
Mobile	12,976.55
Solid Waste	252.42
Water Supply and Wastewater	303.18
Total Operational Emissions	**14,854.17**
Operations + Amortized Construction Total*	**15,305.43**

Notes: CO_2e = carbon dioxide-equivalent; MT/year = metric tons per year.

* Total emissions may not sum due to rounding. Project GHG emissions are based on the "Mitigated" CalEEMod outputs in order to incorporate the 50% solid waste diversion rate consistent with AB 939 compliance, even though this measure is not considered a separate mitigation measure.

As depicted in Table 3.6-3 above, the project would result in an increase of GHG emissions, primarily associated with vehicular traffic (mobile sources) and energy use. However, in order to determine significance, the project was compared to the County's CAP consistency checklist. The County's CAP consistency checklist includes criteria against which a project must be evaluated. Projects that are consistent with the applicable criteria are considered consistent with the County's CAP and would not have a significant GHG impact. As shown in the completed CAP Checklist in Appendix F, the project would not meet the following County CAP requirements:

- EE 1: New nonresidential development will install high efficiency appliances and insulation.
- RE 1: New residential and nonresidential development will meet the standards to be solar ready as defined by the California Building Standards Code.
- LUT 2: New multifamily (greater than five units) and nonresidential (greater than 10,000 square feet) developments will provide EV charging stations in designated parking spots.
- LUT 4: New residential and nonresidential development will be located within one half-mile of a Bay Area Rapid Transit or Amtrak station, or within one quarter-mile of a bus station.

Since the project would not meet the applicable CAP consistency checklist criteria, it would be considered inconsistent with the County's CAP without mitigation. As such, the project would have a **potentially significant** impact on climate change.

Impact 3.6-2. The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. (Potentially Significant)

The Scoping Plan, approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the CEQA Guidelines, the CNRA observed that "the [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., LCFS), among others. To the extent that these regulations are applicable to the project, the project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law.

Regarding consistency with SB 32 (goal of reducing GHG emissions to 40% below 1990 levels by 2030) and EO S-3-05 (goal of reducing GHG emissions to 80% below 1990 levels by 2050), there are no established protocols or thresholds of significance for that future-year analysis. However, CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the First Update that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions to 80% below 1990 levels, the First Update states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under Assembly Bill 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80% below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that the state is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the Second Update, which states (CARB 2017a),

> This Plan draws from the experiences in developing and implementing previous plans to present a path to reaching California's 2030 GHG reduction target. The Plan is a package of economically viable and technologically feasible actions to not just keep California on track to achieve its 2030 target, but stay on track for a low- to zero-carbon economy by involving every part of the state.

The 2017 Scoping Plan also states that although "the Scoping Plan charts the path to achieving the 2030 GHG emissions reduction target, we also need momentum to propel us to the 2050 statewide GHG target (80% below 1990 levels). In developing this Scoping Plan, we considered what policies are needed to meet our mid-term and long-term goals" (CARB 2017a).

With respect to future GHG targets under SB 32 and EO S-3-05, CARB has made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary, beyond the AB 32 horizon year of 2020, to meet SB 32's 40% reduction target by 2030 and EO S-3-05's 80% reduction target by 2050; this legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets. However, as described in Impact 3.6-1, the project would not be consistent with the County's CAP, which is considered a qualified GHG reduction plan pursuant to CEQA, and established based on the goal of AB 32 to reduce statewide emissions to 1990 levels by 2020.

Therefore, the project would also be considered inconsistent with implementation of any of the above-described GHG reduction goals for 2030 or 2050.

Based on the above considerations, the project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be **potentially significant**.

3.6.5 Mitigation Measures

The following mitigation measures would reduce potentially significant impacts during operation. These measures would be applied to individual development projects implemented under the Byron Airport Development Program. As a conservative approach, the reductions from Mitigation Measure (MM) GHG-1, MM-GHG-2, and MM-GHG-3 were not quantified due to the lack of clarity on the quantity of reductions associated with these mitigation measures.

MM-GHG-1 The individual development projects shall include the following transit-oriented and alternative transportation development design features to reduce the use of single-occupancy fossil fueled vehicles and vehicle miles traveled:

- Provide preferred parking for zero/low emission vehicles. Bicycle parking and only the minimum amount of auto parking shall be provided to encourage alternative forms of travel.
- Install conduits from the building(s) to the parking lot(s), to allow for installation of electric vehicle charging stations for vehicles. The proportion of electric vehicle parking spaces shall comply with the applicable California Green Building Standards Code.
- The proposed project shall promote ridesharing programs through a multifaceted approach, such as designating a certain percentage of parking spaces for ridesharing vehicles; designating adequate passenger loading and unloading and waiting areas for ridesharing vehicles; or providing a website or message board for coordinating rides.
- The proposed project shall implement marketing strategies to reduce commute trips. Information sharing and marketing are important components to successful commute trip-reduction strategies. Implementing commute trip-reduction strategies without a complementary marketing strategy would result in lower vehicle miles traveled reductions. Marketing strategies may include: new employee orientation of trip reduction and alternative mode options; event promotions; or publications.

MM-GHG-2 The individual development projects shall include the following design features to reduce the demand for energy use and greenhouse gas emissions:

- Obtain Leadership in Energy and Environmental Design (LEED) Certification for building construction, where feasible.
- Provide the maximum amount of skylights to reduce electricity use associated with interior lighting.
- All facility lighting shall meet or exceed the applicable Title 24 requirements.
- All installed appliances (e.g., washer/dryers, refrigerators, dishwashers) shall be Energy Star rated or equivalent.
- Design proposed buildings with:
    - Roof structure with additional load (defined as 1 to 2 pounds per square foot) capacity to allow the future installation of solar panels without retrofitting. The installation of solar panels would comply with the policy and procedures set forth in the Interim Policy for FAA Review of Solar Energy System Projects on Federally Obligated Airports (78 FR 63276).
    - Installation of an above market sized electrical infrastructure system (larger electrical room for future expansion, underground conduits (car, truck and loading dock) for future electrical charging systems, as well as additional conduits into the grid system for future expand-ability.

MM-GHG-3 The individual development projects shall incorporate the following design features to conserve water:

- Install low flow plumbing fixtures, such as faucets, toilets, and showers.
- Utilize water efficient landscaping to reduce the usage of outdoor water on the premises.
- Construct dual plumbing for both potable and recycled water for exterior landscape irrigation, unless determined infeasible by Department of Conservation and Development, Current Planning Division.

3.6.6 Level of Significance After Mitigation

With implementation of MM-GHG-1, MM-GHG-2, and MM-GHG-3 the project would be consistent with the CAP checklist items EE 1 (high efficiency appliances and insulation), RE 1 (solar ready), and LUT 2 (EV charging stations). However, based on the rural location of Byron Airport, the project would not comply with LUT 4 (located within one half-mile of a Bay Area Rapid Transit or Amtrak station or within one quarter-mile of a bus station). Therefore, the project

would not comply with the County CAP and the cumulative GHG impact would remain **significant and unavoidable**.

3.6.7 Cumulative Impacts

As discussed in Section 3.6.3, GHG emissions and climate change are by their very nature considered to be cumulative impacts. Therefore, cumulative impacts are taken into account in the impact analysis in Section 3.6.4.

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3.7 HAZARDS AND HAZARDOUS MATERIALS

This section describes the existing hazardous materials within the vicinity of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project. This impact analysis in this section is based on the Hazards Assessment prepared by Dudek (2018), attached as Appendix G to this Environmental Impact Report (EIR).

3.7.1 Existing Conditions

The project site is located south of Armstrong Road at Byron Hot Springs Road near Byron, California (Figure 2-1, Project Location, of Chapter 2, Project Description). The project site consists of 1,319 acres, which includes airport property south of Armstrong Road and an adjacent 11.7-acre parcel with an existing single-family residence located between the airport property and the Bethany Irrigation District Canal (Figure 2-2, Project Site, of Chapter 2). The study area for hazardous conditions/materials includes all areas identified for development in the Byron Airport Master Plan and the 11.7-acre potential acquisition parcel (Figure 3.7-1, Hazards Site Map). It should be noted that the proposed project includes development on only 70 acres (Figure 2-3, Development Area and Safety Zones, of Chapter 2).

The Byron Airport was opened to the public in 1994. Prior to the development of the airport, the project site appeared to include the smaller Byron Airpark in the northwestern portion of the project site, an agricultural area in the eastern portion of the project site, and two residences in the central portion of the project site. Some of the surrounding land was developed for agriculture and residences as early as 1949. The project site currently contains structures associated with the function of the airport such as a terminal, hangars, aircraft maintenance, fueling facilities, and airport administrative offices. The majority of the project site is vacant land, including land managed for habitat. A single-family house is located on the 11.7-acre parcel in the northeast corner of the project site. The surrounding area consists of agricultural land, vacant land, and some residential development.

The existing conditions were assessed using the following sources: (1) regulatory files searched by Environmental Data Resources (EDR), (2) regulatory files available from Contra Costa Health Services Hazardous Materials Programs, (3) historical aerial photographs and topographic maps, (4) mapped pipeline information, and (5) additional site documents (see Appendix G of this EIR). The project site was identified in the EDR report as being listed in databases associated with aboveground petroleum storage tanks and generation and off-site disposal of hazardous materials. The site was also listed in the Statewide Environmental Evaluation and Planning System underground storage tank (UST) database, which may be associated with a possible UST on the former Byron Airpark site. It is not known if the potential UST was removed or where it was

located. No information about a UST was included in the Contra Costa County (County) files reviewed. However, an additional site document reviewed indicated the former presence of two fuel islands, one of which appears to have been located in the northern portion of the project site.

Information regarding the use of hazardous materials at the project site was obtained from the Contra Costa Health Services Department and other records reviewed. The files indicate the following fuel and oil storage, use, and releases at the project site:

- 10,000-gallon aviation fuel aboveground storage tank (AST)
- 1,000-gallon gasoline AST
- 200-gallon diesel AST (adjacent)
- 250-gallon waste oil AST
- 100-gallon aviation fuel release (remediated)
- Potential presence of USTs or an additional fuel AST (indicated by former fuel islands); UST present on or near the project site in 1991 (per EDR report)
- Minor releases from waste oil drums
- At least one oil/water separator near the 250-gallon waste oil AST (Figure 3.7-1); additional oil/water separator potentially located near the aviation fuel AST
- Water from the oil/water separator(s) running to the leach field
- A hazardous liquid (crude oil) pipeline located in the western portion of the project site (Figure 3.7-1)

Based on a review of the EDR report, it is not likely that operations or releases at surrounding sites have impacted environmental conditions at the project site. Additionally, based on review of historical aerial photographs, it appears that an area in the eastern portion of the project site was used for agriculture from the 1960s until the 1980s. Pesticides may have been used at the project site during this time.

3.7.1.1 Wildland Fire Severity Zone

The project site is located in a Moderate Fire Hazard Severity Zone within the Local Responsibility Area based on the California Department of Forestry and Fire Protection (CAL FIRE) Fire Hazard Severity Zoning map (CAL FIRE 2007). The project site is not within a High or Very High Fire Hazard Severity Zone (Figure 3.7-2, Wildfire Hazards).

3.7.2 Relevant Plans, Policies, and Ordinances

This section includes applicable federal, state, and local laws; regulatory guidance; and General Plan goals and policies that govern environmental hazards and hazardous materials in the County.

Federal

Federal Fire Prevention and Control Act of 1974/Federal Fire Safety Act of 1992

The Federal Fire Prevention and Control Act of 1974 was created to provide federal assistance to states and communities for research and development, education, and training on fire problems, setting priorities, and identifying possible solutions to problems. The 1974 act was amended in the Federal Fire Safety Act of 1992 to require, among other things, automatic sprinkler systems or an equivalent level of safety on buildings having more than 25 employees that have been purchased, constructed, or renovated with federal funds.

Aviation and Transportation Security Act

On November 19, 2001, the Aviation and Transportation Security Act was enacted, which created the Transportation Security Administration (TSA) and transferred authority for enforcement of civil aviation security requirements (Title 49 Code of Federal Regulations [CFR] Part 1542) from the Federal Aviation Administration (FAA) to TSA. TSA has operated its civil enforcement program utilizing many of the FAA procedures and policies already in place. TSA's stated mission is to "protect the nation's transportation systems to ensure freedom of movement for people and commerce". The TSA's Office of Security Operations provides "risk-based, adaptive security" that includes airport checkpoint and baggage screening operations, regulatory compliance, cargo inspections, and other specialized programs designed to secure transportation (14 CFR 139). The airport is a federally regulated facility under 14 CFR 139. The airport is required to have an Airport Operating Certificate per 14 CFR 139, in addition to meeting numerous federal regulations. These regulations include standards for aircraft rescue and firefighting equipment and services, including response times and personnel training, the handling and storing of hazardous materials, and safety inspection and reporting procedures.

Federal Aviation Administration Advisory Circulars

FAA advisory circulars (ACs) include specific guidance on a number of topics related to airport design, operation, and maintenance. The use of FAA ACs is mandatory for those airport construction projects receiving funds under the Airport Improvements Program (see FAA Grant Assurance No. 34, Policies, Standards, and Specifications). The following ACs are pertinent to fire/emergency services:

- FAA AC 150/5210-15A, Aircraft Rescue and Firefighting Station Building Design. Provides additional guidance on the design of the aircraft rescue and firefighting building.
- FAA AC 150/5370-2G, Operational Safety on Airports During Construction. Sets forth guidelines for operational safety on airports during construction.

National Fire Protection Association Codes and Standards

The National Fire Protection Association (NFPA) is a membership organization that develops and monitors the use of over 300 fire codes and standards that have been widely incorporated into state and local fire codes. There are no legislative enforcement mechanisms in place.

By working through numerous technical committees, the NFPA uses a consensus approach to solve many safety-related issues. According to the NFPA website, the standards are updated every 3–5 years (NFPA 2018).

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as Superfund, was enacted by congress on December 11, 1980. It established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for releases of hazardous waste at these sites, and established a trust fund to provide for cleanup when no responsible party could be identified. Amended in 1986, the act establishes two primary actions: (1) to coordinate short-term removal of hazardous materials and (2) to coordinate and manage the long-term remedial response actions associated with sites identified on the U.S. Environmental Protection Agency (EPA) National Priorities List. The National Priorities List lists known or threatened releases of hazardous substances, pollutants, or contaminants. The Comprehensive Environmental Response, Compensation, and Liability Information System is a national database and management system used by the EPA to track cleanup activities at Comprehensive Environmental Response, Compensation, and Liability Act hazardous waste sites.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC 6901–6992) established a program administered by the EPA for regulation of the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA was amended in 1984 by the Hazardous and Solid Waste Act (PL 98-616), which affirmed and extended the "cradle-to-grave" system of regulating hazardous wastes. The use of certain techniques for the disposal of some hazardous wastes was specifically prohibited by the Hazardous and Solid Waste Act. Under the authority of RCRA, the regulatory framework for managing hazardous waste, including requirements for entities that generate, store, transport, treat, and dispose of hazardous waste is found in 40 CFR, Parts 260–299. California is delegated authority from the EPA to enforce RCRA and its own Hazardous Waste Control Act (see following sections) in California. The EPA retains enforcement authority.

RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled the EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. The 1984 federal Hazardous and Solid Waste Amendments to RCRA are focused on waste minimization and phasing out land disposal of hazardous waste, as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive UST program.

Hazardous Materials Transportation Act

The U.S. Department of Transportation regulates hazardous materials transportation under Title 49 of the United States Code. State agencies with primary responsibility for enforcing federal and state regulations and responding to hazardous materials transportation emergencies are the California Highway Patrol and the California Department of Transportation. These agencies also govern permitting for hazardous materials transportation.

State

California Accidental Release Prevention Program

The California Accidental Release Prevention (CalARP) Program (19 CCR 2735.1 et seq.) regulates facilities that use or store regulated substances, such as toxic or flammable chemicals, in quantities that exceed established thresholds. The overall purpose of CalARP is to prevent accidental releases of regulated substances and reduce the severity of releases that may occur. The CalARP Program meets the requirements of the EPA Risk Management Program, which was established pursuant to the Clean Air Act Amendments.

California Hazardous Materials Release Response Plans and Inventory

In California, the handling and storage of hazardous materials is regulated by Division 20, Chapter 6.95, of the California Health and Safety Code (Section 25500 et seq.). Under Sections 25500–25543.3, facilities handling hazardous materials are required to prepare a Hazardous Materials Business Plan (HMBP). HMBPs contain basic information about the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state.

Chapter 6.95 of the California Health and Safety Code establishes minimum statewide standards for HMBPs. Each business shall prepare an HMBP if that business uses, handles, or stores a hazardous material (including hazardous waste) or an extremely hazardous material in disclosable quantities greater than or equal to the following (California Health and Safety Code, Section 25503.5):

- 500 pounds of a solid substance
- 55 gallons of a liquid

- 200 cubic feet of compressed gas
- A hazardous compressed gas in any amount (highly toxic with a Threshold Limit Value of 10 parts per million or less)
- Extremely hazardous substances in threshold planning quantities

In addition, in the event that a facility stores quantities of specific acutely hazardous materials above the thresholds set forth by California code, facilities are also required to prepare a risk management plan and CalARP plan. The risk management plan and accidental release prevention plan provide information about the potential impact zone of a worst-case release and require plans and programs designed to minimize the probability of a release and mitigate potential impacts.

California Hazardous Waste Control Act

The Department of Toxic Substances Control is responsible for the enforcement of the Hazardous Waste Control Act (California Health and Safety Code, Section 25100 et seq.), which creates the framework under which hazardous wastes are managed in California. The law provides for the development of a state hazardous waste program that administers and implements the provisions of the federal RCRA cradle-to-grave waste management system in California. It also provides for the designation of California-only hazardous waste and development of standards that are equal to or, in some cases, more stringent than federal requirements. The Hazardous Waste Control Act lists 791 chemicals and approximately 300 common materials that may be hazardous; establishes criteria for identifying, packaging, and labeling hazardous wastes; prescribes management controls; establishes permit requirements for treatment, storage, disposal, and transportation; and identifies some wastes that cannot be disposed of in landfills.

According to Title 22 of the California Code of Regulations, Sections 66001 et seq., substances having a characteristic of toxicity, ignitability, corrosivity, or reactivity are considered hazardous. Hazardous wastes are hazardous substances that no longer have a practical use, such as material that has been abandoned, discarded, spilled, contaminated, or are being stored prior to proper disposal.

Toxic substances may cause short-term or long-lasting health effects ranging from temporary effects to permanent disability or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Carcinogens (substances known to cause cancer) are a special class of toxic substances. Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances (e.g., gasoline, hexane, and natural gas) are hazardous because of their flammable properties. Corrosive substances (e.g., strong acids and bases such as sulfuric [battery] acid or lye) are chemically active and can damage other materials or cause severe burns upon contact. Reactive substances (e.g., explosives, pressurized canisters, and pure sodium metal, which react violently with water) may cause explosions or generate gases or fumes.

Other types of hazardous materials include radioactive and biohazardous materials. Radioactive materials and wastes contain radioisotopes, which are atoms with unstable nuclei that emit ionizing radiation to increase their stability. Radioactive waste mixed with chemical hazardous waste is referred to as "mixed wastes." Biohazardous materials and wastes include anything derived from living organisms. They may be contaminated with disease-causing agents, such as bacteria or viruses (22 CCR 66261.1 et seq.).

California Occupational Safety and Health Administration

The California Occupational Safety and Health Administration is the primary agency responsible for worker safety in the handling and use of chemicals in the workplace. California Occupational Safety and Health Administration standards are generally more stringent than federal regulations. The employer is required to monitor worker exposure to listed hazardous substances and notify workers of exposure (8 CCR 330 et seq.). The regulations specify requirements for employee training, availability of safety equipment, accident prevention programs, and hazardous substance exposure warnings. The employer is also required, among other things, to have an Illness and Injury Prevention Program.

Certified Unified Program

The California EPA implements and enforces a statewide hazardous materials program known as the Certified Unified Program, established by Senate Bill 1802 to consolidate, coordinate, and make consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental and emergency management programs for hazardous materials:

- Hazardous Materials Release Response Plans and Inventories (Business Plans)
- CalARP Program
- UST Program
- Aboveground Petroleum Storage Act Requirements for Spill Prevention, Control, and Countermeasure Plans
- Hazardous Waste Generator and On-Site Hazardous Waste Treatment Programs
- California Uniform Fire Code, Hazardous Materials Management Plans, and Hazardous Material Inventory Statements

To ensure consistency in the administrative requirements, permits, inspections, and enforcement related to the handling and storage of hazardous wastes and materials, California EPA oversees the Certified Unified Program and certifies local government agencies as Certified Unified Program Agencies to implement hazardous waste and materials standards. In the County, the Contra Costa County Health Services Department is the Certified Unified Program Agency.

Cortese List

The Hazardous Wastes and Substances Site (Cortese) List, maintained by California EPA, is a list of data resources used by state and local agencies and developers to provide information about the location of hazardous materials release sites, per Government Code Section 65962.5. The Department of Toxic Substances Control, State Water Board, and California Department of Resources Recycling and Recovery all contribute data related to hazardous waste and substances sites, leaking USTs, solid waste disposal sites with waste constituents above hazardous waste levels, active Cease and Desist Orders and Cleanup and Abatement Orders, and hazardous waste facilities subject to corrective action.

General National Pollutant Discharge Elimination System Permits and Waste Discharge Requirements

To enable efficient permitting under both the Clean Water Act and the Porter-Cologne Act, the State Water Resources Control Board and the Regional Water Quality Control Board run permit programs that group similar types of activities that have similar threats to water quality. These general permit programs include the Phase I Municipal Separate Storm Sewer System[1] Permit, the construction general permit, the industrial general permit, and other general permits for low-threat discharges. The construction and industrial stormwater programs are administered by the State Water Resources Control Board, while the Phase I Municipal Separate Storm Sewer System Permit and other general Waste Discharge Requirements are administered by the Central Valley Regional Water Quality Control Board. Point source discharges or other activities that threaten water quality that are not covered under a general permit must seek individual National Pollutant Discharge Elimination System permits and/or Waste Discharge Requirements, depending on the type, location, and destination of the discharge. For these types of discharges, the initial step in the process is to submit a Report of Waste Discharge to the Central Valley Regional Water Quality Control Board, who then determines the appropriate permitting pathway.

Applicable National Pollutant Discharge Elimination System requirements for the proposed project are discussed in Section 3.8, Hydrology and Water Quality, of this EIR.

California Building Standards Code

The 2016 California Building Standards Code (24 CCR) was published July 1, 2016, with an effective date of January 1, 2017. A supplement was published January 1, 2017, with an effective date of July 1, 2018. The California Building Standards Code is a compilation of three types of building criteria from three different origins: (1) building standards that have been adopted by state

[1] A Municipal Separate Storm Sewer System is defined in as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, or storm drains) that serve medium and large cities or certain counties with populations of 100,000 or more.

agencies without change from building standards contained in national model codes; (2) building standards that have been adopted and adapted from the national model code standards to meet California conditions; and (3) building standards, authorized by the California legislature, that constitute extensive additions not covered by the model codes that have been adopted to address particular California concerns.

State Fire Regulations

The California Fire Code (CFC) is Part 9 of Title 24 of the California Code of Regulations, which includes regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. It was created by the California Building Standards Commission and is based on the International Fire Code created by the International Code Council. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety (24 CCR Part 9). These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every 3 years and was most recently updated in 2016, with an effective date of January 1, 2017.

Wildfire Protection

Fire safety is regulated throughout the state through a variety of fire protection laws, including the designation of fire hazard areas. California Public Resources Code, Sections 4251–4299, provide for permitted activities and procedures for development within fire hazard areas, including the establishment and management of defensible space (buffers managed to ensure fuel reduction around structures). CAL FIRE regulates State Responsibility Areas (SRAs), which are areas where the state has primary responsibility for fire prevention and protection services (as opposed to local and/or federal agencies). Within SRAs, developers must provide for emergency access, signs and building numbering, private water supply reserves for emergency fire use, and vegetation modifications.

The majority of the project site (excluding a portion south of Holey Road) is located within an SRA and is identified as a Moderate Fire Hazard Severity Zone (CAL FIRE 2007). The project site is within CAL FIRE's Santa Clara Unit.

California Public Resources Code, Section 4290, required CAL FIRE to adopt regulations regarding minimum requirements for road access to land uses within SRAs and high fire hazard areas. These regulations are now contained within the SRA Fire Safe Regulations, California Code

of Regulations, Title 14, Section 1270 et seq. To provide for two-way traffic flow to support emergency vehicle and civilian egress, all roads within an SRA shall be constructed to provide a minimum of two 10-foot traffic lanes, not including shoulder and striping.

California Government Code Section 51182 and Public Resources Code, Section 4291, require fire risk reduction measures to be enforced by local agencies and CAL FIRE for occupied dwellings or structures. These measures require the following:

- Maintaining a fire break made by removing and clearing away, for a distance of not less than 100 feet on each side of a dwelling or structure, or to the property line whichever is nearer, all flammable vegetation or other combustible growth. This does not apply to single specimen trees, ornamental shrubbery, or similar plants that are used as ground cover, if they do not form a means of rapidly transmitting fire from the native growth to any dwelling or structure.
- Maintaining additional fire protection or firebreaks made by removing all brush, flammable vegetation, or combustible growth that is located within 100 feet from an occupied dwelling or occupied structure or to the property line, or at a greater distance if required by state law, or local ordinance, rule, or regulation.
- Removal of that portion of any tree that extends within 10 feet of the outlet of any chimney or stovepipe.
- Maintaining any tree adjacent to or overhanging any building free of dead or dying wood.
- Maintaining the roof of any structure free of leaves, needles, or other dead vegetative material.

Local

Contra Costa County General Plan

The County's General Plan establishes goals and policies for hazards and hazardous materials. The General Plan Public Safety Element contains the following policies that apply to hazards (Contra Costa County 2005):

Goal 10-I To provide public protection from hazards associated with the use, transport, treatment, and disposal of hazardous substances.

Goal 10-N To provide for a continuing high level of public protection services and coordination of services in a disaster.

Goal 7-AA To incorporate requirements for fire-safe construction into the land use planning and approval process.

Goal 7-AD To provide special fire protection for high-risk land uses and structures.

Policy 10-61 Hazardous waste releases from both private companies and from public agencies shall be identified and eliminated.

Policy 10-62 Storage of hazardous materials and wastes shall be strictly regulated.

Policy 10-63 Secondary containment and periodic examination shall be required for all storage of toxic materials.

Policy 10-64 Industrial facilities shall be constructed and operated in accordance with up-to-date safety and environmental protection standards.

Policy 10-65 Industries which store and process hazardous materials shall provide a buffer zone between the installation and the property boundaries sufficient to protect public safety. The adequacy of the buffer zone shall be determined by the County Planning Agency.

Policy 10-68 When an emergency occurs in the transportation of hazardous materials, the County Office of Emergency Services shall be notified as soon as possible.

Policy 7-62 The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban and suburban areas. (These areas are defined in Section 4).

Policy 7-63 The County shall strive to achieve a total response time (dispatch plus running and set-up time) of five minutes in CBD, urban and suburban areas for 90 percent of all emergency responses.

Policy 7-64 New development shall pay its fair share of costs for new fire protection facilities and services.

Policy 7-71 A set of special fire protection and prevention requirements shall be developed for inclusion in development standards applied to hillside, open space, and rural area development.

Policy 7-72 Special fire protection measures shall be required in high risk uses (e.g., mid-rise and high-rise buildings, and those developments in which hazardous materials are used and/or stored) as conditions of approval or else be available by the district prior to approval.

Policy 7-80 Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply, shall be encouraged to reduce wildland fire hazards.

Policy 7-81 All structures located in Hazardous Fire Areas, as defined in the Uniform Fire Code, shall be constructed with fire-resistant exterior materials, such as fire safe roofing, and their surroundings are to be irrigated and landscaped with fire-resistant plants, consistent with drought resistance and water conservation policies.

Measure 10-ae Request that state and federal agencies with responsibilities for regulating the transportation of hazardous materials review regulations and procedures, in cooperation with the County, to determine means of mitigating the public safety hazard in urbanized areas.

Contra Costa County Health Services Department

The implementation of the Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (California Health and Safety Code Chapter 6.11) is managed by the County Health Services Department, which is certified by the California Secretary of Environmental Protection. The County Health Services Department manages the regulatory programs for HMBPs, USTs, hazardous waste generators, and CalARP. The Contra Costa County Hazardous Materials Area Plan, adopted by the County in 2009, provides the framework for the coordination of management, monitoring, containment, and removal of hazardous materials for County regulatory and response agencies.

Contra Costa County Office of the Sheriff

The Sheriff's Office of Emergency Services has overall responsibility for implementation of the Emergency Operations Plan (EOP), under the direction of the County Administrator. The purpose of the EOP is to provide the basis for a coordinated response before, during and after an emergency affecting the County (Contra Costa County 2015). The EOP applies to all emergencies in unincorporated areas of the County and that generate situations requiring planned, coordinated responses. The EOP also applies to emergencies that occur within incorporated areas, to the extent that those emergencies require multi-agency coordination at the operational area level. Potential emergencies include hazardous materials spills and wildfire.

Contra Costa County Hazard Mitigation Plan Update

The federal Disaster Mitigation Act of 2000 required state and local governments to develop Hazard Mitigation Plans (HMPs) as a condition for federal disaster grant assistance. The County

participated in an effort led by the Association of Bay Area Governments in 2004 to meet this requirement. The County adopted an update of that HMP in 2011 that completely restructured the plan as a countywide plan focused on the County (as opposed to the previous multicounty plan). The plan, in compliance with federal requirements, includes a description of the planning process, a risk assessment, a mitigation strategy (goals, alternatives, and a prioritized action plan), a plan maintenance section, and documentation of plan adoption (Contra Costa County 2011). The County HMP also includes a second volume that includes the various special districts within the County as planning partners.

3.7.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts related to hazards and hazardous materials are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to hazards and hazardous material would occur if the project would:

1. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
2. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
4. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as result, would it create a significant hazard to the public or the environment.
5. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area.
6. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

In addition, this chapter addresses the wildfire issues in Appendix G of the CEQA Guidelines. A significant effect may result if the project is located in or near SRAs or lands classified as very high fire hazard severity zones, and would:

7. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

8. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.
9. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Regarding item 5, the project site is located on public airport land with an airport land use plan. As part of the proposed project, the airport land use plan would be updated to reflect recent regulatory guidance and the most recent airport layout plan. The project incorporates safety considerations for people working on the airport and residing or working in the airport vicinity. See Chapter 2 and Section 3.9, Land Use and Planning, for discussion of this issue.

3.7.4 Impacts Analysis

Impact 3.7-1. The project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant)

Hazardous materials used and stored on the project site include aviation fuel, gasoline, diesel, waste oil, and detergents. While the number of airport operations is forecast to increase, the type of activities would be similar to existing uses. Future aviation operations at the project site would therefore involve similar storage, use, and disposal of fuel and oil. These hazardous materials would be safely managed in accordance with local, state, and federal regulations.

As the quantities of hazardous materials handled by the airport currently and would likely still equal or exceed 55 gallons of liquid, 500 pounds of solids, and/or 200 cubic feet of a compressed gas at any time, an HMBP would be prepared/updated for the project site and submitted to the Certified Unified Program Agency via the California Environmental Reporting System. The HMBP would include an inventory of hazardous materials, present a site map identifying locations of hazardous materials and safety equipment, and address preparedness for emergency response to incidents involving hazardous materials.

Likewise, as the project site involves the aboveground storage of an aggregate quantity of 1,320 gallons or more of petroleum or petroleum products, a Spill Prevention Control and Countermeasure Plan would be prepared/updated and implemented.

Accumulation, management, and disposal of hazardous waste is regulated by the California Department of Toxic Substances Control and the EPA. Under federal regulation (RCRA), waste is classified as hazardous based on the process that generated the listed waste or its characteristics of ignitibility, reactivity, corrosion and/or toxicity. California mandates further criteria for hazardous

waste in addition to those established under the RCRA. Waste accumulation is regulated based on the quantities produced and the distance to the nearest treatment, storage, and disposal facility.

Once classified as hazardous, waste would not accumulate longer than 90 days for large quantity generators and 180 days (or 270 days if the distance to the treatment, storage, and disposal facility is more than 200 miles) for small quantity generators. These accumulation times begin as soon as the waste begins accumulating. For a Conditionally Exempt Small Quantity Generator, hazardous waste can accumulate for 180 days (or 270 days if the distance to the treatment, storage, and disposal facility is more than 200 miles) once 100 kg of hazardous waste has accumulated. Waste considered acutely or extremely hazardous must be removed within 90 days for small quantity generators and Conditionally Exempt Small Quantity Generators. Hazardous and non-hazardous waste would be stored, labeled, and manifested in accordance with state and federal regulations, including those summarized in the Hazardous Waste Generator Requirements. Waste oil, which is currently generated at the airport and would likely continue to be generated, is the only California-hazardous waste anticipated for the project site.

Airport fueling would be completed in accordance with general standards for airport fueling operations, as presented in the 2015 Airport Cooperative Research Program Synthesis 63, Overview of Airport Fueling System Operations.

Development of non-aviation uses, including light industrial, warehousing, commercial, and office uses, may also result in the routine use and storage of hazardous materials. These materials may include solvents, paints, waste oil, and other petroleum products. As described above, if these materials are stored in sufficient quantities on site, an HMBP and/or Spill Prevention Control and Countermeasure Plan would be completed.

In conclusion, routine transport, use, and disposal of hazardous materials associated with the proposed project would be completed in accordance with applicable federal, state, and local regulations. Therefore, impacts would be **less than significant**.

Impact 3.7-2. The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Potentially Significant)

While there have been no known releases to the subsurface causing contamination (there have been minor releases from drums and a fuel release to the surface that was cleaned up), it is possible that subsurface releases/contamination have occurred in areas of fuel/oil storage and use (areas near the ASTs, wash rack, oil/water separator[s], crude oil pipeline, leach field, former fuel islands, and potential USTs) (Figure 3.7-1). Construction activities in these areas could result in encountering contaminated soil and/or groundwater. Exposure of contaminated soils to workers

and the surrounding environment would result in **potentially significant** impacts. Mitigation Measure (MM) HAZ-1 would require the preparation of a Hazardous Materials Contingency Plan.

While potential oil and fuel releases can be identified during construction using visual and odor indicators and air monitoring, potential pesticide impacts are not easily identified during construction. As discussed in the Section 3.7.1, Existing Conditions, based on a review of historical aerial photographs, it appears that an area in the eastern portion of the project site was used for agriculture from the 1960s until the 1980s. Pesticides may have been used at the project site during this time. Exposure of pesticide-contaminated soils to workers and the surrounding environment during grading and construction would result in **potentially significant** impacts. MM HAZ-2 requires soil sampling, analysis, and potential remediation of soils in this former agricultural area.

Impact 3.7-3. The project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. (No Impact)

All existing nearby schools are more than 0.25 miles from the project site. The closest schools to the project site (at the closest point) include Byron Elementary (3.2 miles north), Vista Oaks Charter (3.3 miles north), Delta Vista High School (3.1 miles north), Mountain House Elementary (4.1 miles southeast), Altamont Elementary (5.4 miles southeast), Bethany Elementary (5.9 miles southeast), Wicklund Elementary (6.3 miles southeast), Julius Cordes School (6.7 miles southeast), Hansen Elementary (6.3 miles southeast), and Mountain House High School (6.4 miles southeast). The proposed project would not include any operations that would emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school. Therefore, the proposed project would have **no impact**.

Impact 3.7-4. The project would not be located on a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 that would potentially result in a significant hazard to the public or the environment. (No Impact).

The EDR search conducted for the project site did not identify the presence of sites compiled pursuant to Government Code Section 65962.5 (also known as the Cortese List). The disturbance of previously unlisted contaminated areas from project activities is addressed in Impact 3.7-2. There would be **no impact** related to hazardous materials sites included on the Cortese List.

Impact 3.7-5. The project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. (Less than Significant)

The project would not interfere with an adopted emergency response or evacuation plan. The EOP and HMP do not identify specific criteria or evacuation routes that apply to the airport. Local roads serving the airport currently meet the minimum requirements for two-way access (10-foot travel lanes). However, expansion of airport-related uses at the airport would require roadway improvements (Section 3.13, Transportation). This would result in long-term access improvements. Construction activities may result in short-term lane closures, but any lane closures due to construction activity would be coordinated with emergency service providers to maintain access. Access to the airport and surrounding properties would be maintained throughout construction. The project impact associated with impairing implementation of or physically interfering with the adopted emergency evacuation plan would be **less than significant**.

Impact 3.7-6. The project would not, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. (Less than Significant)

As discussed in Section 3.12, Public Services, fire protection for the project vicinity is provided by the East Contra Costa Fire Protection District and the airport provides fire protection for aviation activities. The closest fire station to the project site is East Contra Costa Fire Station 59 located approximately 5.7 miles north of the site. The East Contra Costa Fire Protection District enforces the County's current Fire Code, which provides strict requirements for fire suppression systems, use of fire-resistant building materials, and visible address signage.

The project area is not located in a High or Very High Fire Hazard Severity Zone. The project site is partially located within an SRA, with a moderate fire hazard severity risk. The project would not introduce residential uses. Non-residential structures at the project, due to being within an SRA, would comply with state requirements for access/egress, signage, and defensible space (including fuel management).

The project would not exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. The project site is relatively flat, with hills rising to the west. The development areas within the project site are primarily agricultural or vacant/ruderal grasslands. The prevailing wind direction varies. During the summer, strong afternoon winds from the west may occur (see Section 3.2, Air Quality). For these reasons, the project site is identified

as moderate for fire hazard severity. The project would not introduce residences or vegetation that would exacerbate this risk. This impact would be **less than significant.**

Impact 3.7-7. The project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. (Less than Significant)

The project would require the installation of infrastructure (e.g., roadway improvements, water supply improvements, sewer facilities). These facilities would not exacerbate fire risk, and improved roadways and water infrastructure may be a beneficial impact for wildfire risk. This impact would be **less than significant.**

Impact 3.7-8. The project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. (Less than Significant)

The project would not expose people or structures to secondary impacts of wildfire, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. As discussed, the project site is relatively flat and not subject to landslides. Flooding risk is limited to a small area in the northeast corner of the project associated with Brushy Creek. This impact would be **less than significant.**

3.7.5 Mitigation Measures

MM-HAZ-1 Prior to initiation of grading and construction, a Hazardous Materials Contingency Plan shall be in-place and consist of the following:

- Identification of areas of potential fuel- or oil-impacted soils on a site plan.
- Protocol for identifying suspected contaminated soils (e.g., discoloring, odor, positive photoionization detector readings), utilizing personnel trained in recognition of contaminated soils/groundwater and certified with respect to Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response (i.e., OSHA HAZWOPER training).
- Procedures for notification and reporting, including internal management and to Contra Costa Environmental Health Division and local agencies, as needed.
- Procedures for temporary cessation of construction activity and evaluation of the level of environmental concern.

- Procedures for limiting access to the contaminated area to personnel with OSHA HAZWOPER training.
- A worker health and safety plan for excavation of contaminated soil and/or groundwater.
- Procedures for characterizing, managing, and disposing of potentially contaminated soils.

MM-HAZ-2 Prior to development of the former agricultural areas identified in Figure 3.7-1, Hazards Site Map, soil samples shall be collected and tested for pesticides. Shallow soil samples shall be collected from the upper 0.5 to 1.0 foot of ground surface and analyzed for organochlorine pesticides by U.S. Environmental Protection Agency (EPA) Method 8081A and arsenic by EPA Method 6010B. The soil samples shall be analyzed by a California Environmental Laboratory Accreditation Program-certified laboratory.

The pesticide sampling data shall be compared to applicable regulatory threshold levels such as the EPA Regional Screening Levels and the Department of Toxic Substances Control Human and Ecological Risk Office Note 3 screening levels. The arsenic sampling data shall be compared to California typical background levels, such as those in the 1996 Kearney Foundation Special Report on Background Concentrations of Trace and Major Elements in California Soils.

If the soil sampling concentrations, using the 95% upper confidence level or other statistical evaluation, exceed the screening level, mitigation shall include removal of impacted soil for off-site disposal prior to or during construction grading. A soil management plan, including a health and safety plan, shall be prepared to properly manage the excavated soil and protect worker and public health and safety.

3.7.6 Level of Significance After Mitigation

MM-HAZ-1 would require a Hazardous Materials Contingency Plan to address any accidental discovery of contaminated soils or groundwater during project construction. The procedures would protect workers and members of the public from hazardous materials impacts. A related mitigation measure, MM-HAZ-2, would require sampling of soils in former agricultural areas, and if pesticide levels exceed health standards, remediation would be required. With implementation of the identified mitigation measures, Impact 3.7-2 would be reduced to **less than significant**.

3.7.7 Cumulative Impacts

The cumulative analysis for hazards and hazardous materials is based on development considered in the County General Plan. The vicinity of the project site is primarily designated for agricultural use. Although agricultural operations may involve the use of pesticides and petroleum products (for vehicles and equipment), such uses would not be of a type or quantity that would interact with the proposed project to produce cumulative effects. The Hazards Assessment prepared in support of this EIR (Appendix G) identifies hazardous materials storage, use, and release sites on and near the project site. The potential project–related effects related to these sites are addressed in the impact analysis, Section 3.7.4. No future development identified in the General Plan would affect these sites in a manner that would create a cumulative impact. In addition, compliance with existing regulations and with MM-HAZ-1 and MM-HAZ-2 would reduce any project contribution to potential cumulative impacts to **less than significant**.

3.7.8 References Cited

CAL FIRE (California Department of Forestry and Fire Protection). 2007. "Fire Hazard Severity Zones in SRA." Contra Costa County. November 7, 2007.

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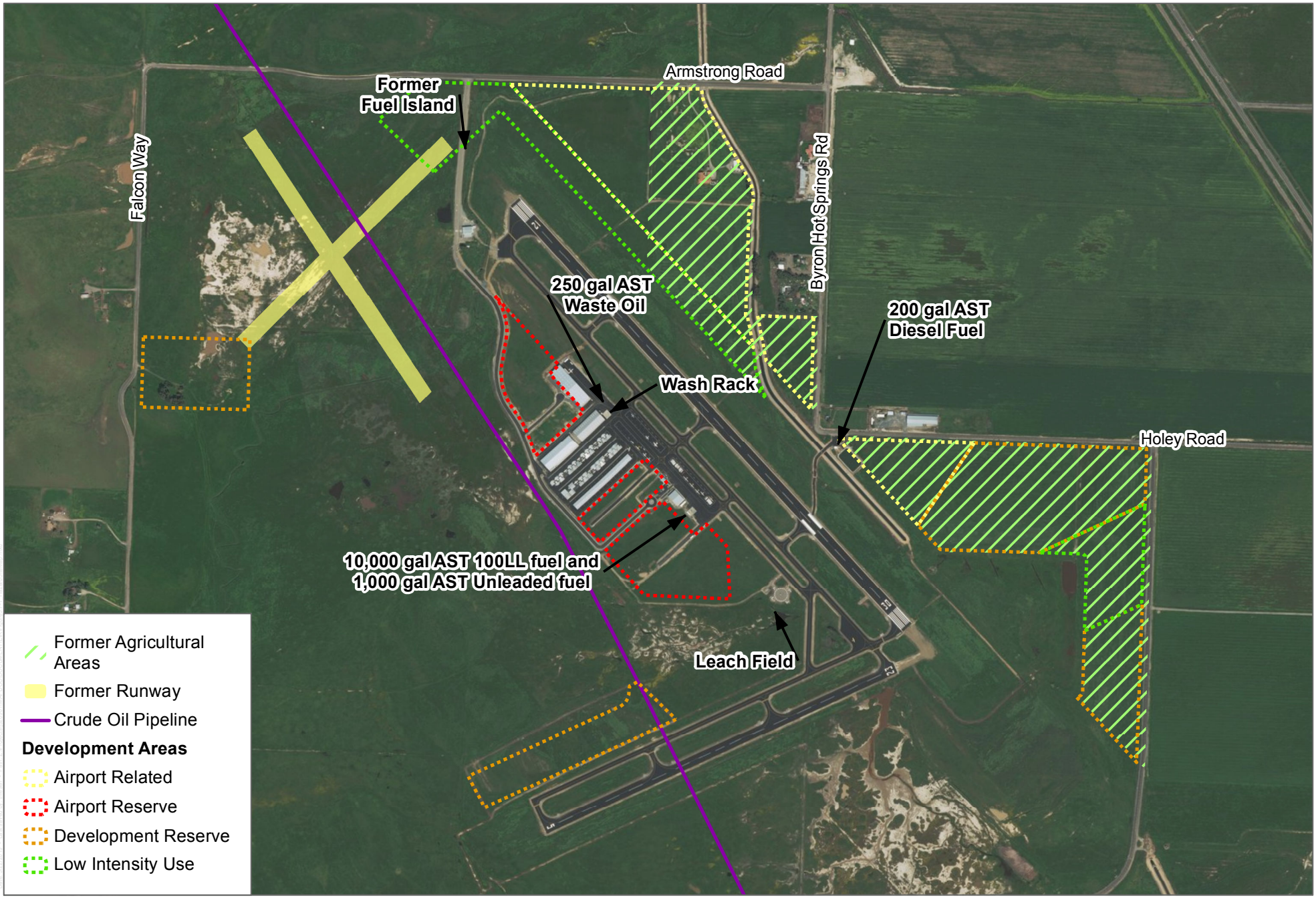
NFPA (National Fire Protection Association). 2018. "An Introduction to the NFPA Standards Development Process." https://www.nfpa.org/~/media/files/codes-and-standards/regulations-directory-and-forms/Stds_Dev_Process_Booklet_2018.ashx?la=en.



SOURCE: ESRI 2019

DUDEK

0 500 1,000 Feet

FIGURE 3.7-1

Hazards Site Map

Byron Airport Development Program EIR

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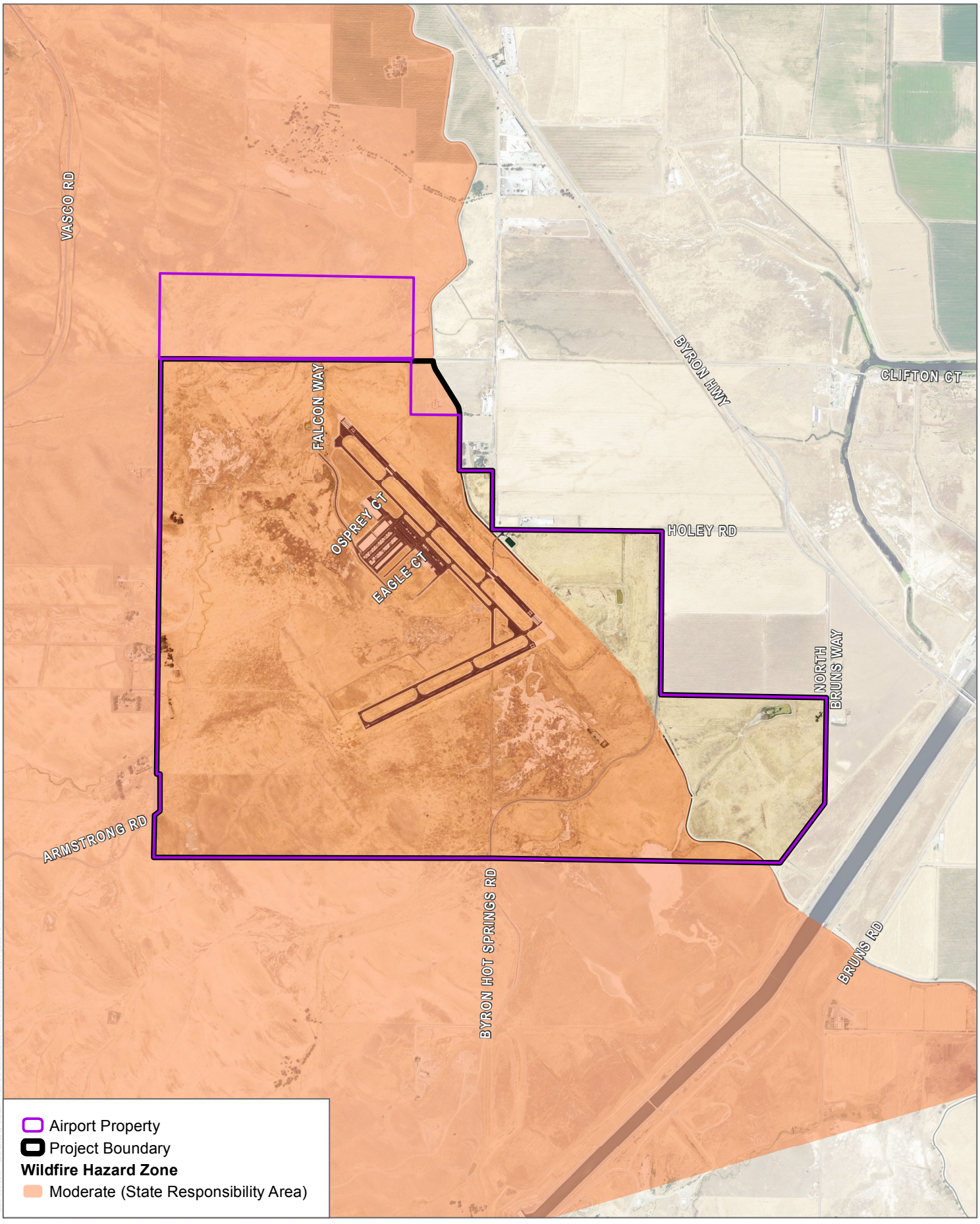

SOURCE: NAIP 2016, Contra Costa County 2017, CalFire 2019

DUDEK

0 1,000 2,000 Feet

FIGURE 3-7.2

Wildfire Hazards

Byron Airport Development Program EIR

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3.8 HYDROLOGY AND WATER QUALITY

This section describes the existing hydrology and water quality of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures to reduce the proposed project's potentially significant impacts to less-than-significant levels. In response to the Notice of Preparation, the Central Valley Regional Water Quality Control Board (RWQCB) sent a letter listing the regulatory framework potentially applicable to the site; applicable regulations are described in Section 3.8.2, Relevant Plans, Policies, and Ordinances.

3.8.1 Existing Conditions

3.8.1.1 Watersheds

Regionally, watersheds within the project site are identified based on the U.S. Geological Survey (USGS) Watershed Boundary Dataset (USGS 2018). The Watershed Boundary Dataset delineates watersheds according to hydrologic units (HUs), which are nested within one another according to the scale of interest. USGS identifies HUs by name and by hydrologic unit code (HUC), which gets longer as the watershed boundaries are delineated at a finer scale (i.e., more detailed). For example, at a statewide scale, HUs consist of large regions and subregions draining to a common outlet. At this scale, the project site is within the 1,232-square-mile San Joaquin Delta Subbasin (HUC 18040003), whose outlet point is the Sacramento-San Joaquin Delta and the San Francisco Bay. These watershed areas are listed in Table 3.8-1.

Table 3.8-1
Watersheds Intersected by the Byron Airport

Basin (HUC, size)	Subbasin (HUC, size)	Watershed (HUC, size)	Subwatershed (HUC, size)
San Joaquin (180400, 15,825 mi^2)	San Joaquin Delta (18040003, 1,232 mi^2)	Old River (1804000306, 243 mi^2)	Brushy Creek (180400030603, 16 mi^2)
			Lower Old River (180400030605, 104 mi^2)
			Clifton Court Forebay (180400030604, 25 mi^2)

Source: USGS 2018.
Note: HUC = hydrologic unit code; mi^2 = square miles.

The project site crosses several subwatershed boundaries within the 243-square-mile Old River Watershed (HUC 1804000306) (USGS 2018). Figure 3.8-1 shows the creeks and subwatersheds that occur within the Byron Airport property and the proposed development area (i.e., aviation and non-aviation uses). The development area boundary is largely within the 16-square-mile Brushy Creek subwatershed (HUC 180400030603), although a small part of the southeastern portion of the development area is within the 104-square-mile Lower Old River subwatershed. The southeastern part of the airport property lies within the 25-square-mile Clifton Court Forebay subwatershed.

In managing water resources, the State Water Resources Control Board (SWRCB) classifies watersheds in a hierarchical system similar to the USGS Watershed Boundary Dataset, but with watershed names and boundaries that are designated by the California Department of Water Resources (DWR). These geographic boundaries are likewise watershed based, but are typically referred to as hydrologic basins and are defined in the Water Quality Control Plan for the California Regional Water Quality Control Board, Central Valley: Sacramento River Basin and San Joaquin River Basin (Basin Plan) (Central Valley RWQCB 2015).[1] These generally constitute the geographic basis around which many surface water quality problems and goals/objectives are defined, and consist of surface water HUs, hydrologic areas, and hydrologic subareas. The project site is partially within the North Diablo Range HU (HU 543.00) and partially within San Joaquin Delta HU (HU 544.00) (Central Valley RWQCB 2015). The Basin Plan does not designate hydrologic areas or subareas for the project site (Central Valley RWQCB 2015).

3.8.1.2 Surface Water Features and Drainage Patterns

The project site ranges in elevation from 30 feet above mean sea level near the intersection of Holey Road and Byron Hot Springs Road to 125 feet above mean sea level in the middle part of the site's western boundary (Google Earth 2018). The airport reference elevation is 76 feet above mean sea level. Elevations on site generally decrease from southwest to northeast. Stormwater drainage is generally expected to flow in a similar direction, and/or toward Brushy Creek in the central, northern, and western portions of the site and toward the unnamed ephemeral drainage in the southeastern part of the site.

Brushy Creek is the primary natural waterway that crosses the project site (Figure 3.8-1). Brushy Creek starts in Alameda County near the eastern flank of Brushy Peak and flows to the north. Several unnamed spring-fed streams converge with Brushy Creek north of the Contra Costa/Alameda County line. The lower reach of Brushy Creek enters the alluvial plain near the Byron Airport. East of the northern border of the airport, Brushy Creek confluences with Indian Slough, which in turn confluences with Old River, before joining the Sacramento-San Joaquin Delta (USGS 2018).

Brushy Creek enters the southwestern part of the airport property where it under-crosses Armstrong Road, flows north-northeast to a marshy flat area south of the airport's main access road (Falcon Way), under-crosses Falcon Way through a culvert, snakes between the skydiving operation to the west and the western end of Runway 12-30 to the east, and exits the northern border of the site under Armstrong Road. Brushy Creek is classified by the USGS as a perennial stream upstream of its first crossing of Armstrong Road, and an intermittent (i.e., seasonal) stream

[1] The Basin Plan for each region serves as the regulatory reference for meeting both state and federal requirements for water quality control. It designates beneficial uses to be protected, water quality objectives to protect those uses, and a program of implementation needed for achieving those objectives.

downstream of Armstrong Road (within the project site) (USGS 2018). Flow in Brushy Creek slows to a trickle or subsurface flow during the late summer and early fall seasons. Based on review of aerial photography and topography, Brushy Creek appears to be quite deeply entrenched within the alluvial plain. East of the airport, Brushy Creek enters Italian Slough, which meanders north along the western perimeter of Clifton Court Forebay, toward Old River.

Although Brushy Creek crosses the airport property, the primary receiving water for the existing and proposed development footprint of the project is an approximately 15-acre detention basin located southeast of Runway 12-30 and east of Runway 5-23 (Google Earth 2018; LFA 2005). This basin, along with a system of drainage ditches and stormwater pipes designed for a 10-year storm, collects runoff from the majority of the developed portions of the project site (Figure 3.8-2, Site Drainage) (Mead and Hunt 2013). The existing aviation uses (administration building, aircraft and vehicle parking, hangar spaces, maintenance warehouses, pump house, wash rack, and other ancillary structures) are graded to drain northeast toward Runway 12-30 and its taxiway, which, through pipes and ditches, direct storm flows to the southeast and eventually to the detention basin (Figure 3.8-2) (LFA 2005). Runway 5-23 and its taxiway direct storm flows to the east-northeast, also to the detention basin (LFA 2005). Aside from the northern edge of the proposed airport related uses adjacent to Brushy Creek, drainage for the proposed aviation and non-aviation uses would be similarly directed toward the detention basin (Figure 3.8-2). Under normal circumstances, storm flow that is collected by the detention basin is either lost to evaporation and/or percolates into the underlying groundwater table. During extreme storm events (e.g., greater than a 10-year storm), when the detention basin reaches its holding capacity, it is designed to overflow into a ditch that flows north under Holey Road and then northeast to the lower-most reach of Brushy Creek near Byron Highway approximately 0.5 miles upstream of its confluence with Indian Slough (Google Earth 2018; LFA 2005; USGS 2018).

Besides the detention basin and Brushy Creek, there are several other surface water features within the project site. A minor ephemeral drainage ditch flows northeasterly in the southeast corner of the site between Byron Hot Springs Road and North Bruns Way, appearing to terminate at a 4-acre irrigation and/or cattle pond (USGS 2018; Google Earth 2018). This area would remain as habitat management land. In addition, Canal 45 crosses the project site along the northeastern edge of Runway 12-30 (BBID 2017). Canal 45 is the northern extension of the Byron-Bethany Irrigation District and is supplied with water during the irrigation season through a pump station on the north side of the California Aqueduct (BBID 2017). A portion of this canal northwest of Byron Hot Springs Road to north of the airport detention basin is routed underground (LFA 2005; Google Earth 2018). In addition, a small 0.4-acre pond with an estimated 750,000-gallon capacity was constructed southeast of the intersection of Holey Road and Byron Hot Springs Road for the purpose of storing water for fire protection (Mead and Hunt 2013). Water for this pond is supplied by the Byron-Bethany Irrigation District through a pump located above the underground portion of Canal 45 (Mead and Hunt 2013; LFA 2005).

Clifton Court Forebay is located less than 2 miles east of the site, Bethany Reservoir is approximately 3 miles to the south, and Los Vaqueros Reservoir is 5 miles to the west.

3.8.1.3 Flood Hazard

Flood zones identified on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) are identified as a Special Flood Hazard Area (SFHA). An SFHA is defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1%-annual-chance flood is also referred to as the base flood or 100-year flood. "Floodways" are areas within the SFHA that include the channel of a river/watercourse and adjacent land areas which in an unobstructed condition can discharge a 100-year flood/base flood without any increase in water surface elevations. The area outside the floodway but still within the 100-year floodplain can be obstructed without increasing the water surface elevation of a 100-year flood event more than 1 foot at any point.

According to the FEMA, there is an SFHA associated with Brushy Creek (FEMA 2017). FEMA has mapped SFHAs on the project site on FIRM panel numbers 06013C0510G and 06013C0530G (effective March 21, 2017), shown in Figure 3.8-2. The flood zone widens significantly along Brushy Creek in an area located west of Runway 12-30 and west of Falcon Way, and spreads over low-lying areas between the two runways and south of Runway 5-23. The flood zone crosses Falcon Way near its intersection with Armstrong Road and crosses the northeastern end of Runway 5-23. Review of the flood zone shows that it is largely confined to areas of the project site that would be designated as habitat management or low intensity use. However, the flood zone intersects an area designated for airport-related uses just south of Armstrong Road, northwest of Runway 12-30 (FEMA 2017). Also shown in Figure 3.8-2 is a regulatory floodway[2] along Brushy Creek, which intersects the northern edge of the proposed development area for airport-related uses. In addition, the 100-year flood hazard area terminates at the airport's 15-acre detention basin located southeast of Runway 12-30 and east of Runway 5-23. East of the detention basin, a 500-year hazard area (also referred to as a 0.2%-annual-chance flood hazard) is mapped by FEMA.

3.8.1.4 Groundwater Resources

The entire project site is located within the Tracy Groundwater Subbasin[3] of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-022.15), as defined by DWR (DWR 2003). The Great Valley is a broad structural trough bounded by the tilted block of the Sierra Nevada on the east and the complexly folded and faulted Coast Ranges on the west. The Tracy Subbasin is defined by the areal extent of unconsolidated to semi-consolidated sedimentary deposits that are bounded

[2] FEMA regulates filling and construction in floodways to allow flood waters to be discharged without raising surface water levels beyond a designated height.

[3] The California Department of Water Resources is currently reviewing a request to rename the Subbasin to the "East Contra Costa County Subbasin."

by the Diablo Range on the west, Mokelumne and San Joaquin Rivers on the north, San Joaquin River to the east, and San Joaquin/Stanislaus County line on the south (DWR 2003). Water-bearing formations consist of continental deposits of Late Tertiary to Quaternary age, and the cumulative thickness of these deposits increases from a few hundred feet near the Coast Range foothills on the west to about 3,000 feet along the eastern margin of the basin (DWR 2003). Given the project site is on the western edge of the subbasin, it is likely that basin deposits are on the low end of the range of thickness. Annual precipitation within the subbasin ranges from about 11 inches in the south to about 16 inches in the north (DWR 2003). DWR reports that groundwater yields in the Tracy Subbasin range from 500 to 3,000 gallons per minute when isolating the yields obtained by municipal wells.

Limited current information is available regarding groundwater levels and quality on site and in the project area. However, DWR well completion reports and the USGS national water information system were reviewed for groundwater level information pertaining to the project site and its vicinity. Table 3.8-2 shows well completion report records available for each township and range section that intersects or shares a border with Byron Airport, including information on the average depth of wells and the range of depths. The well types are primarily domestic wells but include three larger production and/or irrigation wells. Based on review of well completion reports, groundwater levels in the local vicinity, as reported when the wells were first drilled, have historically varied between 10 and 100 feet below ground surface (DWR 2018a). However, the majority of records reviewed reported a groundwater level of between 10 and 30 feet below ground surface (DWR 2018a). Well yields, where recorded in well completion reports, were generally low. The on-site well used to supply the project site is reported to yield 1 gallon per minute or less (40–60 gallons per hour) (Mead and Hunt 2013).

Except for seasonal variation resulting from recharge and pumping, the majority of water levels in wells have remained relatively stable over at least the last 10 years (DWR 2003). Long-term water level records for two off-site wells are available, one located 1 mile east of the site's southeastern boundary adjacent to the California Aqueduct (State Well No. 01S03E25M999M), and one located about 0.75 miles north of the site's northern boundary (State Well No. 01S03E15A001M) (DWR 2018b). Groundwater levels recorded at State Well No. 01S03E25M999M have generally been stable within the period of record from July 2014 to March 2018, and have ranged from 5 to 14 feet below ground surface (DWR 2018b). Groundwater levels recorded at State Well No. 01S03E15A001M have also been fairly stable within the period of record from October 1974 to April 2018, and have ranged from 2 to 12 feet below ground surface (DWR 2018b). As these wells are at lower elevations and located further away from the east flank of the Diablo Range, they have somewhat shallower groundwater levels than are likely to be encountered on the project site but are still likely to be representative of overall trends in groundwater table elevation. The groundwater elevation may fluctuate due to seasonal variation in rainfall, irrigation, tidal action, pumping rates, or other factors not evident at the time of exploration.

Table 3.8-2
Well Completion Report Records on the Project Site and Vicinity

Township and Range Section	Domestic Well Count	Average Well Depth, in Feet (Range)	Production/Irrigation Well Count	Average Well Depth, in Feet (Range)
T01SR3E14	5	99 (60–172)	2	72 (70–75)
T01SR3E22	4	106 (44–200)	0	—
T01SR3E23	9	151 (40–278)	0	—
T01SR3E25	3	169 (100–300)	1	80 (N/A)
T01SR3E26	2	250 (250–250)	0	—
T01SR3E27	1	165 (N/A)	0	—
T01SR3E28	3	135 (100–200)	0	—

Source: DWR 2018a.
Note: — = no data available; N/A = not applicable.

3.8.1.5 Water Quality

Perhaps due to the intermittent and ephemeral nature of the waterways located on site, very limited surface water quality data are available for the project site and its vicinity. Brushy Creek is not included in the Clean Water Act (CWA) Section 303(d) list of water quality impaired segments for California (SWRCB 2018) (Table 3.8-3). Being impaired (also known as "water quality-limited") means that a water body is "not reasonably expected to attain or maintain water quality standards" without additional regulation. The CWA requires that the U.S. Environmental Protection Agency (EPA) develop total maximum daily loads (TMDLs) for each impaired water body in the nation (described further below in Section 3.8.2). The TMDLs specify the maximum amount of a pollutant a water body can receive and still meet water quality standards. A TMDL may also include a plan for bringing an impaired water body within standards.

Substantial water quality data are available for the Sacramento-San Joaquin Delta, of which Brushy Creek and Old River are tributaries. Old River has the following impairments: low dissolved oxygen, chlorpyrifos, total dissolved solids (TDS), and electrical conductivity (SWRCB 2018). Sacramento-San Joaquin Delta waters are included on the CWA Section 303(d) list for the following constituents: toxicity, diazinon, DDT, Group A pesticides, electrical conductivity, TDS, mercury, and chlorpyrifos (SWRCB 2018). TMDLs have been approved for chlorpyrifos and diazinon, both of which are pesticides that are no longer used, as well as for mercury, which is present in waterways as a result of the state's history with hydraulic gold mining.

Table 3.8-3
Clean Water Act Section 303(d) Impairments in the Southern Sacramento-San Joaquin Delta

Water Bodies	Pollutant/Stressor	Potential Sources	TMDL Status	Year1
Old River (San Joaquin River to Delta-Mendota Canal; in Sacramento-San Joaquin Delta Waterways, Southern Portion)	Low Dissolved Oxygen	Unknown Sources; Hydromodification	Expected	07/19/1909
	Chlorpyrifos	Urban Runoff/Storm Sewers	Approved	10/10/2007
	Total Dissolved Solids	Source Unknown	Expected	07/13/1905
	Electrical Conductivity	Source Unknown	Expected	07/15/1905
Sacramento-San Joaquin Delta Waterways (Export Area)	Toxicity	Source Unknown	Expected	07/11/1905
	Diazinon	Source Unknown	Approved	10/10/2007
	DDT (Dichlorodiphenyltrichloroethane)	Source Unknown	Expected	07/03/1905
	Group A Pesticides	Source Unknown	Expected	07/03/1905
	Electrical Conductivity	Source Unknown	Expected	07/11/1905
	Invasive Species	Source Unknown	Expected	07/11/1905
	Mercury	Abandoned Resource Extraction; Numerous Others	Approved	10/20/2011
	Chlorpyrifos	Source Unknown	Expected	07/19/1905

Source: SWRCB 2018.
Notes: TMDL = total maximum daily load.
1 Dates per State Water Resources Control Board.

Groundwater quality is reported from several sources to be generally poor or undesirable. In general, the northern part of the Tracy Groundwater Subbasin, in which the project site is located, is characterized by a sodium water type and a wide range of anionic water types including bicarbonate, chloride, and mixed bicarbonate-chloride types (DWR 2003). Based on analyses of 36 water supply wells in the subbasin, TDS range from 210 to 7,800 milligram per liter and averages about 1,190 milligram per liter (DWR 2003). TDS is a general measure of water quality and high levels, generally above 500 milligram per liter, are considered undesirable and exceed secondary maximum contaminant levels. In addition, elevated levels of chloride, nitrate, and boron have been measured in the subbasin (DWR 2003). Mead and Hunt (2013) report that the on-site groundwater well was tested when originally constructed, prior to development, and had a TDS concentration of 13,000 milligram per liter, which is not suitable for potable use.

This information indicates that groundwater for potable (drinking) use would require treatment to meet potable water quality standards. The on-site well used by the airport does not produce raw water of suitable quality for drinking, and currently can only be used for non-potable purposes (e.g., aircraft wash water and grounds maintenance).

3.8.1.6 Tsunamis and Seiches

Tsunamis are earthquake-generated displacements of water resulting in a rise or mounding at the ocean surface that moves away from the center as a sea wave. All portions of the project site are located at least several hundred feet above sea level, within landlocked areas that are not adjacent to the ocean or other water bodies that would support the propagation of a tsunami.

Seiches are large-scale waves of long wave length in a closed body of water such as a lake or reservoir. They can be caused by earthquake shaking or a landslide along the shore of a lake or reservoir. There are no lakes or reservoirs on or directly adjacent to the project site. As these water bodies are 2 to 5 miles from the project site, the project site is not subject to risk from a seiche.

3.8.1.7 Dam Inundation

As identified in Section 3.8.1.6, above, there are essentially three reservoirs in the project vicinity: Clifton Court Forebay less than 2 miles east of the site, Bethany Reservoir approximately 3 miles to the south, and Los Vaqueros Reservoir 5 miles to the west. The Department of Water Resources, Division of Dam Safety, maintains dam inundation maps that show areas that would be impacted by a dam failure. Los Vaqueros has the largest inundation of the three and would affect the communities of Byron and Discovery Bay. However, the project site is not within the inundation area (DWR 2021a). Clifton Forebay and Bethany Reservoir have smaller inundation areas which would not affect the project site (DWR 2021b).

3.8.2 Relevant Plans, Policies, and Ordinances

The regulatory framework related to hydrology and water quality is extensive because it addresses issues related to the environment (i.e., maintaining high quality waters for water-dependent species and activities), public health (e.g., ensuring adequate drinking water quality), and public safety (e.g., avoiding flood damage). Impacts pertaining to provision of potable and non-potable water supplies, including applicable regulations, are addressed in Section 3.14, Utilities. Additional background and details on water supply, specifically compliance with Senate Bill (SB) 610, is provided in the Water Supply Assessment, included as Appendix I of this Environmental Impact Report.

Federal

Clean Water Act

The CWA, as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality (33 USC 1251 et seq.). The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA establishes basic

guidelines for regulating discharges of both point and non-point sources[4] of pollutants into the waters of the United States. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA. Relevant sections of the act are as follows:

- **Sections 303 and 304** provide for water quality standards, criteria, and guidelines. Under Section 303(d) of the CWA, the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. California is required to establish TMDLs for each pollutant/stressor. A TMDL defines how much of a specific pollutant/stressor a given water body can tolerate and still meet relevant water quality standards. Once a water body is placed on the Section 303(d) List of Water Quality Limited Segments, it remains on the list until a TMDL is adopted and the water quality standards are attained, or there is sufficient data to demonstrate that water quality standards have been met and delisting from the Section 303(d) list should take place. The water quality impairments relevant to the project are shown in Table 3.8-3, and the basin planning process that establishes beneficial uses and associated water quality objectives are further described under the heading Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin below.
- **Section 401 (Water Quality Certification)** requires an applicant for any federal permit that proposes an activity which may result in a discharge to waters of the United States to obtain certification from the state that the discharge will comply with other provisions of the CWA. This process is known as the Water Quality Certification/waste discharge requirements (WDRs) process. For projects in southeastern Contra Costa County (County), the Central Valley RWQCB issues CWA Section 401 permits.
- **Section 402 (National Pollutant Discharge Elimination System)** establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredged or fill material) into waters of the United States. This permit program is administered by the SWRCB and the nine RWQCBs, who have several programs that implement individual and general permits related to construction activities, stormwater runoff quality, and various kinds of non-stormwater discharges.
- **Section 404** (**Discharge of Dredged or Fill Material into Waters of the United States)** establishes a permit program for the discharge of dredged or fill material into waters of the United States. This permit program is jointly administered by the U.S. Army Corps of Engineers and EPA. Environmental Impact Report Section 3.3, Biological Resources, addresses this impact/requirement in greater detail.

[4] Point source discharges are those emanating from a pipe or discrete location/process, such as an industrial process or wastewater discharge. Non-point source pollutants are those that originate from numerous diffuse sources and land uses, and which can accumulate in stormwater runoff or in groundwater.

Numerous agencies have responsibilities for administration and enforcement of the CWA. At the federal level this includes the EPA, U.S. Army Corps of Engineers, Bureau of Reclamation, and the major federal land management agencies such as the U.S. Forest Service and Bureau of Land Management. At the state level, with the exception of tribal lands, the California EPA and its sub-agencies, including the SWRCB, have been delegated primary responsibility for administering and enforcing the certain provisions of the CWA in California. At the local level, the Central Valley RWQCB and the County have both enforcement and implementation responsibilities under the CWA.

Federal Antidegradation Policy

The federal Antidegradation Policy (40 CFR 131.12) is designed to protect water quality and water resources. The policy requires states to develop statewide antidegradation policies and identify methods for implementing them. State antidegradation policies and implementation measures must include the following provisions: (1) existing instream uses and the water quality necessary to protect those uses shall be maintained and protected; (2) where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and (3) where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected. State permitting actions must be consistent with the federal Antidegradation Policy.

National Flood Insurance Act

The National Flood Insurance Act of 1968 established the National Flood Insurance Program to provide flood insurance within communities that would adopt floodplain management programs to mitigate future flood losses. The act also required the identification of all floodplain areas within the United States and establishment of flood-risk zones within those areas. FEMA is the primary agency responsible for administering programs and coordinating with communities to establish effective floodplain management standards. FEMA is responsible for preparing FIRMs that delineate the areas of known special flood hazards and their risk applicable to the community. FEMA FIRMs are used as part of state and community floodplain management regulations, as well as for insurers to calculate flood insurance premiums. They are also used for emergency management, land use and water resources planning, and by federal agencies. It is the responsibility of state and local agencies to implement regulations, ordinances, and policies in compliance with FEMA requirements to adequately address floodplain management issues and attempt to prevent loss of life and property, health and safety hazards, and other adverse effects due to flooding.

The National Flood Insurance Reform Act of 1994 resulted in major changes to the National Flood Insurance Program. The act provides tools to make the National Flood Insurance Program more effective in achieving its goals of reducing the risk of flood damage to properties and reducing federal expenditures for uninsured properties damaged by flood. The act requires mitigation insurance and establishes a grant program for state and community flood mitigation planning projects.

State

Porter–Cologne Water Quality Control Act

The Porter–Cologne Water Quality Control Act (codified in the California Water Code, Section 13000 et seq.) is the primary water quality control law for California. Whereas the CWA applies to all waters of the United States, the Porter–Cologne Act applies to waters of the state,[5] which includes isolated wetlands and groundwater in addition to federal waters. The act requires a Report of Waste Discharge for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. California Water Code Section 13260(a) requires that any person discharging waste or proposing to discharge waste, other than to a community sewer system, that could affect the quality of the waters of the state, file a Report of Waste Discharge with the applicable RWQCB. For discharges directly to surface water (waters of the United States), an NPDES permit is required, which is issued under both state and federal law; for other types of discharges, such as waste discharges to land (e.g., spoils disposal and storage), erosion from soil disturbance, or discharges to waters of the state (e.g., groundwater and isolated wetlands), WDRs are required and are issued exclusively under state law. WDRs typically require many of the same best management practices (BMPs) and pollution control technologies as are required by NPDES-derived permits.

California Antidegradation Policy

The California Antidegradation Policy, otherwise known as the Statement of Policy with Respect to Maintaining High Quality Water in California, was adopted by the SWRCB (State Board Resolution No. 68-16) in 1968. Unlike the federal Antidegradation Policy, the California Antidegradation Policy applies to all waters of the state, not just surface waters. The policy requires that, with limited exceptions, whenever the existing quality of a water body is better than the quality established in individual basin plans, such high-quality water must be maintained and discharges to that water body must not unreasonably affect any present or anticipated beneficial use of the water resource. As stated in the Basin Plan, "discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or

[5] "Waters of the state" are defined in the Porter–Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state" (California Water Code Section 13050[e]).

nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State" (Central Valley RWQCB 2015).

Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin

The Central Valley RWQCB is responsible for protection of the beneficial uses of waters draining to the Sacramento-San Joaquin Delta. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan (California Water Code Sections 13240–13247) (Central Valley RWQCB 2015). The most water quality–sensitive beneficial uses applicable to the Sacramento-San Joaquin Delta include water contact recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, and migration and spawning. The beneficial uses that have the potential to be affected by the project are shown in Table 3.8-4, and definitions for acronyms are provided in Table 3.8-5. The Basin Plan also lists groundwater quality objectives for bacteria, chemical constituents, pesticides, radioactivity, salinity, tastes and odors, and toxicity.

Table 3.8-4
Beneficial Uses of Waters within the Study Area

Waterbody	MUNa	AGRa	INDa	PROa	POWa	REC-1a,b	REC-2a	WARMa	COLDa	MIGRa	SPWNa	WILDa	NAVa	COMMa,c
North Diablo Range Hydrologic Unit (HU 543.00)	✓	✓		✓	✓	✓	✓			✓		✓		
San Joaquin Delta Hydrologic Unit (HU 544.00)	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	

Source: Table II-1 of the Basin Plan (Central Valley RWQCB 2015).
Notes:
[a] Refer to Table 3.8-5 for definitions of abbreviations.
[b] Water contact recreation designation excludes canoeing and rafting uses, with the implication that certain flows are required for this beneficial use.
[c] COMM is a designated beneficial use for the Sacramento San Joaquin Delta and Yolo Bypass waterways only and not any tributaries to the listed waterways or portions of the listed waterways outside of the legal Delta boundary unless specifically designated.
✓ = Existing Beneficial Uses.

Table 3.8-5
Definitions of Beneficial Uses of Surface Waters

Abbreviation	Beneficial Use	Description
MUN	Municipal and Domestic Supply	Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.
AGR	Agricultural Supply	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
IND	Industrial Service Supply	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well re-pressurization.

Table 3.8-5
Definitions of Beneficial Uses of Surface Waters

Abbreviation	Beneficial Use	Description
PRO	Industrial Process Supply	Industrial activities that depend primarily on water quality.
POW	Hydropower Generation	Use of water for hydropower generation.
GWR[a]	Groundwater Recharge	Uses of water for natural or artificial recharge or groundwater for purposes of future extraction, maintenance of water quality, or halting of saltwater intrusion into freshwater aquifers.
FRSH[a]	Freshwater Replenishment	Uses of water for natural or artificial maintenance of surface water quantity or quality.
REC-1	Water Contact Recreation	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
REC-2	Non-contact Water Recreation	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
WARM	Warm Freshwater Habitat	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
COLD	Cold Freshwater Habitat	Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
WILD	Wildlife Habitat	Uses of water that support terrestrial or wetland ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats or wetlands, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
RARE[a]	Rare, Threatened, or Endangered Species	Uses of water that support habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened, or endangered.
SPWN	Spawning, Reproduction, and/or Early Development	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.
NAV	Navigation	Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
COMM	Commercial and Sport Fishing	Uses of water for commercial or recreational collection of fish, shellfish, or other organisms, including, but not limited to, uses involving organisms intended for human consumption or bait purposes.

Source: Central Valley RWQCB 2015.

Notes:

[a] Surface waters with the beneficial uses of Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in the Basin Plan. Surface waters of the Sacramento and San Joaquin River Basins falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board.

General National Pollutant Discharge Elimination System Permits and Waste Discharge Requirements

To enable efficient permitting under both the CWA and the Porter–Cologne Act, the SWRCB and the RWQCBs run permit programs that group similar types of activities that have similar threats to water quality. These general permit programs include the Phase I Municipal Separate Storm Sewer System (MS4)[6] Permit, the construction general permit, the industrial general permit (IGP), and other general permits for low-threat discharges. The construction and industrial stormwater programs are administered by the SWRCB, while the Phase I MS4 Permit and other general WDRs are administered by the Central Valley RWQCB. Point-source discharges or other activities that threaten water quality that are not covered under a general permit must seek individual NPDES permits and/or WDRs, depending on the type, location, and destination of the discharge. For these types of discharges, the initial step in the process is to submit a Report of Waste Discharge to the Central Valley RWQCB, who then determines the appropriate permitting pathway.

Table 3.8-6 lists the permits related to water quality that would apply to certain actions conducted under the project, each of which is further described below.

Table 3.8-6
State and Regional Water Quality-Related Permits and Approvals

Program/Activity	Order Number/ NPDES Number	Permit Name	Affected Area/ Applicable Activity
Construction Stormwater Program	SWRCB Water Quality Order 2009-0009-DWQ/CAS000002, as amended	NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities	Statewide/construction-related land disturbance of >1 acre.
Municipal Separate Storm Sewer System Program	Central Valley RWRCB Water Quality Order No. R5-2010-0102	East Contra Costa County Municipal NPDES Permit	New development or redevelopment that creates and/or replaces 10,000 square feet or more of impervious surface.
Industrial General Permit	SWRCB Order No. 2014-0057-DWQ	NPDES General Permit for Stormwater Discharges Associated with Industrial Activities	Projects categorized as industrial activity, pursuant to Attachment A of the permit.
Temporary/Low Volume Dewatering	SWRCB Order No. 2003-0003-DWQ/Central Valley RWQCB Order No. R5-2013-0074/CAG995001	Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality	Central Valley

Note: NPDES = National Pollutant Discharge Elimination System; SWRCB = State Water Resources Control Board; RWQCB = Regional Water Quality Control Board.

[6] An MS4 is defined in as a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, or storm drains) that serve medium and large cities or certain counties with populations of 100,000 or more.

Construction General Permit (SWRCB Order No. 2009-0009-DWQ, as Amended).

For stormwater discharges associated with construction activity in the State of California, the SWRCB has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling and excavation. The Construction General Permit requires development and implementation of a stormwater pollution prevention plan (SWPPP), which would specify water quality BMPs designed to reduce or eliminate pollutants in stormwater discharges and authorized non-stormwater discharges from the construction site. Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the SWRCB.

To receive coverage under the Construction General Permit, the project proponent must submit a Notice of Intent and permit registration documents to the SWRCB. Permit registration documents include completing a construction site risk assessment to determine appropriate coverage level; detailed site maps showing disturbance area, drainage area, and BMP types/locations; the SWPPP; and, where applicable, post-construction water balance calculations and active treatment systems design documentation.

East Contra Costa County MS4 Permit, Provision C.3 Requirements (SWRCB Order No. R5-2010-0102, as Amended).

Pursuant to Section 402 of the CWA and the Porter–Cologne Water Quality Control Act, municipal stormwater discharges in eastern Contra Costa County are regulated under the East Contra Costa County Municipal NPDES Permit (MS4 Permit), Order No. R5-2010-0102, NPDES Permit No. CAS083313, adopted September 23, 2010. The most relevant requirement that pertains to the project is Provision C.3. It should also be noted that the neighboring MS4 permit covering all Bay Area counties within the boundaries of the San Francisco Bay RWQCB is expected to be amended in the near future to include the portions of eastern Contra Costa County currently within the administrative boundaries of the Central Valley RWQCB (Contra Costa Clean Water Program 2018). The current east Contra Costa County MS4 Permit remains in effect until that occurs.

Provision C.3 addresses post-construction stormwater management requirements for new development and redevelopment projects. This provision applies to a development or redevelopment project that would create or replace more than 10,000 square feet of impervious surface or 5,000 square feet for auto service facilities, gas stations, restaurants, and uncovered parking lots. Currently, the County requires project proponents regulated under the MS4 Permit to install hydrodynamic devices, or other BMPs, to remove pollutants such as floating liquids and

solids, trash and debris, and coarse sediment from stormwater runoff, and to show the locations of such controls on plans submitted with the building permit application. In addition, the County requires implementation of low-impact development (LID) strategies, preventive source controls, and additional stormwater treatment measures to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge of certain industrial projects, as well as prevention of increase in runoff flows. The MS4 Permit requires that LID methods shall be the primary mechanism for implementing such controls.

The required stormwater treatment systems must be designed according to the following hydraulic sizing criteria:

- Volume Hydraulic Design Basis – Treatment systems whose primary mode of action depends on volume capacity shall be designed to treat stormwater runoff equal to (a) the maximized stormwater capture volume for the area, on the basis of historical rainfall records, determined using the formula and volume capture coefficients set forth in Urban Runoff Quality Management, Water Environment Federation Manual of Practice No. 23/American Society of Civil Engineers Manual of Practice No. 87, (1998), pages 175–178 (e.g., approximately the 85th percentile 24-hour storm runoff event); or (b) the volume of annual runoff required to achieve 80% or more capture, determined in accordance with the methodology set forth in Section 5 of the California Stormwater Quality Association's Stormwater Best Management Practice Handbook, New Development and Redevelopment (2003), using local rainfall data;
- Flow Hydraulic Design Basis – Treatment systems whose primary mode of action depends on flow capacity shall be sized to treat (a) 10% of the 50-year peak flow rate; (b) the flow of runoff produced by a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the applicable area, based on historical records of hourly rainfall depths; or (c) the flow of runoff resulting from a rain event equal to at least 0.2 inches per hour intensity; or
- Combination Flow and Volume Design Basis – Treatment systems that use a combination of flow and volume capacity shall be sized to treat at least 80% of the total runoff over the life of the project, using local rainfall data.

Projects must treat 100% of runoff (based on the selected calculation described above) with LID treatment measures that include harvesting and reuse, infiltration, evapotranspiration, or biotreatment (biotreatment may only be used if the other options are infeasible). Biotreatment areas shall be designed to have a long-term infiltration rate of 5 to 10 inches per hour. The County also requires development projects to incorporate the following source control and site design measures:

- Minimize stormwater pollutants of concern through measures that may include plumbing dumpster drips from covered trash, food waste, and compactor enclosures to the sanitary sewer;
- Properly design covers, drains, and storage precautions for outdoor material storage areas and loading docks;

- Properly design trash storage areas;
- Minimize stormwater runoff by implementing one or more site design measures, which include directing roof runoff into cisterns or rain barrels for reuse, or directing roof runoff to vegetated areas.

The County enforces the requirements of the MS4 Permit through its development review and permitting process, and thus requires regulated projects to submit a Storm Water Control Plan for review and approval by the Public Works Department. The Storm Water Control Plan is a separate document from the SWPPP.

Industrial General Permit (SWRCB Order 2014-0057-DWQ, as Amended).

In California, stormwater discharges from industrial facilities are covered under the NPDES General Permit for Stormwater Discharges Associated with Industrial Activities (i.e., the IGP). The IGP is issued by the SWRCB and implemented and enforced by the nine RWQCBs. The IGP requires implementation of management measures that will achieve the performance standard of best available technology economically achievable and best conventional pollutant control technology. The most recent IGP (SWRCB Order No. 2014-0057-DWQ) was adopted April 1, 2014, and became effective on July 1, 2015; it replaces the previous 1997 statewide permit for industrial stormwater (SWRCB Order No. 2014-0057-DWQ).

The IGP requires stormwater dischargers to eliminate unauthorized non-stormwater discharges, develop and implement SWPPPs, implement BMPs, conduct monitoring, compare monitoring results to numeric action levels, perform appropriate exceedance response actions when numeric action levels are exceeded, and certify and submit all permit registration documents. Changes under the new IGP compared to the IGP issued in 1997 are that stormwater dischargers are required to implement minimum BMPs, electronically file all permit registration documents via the SWRCB's Storm Water Multiple Application and Report Tracking System, comply with new training expectations and roles for qualified industrial stormwater practitioners, sample to detect exceedance of annual and instantaneous numeric action levels, develop and implement exceedance response actions if annual or instantaneous numeric action levels are exceeded, monitor for parameters listed under CWA Section 303(d), design treatment control BMPs for flow- and volume-based criteria, and understand new criteria, sampling protocols, and sampling frequency for qualifying storm events. The new general order also defines design storm standards for treatment control BMPs, qualifying storm events, and sampling protocols to follow during a design storm event.

As a covered facility, Byron Airport is currently enrolled in the IGP, under waste discharge identification number 5S07I002606. It is currently operating under an industrial SWPPP and submits reports to the SWRCB on an annual basis documenting its compliance activities (ACMG

2016). The airport's SWPPP is a living document and is updated as needed in concert with RWQCB requirements and/or changes to facility activities and operations (ACMG 2016). During qualifying storm events, when discharges are made to the site's outfall, the airport collects samples of the flow for testing so that it can verify to the SWRCB that it is not contributing to water quality impairments or violations of Basin Plan objectives. The annual report also serves to continually update descriptions of industrial materials and storage/containment devices, and documents activities undertaken by the airport to keep stormwater facilities and pollution controls working effectively. Review of the SWRCB's Storm Water Multiple Application and Report Tracking System indicates that the facility has never been in violation of permit conditions since adoption of the 2014 IGP (SWRCB 2019).

General Order for Dewatering and Other Low-Threat Discharges to Surface Waters (Central Valley RWQCB Order R5-2013-0074, as Amended).

The Central Valley RWQCB has adopted a general NPDES permit for short-term discharges of small volumes of wastewater from certain construction-related activities. Discharges may be covered by the permit provided they are either (1) 4 months or less in duration or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. To receive coverage under this general permit, the discharger must submit a Notice of Intent to the RWQCB and describe the activity with sufficient detail to demonstrate that discharge would comply with the discharge prohibitions, effluent limitations, and receiving water limitations outlined in the order. In no case shall the discharge impair beneficial uses or violate water quality standards or cause a possible nuisance condition. This permit would be required in the event dewatering discharges would be made to a creek, such as might be necessary during foundation excavations, utility trenching, or other site construction activities. If the discharge is made to land (e.g., to a temporary infiltration/percolation basin on site) the project proponent would need to apply for coverage under the Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality (SWRCB Order No. 2003-0003-DWQ) or equivalent. The intent and procedures for coverage under this permit are similar as described above.

California Sustainable Groundwater Act

The Sustainable Groundwater Management Act (SGMA) is a package of three bills (Assembly Bill [AB] 1739, SB 1168, and SB 1319) that provides local agencies with a framework for managing groundwater basins in a sustainable manner. The SGMA establishes minimum standards for sustainable groundwater management, roles and responsibilities for local agencies that manage groundwater resources, and priorities and timelines to achieve sustainable groundwater management within 20 years of adoption of a Groundwater Sustainability Plan (GSP). Central to the SGMA are

the identification of critically over-drafted basins, prioritization of groundwater basins, establishment of Groundwater Sustainability Agencies (GSAs), and preparation and implementation of GSPs for medium-priority, high-priority, and critically over-drafted basins. GSAs must be formed by June 30, 2017. GSPs must consider all beneficial uses and users of groundwater in the basin, as well as include measurable objectives and interim milestones that ensure basin sustainability. A basin may be managed by a single GSP or multiple coordinated GSPs.

At the state level, DWR has the primary role in the implementation, administration, and oversight of the SGMA, with the SWRCB stepping in should a local agency be found to not be managing groundwater in a sustainable manner. DWR recently approved regulations and guidelines for implementation of the SGMA.

The project site intersects the Tracy Groundwater Subbasin (DWR Basin No. 5-22.15), which is a medium priority basin and will eventually be managed under a GSP. The County, the Cities of Antioch and Brentwood, Byron-Bethany Irrigation District, Diablo Water District, Discovery Bay Community Services District, and East Contra Costa Irrigation District are the GSAs within the Contra Costa County portion of the Tracy Groundwater Subbasin. All seven GSAs have signed a memorandum of understanding agreeing to prepare a single GSP for the groundwater basin within the County. The GSP must be submitted to DWR by January 31, 2022.

Groundwater Management Act

Groundwater management is outlined in the California Water Code, Division 6, Part 2.75, Chapters 1–5, Sections 10750 through 10755.4. The Groundwater Management Act was first introduced in 1992 as AB 3030 and has since been modified by SB 1938 in 2002 and AB 359 in 2011. These significant pieces of legislation establish, among other things, specific procedures on how Groundwater Management Plans (GWMPs) are to be developed and adopted by local agencies.

The intent of the Groundwater Management Act is to encourage local agencies to work cooperatively to manage groundwater resources within their jurisdictions and to provide a methodology for developing a GWMP.

- **Assembly Bill 3030**: AB 3030 was signed into law in 1992 and provides a systematic procedure for a local agency to develop a GWMP.
- **Senate Bill 1938**: SB 1938, signed into law in 2002, modified the Groundwater Management Act by requiring any public agency seeking state funds administered through DWR for the construction of groundwater projects to prepare and implement a GWMP with specified required components. The SB 1938 requirements apply not just to management areas that overlie Bulletin 118–defined groundwater basins, but to those agencies that have groundwater management outside of those basins.

- **Assembly Bill 359**: AB 359, signed into law in 2011, modified the Groundwater Management Act by requiring public agencies to prepare and implement a GWMP with an additional required component that is focused on identifying groundwater recharge areas. The AB 359 legislation also includes several plan adoption procedural changes, requires GWMPs to be submitted to DWR, and requires DWR to provide public access to this information.

There are no AB 359, SB 1938, or AB 3030 GWMPs applicable to the project site.

Local

Contra Costa County General Plan

The County General Plan contains goals and policies that are applicable to all development projects within the County's unincorporated areas. The Public Facilities/Services (Chapter 7), Conservation (Chapter 8), and Safety (Chapter 10) Elements identify numerous goals and policies related to drainage, flood control, and water quality that include but are not limited to watershed management, protection of surface and subsurface water supplies, requirements for drainage facilities, risk management in relation to flood control, and control of non-point sources of water pollution (Contra Costa County 2005a, 2005b, 2005c).

Public Facilities/Services Element

Policy 7-23 The County shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.

Policy 7-26 The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.

Policy 7-45 On-site water control shall be required of major new developments so that no significant increase in peak flows occurs compared to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts expected from the development or the project in implementing an adopted drainage plan.

Policy 7-46 Regional detention basins shall be favored over smaller, on-site detention basins.

Conservation Element

Policy 8-23 Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutants and siltation will significantly adversely affect the value or function of wetlands.

Policy 8-76 Preserve and enhance the quality of surface and groundwater resources.

Policy 8-77 Ensure that land uses in rural areas be consistent with the availability of groundwater resources.

Policy 8-80 Support improvements to flood control facilities that provide opportunities for stormwater detention and groundwater recharge.

Policy 8-81 Where feasible, existing and natural waterways shall be protected and preserved in their natural state, and channels which are already modified shall be restored.

Policy 8-89 The natural function of riparian corridors and water channels shall be restored and maintained to reduce flooding, convey stormwater flows, and improve water quality.

Policy 8-91 Existing native riparian habitat shall be preserved and enhanced by new development unless public safety concerns require removal of habitat for flood control or other public purposes.

Policy 8-92 On-site water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.

Policy 8-94 Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback area shall be a minimum of 100 feet; 50 feet on each side of the centerline of the creek.

Policy 8-96 Grading, filling, and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.

Safety Element

Policy 10-38 Flood-proofing of structures shall be required in any area subject to flooding; this shall occur both adjacent to watercourses as well as in the Delta or along the waterfront.

Policy 10-54 New development and substantial improvements or upgrades in the 100- and 500-year flood hazard zones shall be constructed in accordance with applicable County, state, and federal regulations including compliance with the minimum standards of FEMA's National Flood Insurance Program (NFIP) to avoid or minimize the risk of flood damage.

Contra Costa County Municipal Code Section 1014 – Stormwater Management and Discharge Control

The purpose of County Municipal Code Section 1014 is to eliminate, to the maximum extent practicable, the discharge of pollutants into local watercourses and municipal storm drain systems. Section 1014 requires that all projects creating and/or redeveloping at least 10,000 square feet of impervious surface, or 5,000 square feet for auto service facilities, gas stations, restaurants, and uncovered parking lots, provide treatment of stormwater runoff generated by the project. Projects creating and/or redeveloping impervious surface in excess of 1 acre are required to not only treat stormwater runoff, but also provide hydrograph modification management (resulting in post-project stormwater runoff flow rates and durations effectively matching the estimated pre-project levels). This section of the County Municipal Code, as well as the County's Stormwater Management and Discharge Control Ordinance (Section 1014), is intended to achieve compliance with Provision C.3 of the County's MS4 NPDES Permit issued by the Central Valley RWQCB, as described in detail above.

Contra Costa County Municipal Code Chapter 82-28 – Floodplain Management Ordinance

The Floodplain Management Ordinance applies to all FEMA-designated SFHAs within the County's jurisdiction. The purpose of the ordinance is to promote public health and safety and minimize public and private losses due to flood conditions. This is accomplished through provisions designed to protect human life and property; minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, and streets and bridges located in areas of special flood hazard; minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public; minimize public expenditure on flood projects; and provide information to the public regarding SFHAs. The ordinance establishes the requirement for a floodplain permit, which must be obtained prior to issuance of a grading permit or building permit, or commencement of development, on any

property within any area of special flood hazards, and also establishes construction standards pertaining to structure anchoring, construction materials and methods, elevation above the base flood height, and flood proofing.

Contra Costa County Drainage Ordinances

A drainage permit under Division 914 and/or Division 1010, Drainage, of the County Ordinance Code would be required for installation of culverts proposed as part of the project, and within existing drainage ditches and tributaries to Brushy Creek. Among other things, the ordinance prohibits the impairment or impedance of the natural flow of stormwaters; direct physical impacts to watercourses (e.g., through grading, excavation, filling, and/or development); or the construction, alteration, or repair of a drainage structure, facility, or channel without first obtaining a permit from the public works department. Furthermore, Division 914 establishes on-site and off-site collect and convey requirements that must be met before development approvals are granted. Applicants are required to substantiate that both on-site and off-site drainage facilities have adequate capacity to convey specified design storm events, that the capacity and stability of natural watercourses are adequately protected, and that environmentally sensitive flow velocity attenuation techniques approved by the public works department are implemented. Detention basins must be approved by the public works department and are required to detain the 100-year storm runoff.

3.8.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts to hydrology and water quality are based on Appendix G of the CEQA Guidelines. A significant impact related to hydrology and water quality would occur if a project would:

1. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality.
2. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
   (a) result in substantial erosion or siltation on or off site;
   (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

(c) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

(d) impede or redirect flood flows.

4. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
5. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

3.8.4 Impacts Analysis

Impact 3.8-1. The project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality. (Less than Significant)

Impacts to water quality through exceedance of water quality standards, non-conformance with WDRs, or by other means can potentially result from the short-term effects of construction activity (e.g., erosion and sedimentation due to land disturbances, uncontained material and equipment storage areas, improper handling of hazardous materials) and the long-term effects of landscaping, circulation improvements, utility infrastructure, and structural designs (e.g., alteration of drainage patterns, use/handling of hazardous materials, and/or increases in impervious surfaces).

Construction Impacts

Construction period activities could generate stormwater runoff that could cause or contribute to a violation of water quality standards or WDRs, provide substantial additional sources of polluted runoff, or otherwise substantially degrade the water quality of receiving waters, which in most cases consist of the underlying groundwater, but in extreme cases such as a 10-year flood or greater, could consist of Brushy Creek and downstream waters. In areas of active construction, soil erosion may result in discharges of sediment-laden stormwater runoff into the existing or proposed stormwater drainage system, if not properly controlled. Without proper controls, this could contribute to degradation of downstream water quality and impairment of the beneficial uses identified in Section 3.8.2. Sediment can also be a carrier for other pollutants, such as heavy metals, nutrients, pathogens, oil and grease, fuels, and other petroleum products. In addition to sediment, other pollutants associated with the various phases of construction, such as trash, paint, solvents, sanitary waste from portable restrooms, and concrete curing compounds, can discharge into and impair receiving waters if released during construction.

As part of the permitting and approval of individual uses proposed by the project, project proponents would be required to develop and implement a SWPPP in accordance with SWRCB and Central Valley RWQCB requirements (as described in Section 3.8.2). The SWPPP must specify the location, type,

and maintenance requirements for BMPs necessary to prevent stormwater runoff from carrying construction-related pollutants into nearby receiving waters (in this case, the southern part of the Sacramento–San Joaquin Delta). BMPs must be implemented to address potential release of fuels, oil, and/or lubricants from construction vehicles and equipment (e.g., drip pans, secondary containment, washing stations); release of sediment from material stockpiles and other construction-related excavations (e.g., sediment barriers, soil binders); and other construction-related activities with the potential to adversely affect water quality. The number, type, location, and maintenance requirements of BMPs to be implemented as part of the SWPPP depend on site-specific risk factors such as soil erosivity factors, construction season/duration, and receiving water sensitivity.

SWPPPs must be developed and implemented by a Construction General Permit Qualified SWPPP Developer/Qualified SWPPP Practitioner. The Qualified SWPPP Developer/Qualified SWPPP Practitioner is tasked with determining the receiving water risks (including beneficial uses and CWA Section 303d impairments), monitoring site activities that could pose risks to water quality, and developing a comprehensive strategy to control construction-related pollutant loads in site runoff. Minimum standard BMPs include erosion and sediment controls; site management/housekeeping/waste management; management of non-stormwater discharges; run-on and runoff controls; and BMP inspection, maintenance, and repair activities. A rain event action plan must also be prepared by the Qualified SWPPP Developer/Qualified SWPPP Practitioner to outline the procedures to prepare the construction site for rain events and minimize the potential release of construction-related contaminants.

The following list includes examples of treatment control BMPs to employ during construction, although these would vary based on the nature of construction activities, the characteristics of the site, and the existing impairments applicable to receiving waters (these features would appear as notes on final design plans):

- Silt fences installed along limits of work and/or the construction site
- Stockpile containment (e.g., visqueen, fiber rolls, gravel bags)
- Exposed soil stabilization structures (e.g., fiber matrix on slopes and construction access stabilization mechanisms)
- Street sweeping
- Tire washes for equipment
- Runoff control devices (e.g., drainage swales, gravel bag barriers/chevrons, velocity check dams) shall be used during construction phases conducted during the rainy season.
- Drainage system inlet protection
- Wind erosion (dust) controls

- Tracking controls
- Prevention of fluid leaks (inspections and drip pans) from vehicles
- Dewatering operations best practices
- Materials pollution management
- Proper waste management
- Regular inspections and maintenance of BMPs

The standard requirements contained in a SWPPP are sufficient to address a project's potential to violate water quality standards or WDRs. Implementation of SWRCB and Central Valley RWQCB requirements (CWA NPDES Program and Porter–Cologne Water Quality Control Act WDRs) are enforced by the County through Division 1014 (Stormwater Management and Discharge Control) of the County Ordinance Code. In addition to stormwater runoff, construction activities can generate fugitive dust, which, if not properly controlled, can be deposited in nearby waters. Note that this potential impact is addressed in Section 3.2, Air Quality; actions to mitigate adverse effects on air quality would likewise mitigate potential adverse effects on water quality from atmospheric deposition. Therefore, the construction-related impact of the project on water quality would be **less than significant** because existing permitting requirements are sufficient to meet Basin Plan objectives and prevent adverse effects on beneficial uses.

Operational Impacts

The project would involve construction of impervious surfaces such as roofs, driveways, and parking lots, upon which pollutants such as dust/sediment, vehicle and aircraft fluids, oil, and grease could accumulate and come into contact with rain and stormwater runoff, which could discharge into the airport's stormwater drainage system. The aviation and non-aviation uses (e.g., retail, service, warehouse and distribution, and light manufacturing uses) proposed are typically associated with a high coverage of impervious surfaces and can involve the storage/management of hazardous materials. Pollutants could be generated from loading, delivery, and trash pick-up areas and/or the use of open storage areas to store bulk materials, depending on the specific uses ultimately developed in the aviation and non-aviation areas. If not properly controlled, the discharge of polluted stormwater runoff could adversely affect water quality and the beneficial uses of receiving waters.

Byron Airport is currently enrolled in the IGP (SWRCB Order No. 2014-0057-DWQ) under waste discharge identification number 5S07I002606. "Aircraft and aircraft-related activities" and "transportation with vehicle maintenance" facilities are two of the many categories of industrial activities covered by the IGP, which is designed to require project proponents to address industry- and site-specific threats to water quality. The IGP requires permittees to

identify, describe, and assess project-specific pollutant sources; implement minimum and advanced BMPs designed for those pollutant sources and protective of receiving waters; and conduct long-term monitoring and reporting to demonstrate the objectives of the IGP are being met and the quality of receiving waters is not being degraded. Performance standards for BMPs specified in the IGP include use of best available technology economically achievable and best conventional pollutant control technology to reduce or prevent pollutants in stormwater discharges and authorized non-stormwater discharges; the BMPs must be designed to meet discharge prohibitions, effluent and receiving water limitations, TMDLs, and water quality objectives in the Basin Plan. BMPs could include active treatment systems (e.g., pre-settlement tank and multiple filtration systems, as necessary) that target industry- and site-specific pollutants prior to discharge, as well as stormwater effluent testing during each qualifying rainfall event.

Byron Airport is currently operating under an industrial SWPPP and submits reports to the SWRCB on an annual basis documenting its compliance activities (ACMG 2016). The airport's SWPPP is a living document and is updated as needed in concert with RWQCB requirements and/or changes to facility activities and operations (ACMG 2016). During qualifying storm events, when discharges are made to the site's outfall, the airport collects samples of the flow for testing so that it can verify to the SWRCB that it is not contributing to water quality impairments or violations of Basin Plan objectives. The annual report also serves to continually update descriptions of industrial materials and storage/containment devices, and documents activities undertaken by the airport to keep stormwater facilities and pollution controls working effectively. Review of the SWRCB's Storm Water Multiple Application and Report Tracking System indicates that the facility has never been in violation of permit conditions since adoption of the 2014 IGP (SWRCB 2019).

The existing uses would continue to operate under the industrial SWPPP in effect for the Byron Airport, which would continue to be amended as required. Future aviation uses or non-aviation uses that are covered facilities under the IGP would either be folded into the existing IGP coverage through a SWPPP amendment or would be required to obtain coverage under a separate waste discharge identification number, depending on arrangement between landowner and lessee. For leases that would qualify as an industrial facility under the general permit, the project proponent would not be authorized to construct and operate the facility without first obtaining coverage under the IGP, which is accomplished by submitting to the Central Valley RWQCB all required permit registration documents, including a Notice of Intent and an Industrial SWPPP. The Industrial SWPPP would contain, at a minimum, (1) the facility name and contact information, (2) a site map, (3) a list of industrial materials handled, (4/5) a description and assessment of pollutant sources, (6) minimum BMPs, (7) advanced BMPs, where applicable, (8) a monitoring and implementation plan, (9) an annual comprehensive facility compliance evaluation, and (10) the date that the SWPPP was initially prepared and the date of each SWPPP amendment, where applicable.

Future development of airport-related uses not defined as a covered facility under the IGP would require compliance with the east Contra Costa County MS4 Permit (Order No. R5-2010-0102), as described in Section 3.8.2. Provision C.3 of the MS4 Permit addresses post-construction stormwater management requirements for new development and redevelopment projects. Currently, the County requires project proponents to install hydrodynamic devices or incorporate other BMPs to remove pollutants, such as floating liquids and solids, trash and debris, and coarse sediment, from stormwater runoff and to show the locations of such controls on plans submitted with the development application (when a discretionary permit is required) and/or building permit application. In addition, the County requires implementation of LID strategies, preventative source controls, and additional stormwater treatment measures to minimize the discharge of pollutants in stormwater runoff and non-stormwater discharge of certain industrial projects, as well as to prevent of an increase in runoff flows. Additional details on these requirements are provided in Section 3.8.2.

Required compliance with the IGP and the east Contra Costa County MS4 Permit, as applicable, would effectively avoid or substantially reduce the project's potential to violate water quality standards or WDRs or otherwise substantially degrade surface or groundwater quality. Therefore, the impact of operation and maintenance of the project on water quality would be **less than significant**. Impacts of the project regarding drainage and runoff alterations are addressed under Impact 3.8-3.

Impact 3.8-2. The project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. (Less than Significant)

As discussed in Section 3.8.1, Existing Conditions, the proposed project is located in the Tracy Groundwater Subbasin of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-022.15), as defined by the DWR (2003). The Tracy Groundwater Subbasin is a medium priority basin and will eventually be managed under a GSP. DWR's priority rating is based on estimates of population density, anticipated growth, well density, the amount of irrigated agriculture, the degree to which water demands are met from wells (versus surface water), and the existence of documented impacts (e.g., overdraft) (DWR 2014). More than 80% of the municipal and agricultural water demands within the subbasin are served by surface water supplies, primarily from the California Aqueduct, and, as discussed in Section 3.8.1, groundwater levels have been generally stable in the past several decades (DWR 2014). The Byron-Bethany Irrigation District and the County, as part of the GSA for the Tracy Groundwater Subbasin, will have joint responsibility for preparing and implementing a GSP for the basin by 2022. However, there is currently no GWMP currently adopted for the part of the basin which the proposed project overlies (e.g., AB 359, SB 1938, or AB 3030 GWMPs).

The Water Supply Assessment completed for the proposed project estimates that the construction water demand for the proposed project is 31 acre-feet spread out over a 10-year build-out period, equivalent to an average of 3.1 acre-feet per year (Appendix I). Operations and maintenance activities for the proposed project would require a water demand that would ramp up to approximately 36 acre-feet per year by the end of the 10-year build-out period (Appendix I). Due to low yield and poor water quality, groundwater is unlikely to be utilized to meet the water demands of the project; instead, the water demands are anticipated to be met by surface water imports from the Byron-Bethany Irrigation District and/or the Town of Discovery Bay (Appendix I). However, the proposed project would retain the capability to either construct a new well or redevelop its existing well for a backup or emergency source of water.

Should groundwater be utilized to meet some or all of the proposed project's water demands, the impacts on aquifer depletion and/or the local lowering of the groundwater table would be minimal. This is because there are no municipal water wells in the region surrounding the proposed project, and the existing domestic and irrigation wells in the area surrounding the project are a sufficient distance away to avoid experiencing pumping interference (DWR 2018a, 2018b). Average groundwater use in the Tracy Subbasin is estimated to be between 0.03 and 0.1 acre-feet/acre (DWR 2014). Given the Byron Airport is approximately 1,319 acres in size, the maximum water demand of the proposed project, if it were to come entirely from the groundwater aquifer (which is not anticipated), would represent a water use of 0.03 acre-feet/acre, which is consistent with the lower end of the range of the average groundwater use in the Tracy Subbasin. Given this level of groundwater pumping has not produced declining groundwater levels, it would not have substantial adverse impacts with regard to aquifer depletion.

Furthermore, the proposed project would have minimal impacts with respect to groundwater recharge. Although planned uses are likely to include a substantial amount of impervious surfaces, which would locally prevent infiltration, stormflows would be diverted to the site's stormwater detention basin, where the accumulated flow would be available for infiltration. Under existing conditions, as described in Section 3.5, Geology and Soils, the project site contains soils that are not naturally conducive to recharge, since they contain significant amount of clay and therefore have hydrologic soil group ratings of C and D (i.e., slowly to very slowly permeable). Furthermore, compliance with the IGP and MS4 Permit (described under Impact 3.8-1) would include BMPs and LID strategies to manage runoff and water quality, which could include swales and/or infiltration basins which would collect runoff from impervious areas. While impervious surfaces would result in localized decreases in infiltration, the runoff volume from impervious surfaces would be directed to locations (e.g., water quality BMPs and/or detention basin) where it could infiltrate into the underlying groundwater aquifer. Therefore, the project would not significantly change the overall volume of the recharge to the Tracy Groundwater Subbasin.

For these reasons, the impacts of the proposed project on the sustainable management of groundwater (e.g., aquifer depletion, well interference, and groundwater recharge) would be **less than significant**.

Impact 3.8-3. The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (c)create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows. (Potentially Significant)

Drainage patterns of the site can be altered through several means, including significant grading (i.e., alteration of topography), whereby the natural drainage areas of the site are altered, or through addition of impervious surfaces, which can increase the rate and volume of storm runoff, thereby increasing the magnitude and accelerating the arrival time of peak flows in downstream waterways. The project would not substantially alter the site's topography because the areas planned for the aviation and non-aviation uses are located on previously graded pads or are otherwise on land that is already relatively flat. Currently undeveloped areas planned for the aviation and non-aviation uses have average slopes of 1.5% or less (Google Earth 2018). Minor, localized changes in topography may occur as development of these areas proceeds; however, these changes would not be substantial enough to alter the pre-existing watershed boundaries or the general drainage pattern shown in Figure 3.8-2.

Prior to and at full build-out, the project would involve substantial increases in the amount of impervious surfaces, which has the potential to substantially increase the rate and volume of storm runoff during peak storm events without adequate measures to detain, retain, or slow the increased flows. The distribution and extent of impervious surfaces to be constructed is not known precisely at this time but would occur in a 70-acre area planned for non-aviation uses (46.6 acres) and the aviation area (23.5 acres). At full build-out, the total building footprint for all new uses is anticipated to be approximately 914,000 square feet (or 21 acres). Though some of this area may consist of landscaping or water quality control BMPs (e.g., swales, gravel, or pervious pavement), the majority of the building footprint is expected to consist of impervious surfaces, given the anticipated uses (e.g., typically 80% to 90% of the building footprint). The following subsections examine the impacts that altered flow regimes would have on erosion or siltation, on- or off-site flooding, the capacity of existing or planned stormwater drainage systems, and the impedance or redirection of flood flows.

Erosion and Siltation

Alteration in the flow regime (i.e., increases in the volume and rate of stormwater runoff) can increase erosion and siltation beyond naturally occurring levels within receiving waters. The primary receiving waters for the project site consist of Brushy Creek (shown in Figure 3.8-1) and the existing detention basin (shown in Figure 3.8-2). The majority of the project site drains to the detention basin, which means these areas would not have an impact on sedimentation and siltation within Brushy Creek, except under an extreme storm scenario when the detention basin reaches its holding capacity. At that point, the basin as currently constructed would release excess storm flow into a ditch that flows north under Holey Road and then northeast to the lower-most reach of Brushy Creek near Byron Highway, about 0.5 miles upstream of its confluence with Indian Slough.

Erosion and siltation are water quality concerns that are addressed comprehensively under Impact 3.8-1. As discussed therein, compliance with the Construction General Permit (SWRCB Order 2009-0009-DWQ, as amended), the IGP, and the East Contra Costa County MS4 Permit would ensure that erosion and siltation are minimized through centralized and/or distributed implementation of both temporary (construction) and permanent (operation and maintenance) water quality BMPs. Compliance with state and federal water quality regulations and permits are enforced through Division 1014 (Stormwater Management and Discharge Control) of the County Ordinance Code. For the same reasons discussed under Impact 3.8-1, the impact of the project on water quality (including erosion and siltation) would be **less than significant**.

Under the Construction General Permit, MS4 Permit, and IGP, water quality BMPs are typically focused on the capture and treatment of the more typical (frequent) peak storm events. The exact performance standard varies between regulations and permit programs, but typically require water quality BMPs to be designed to the amount of runoff produced in a storm with a 2-year recurrence interval (e.g., 85th percentile 24-hour storm runoff event). Project-related increase in runoff produced by more extreme events must be addressed with conveyance, detention, and flood control improvements necessary to avoid flood-related damage to structures and the environment, addressed below under On-Site and Off-Site Flooding.

On-Site or Off-Site Flooding

The project, due to the aforementioned increases in impervious surfaces, could result in increases in runoff to the on-site detention basin and to Brushy Creek, which is a natural waterway. If not properly controlled, such increases in runoff could exacerbate on- or off-site flooding that already occurs as part of the existing conditions. This impact would be **potentially significant**.

As discussed in Section 3.8.2, a drainage permit would be required to comply with Division 914 of the County Ordinance Code. Among other things, the ordinance prohibits the impairment or impedance of the natural flow of stormwaters; direct physical impacts to watercourses (e.g.,

through grading, excavation, filling, and/or development); or the construction, alteration or repair of a drainage structure, facility, or channel without first obtaining a permit from the public works department. Division 914 establishes on-site and off-site collect and convey requirements that must be met before development approvals are granted. Applicants are required to substantiate that both on-site and off-site drainage facilities have adequate capacity to convey specified design storm events, that the capacity and stability of natural watercourses are adequately protected, and that environmentally sensitive flow velocity attenuation techniques approved by the public works department are implemented.

Brushy Creek is a major drainage facility and natural watercourse with a 16-square-mile watershed, whereas the on-site detention basin is estimated to serve a watershed area of under 1 square mile. The majority of the planned development is anticipated to drain to the existing detention basin, based on the drainage pattern shown in Figure 3.8-2 and described in Section 3.8.1. Because the northern edge of the area planned for airport-related uses is close to Brushy Creek, some developed uses may direct drainage to Brushy Creek. Because a hydrology and drainage study has not been completed, it is assumed that the impacts associated with increased runoff during storm events in excess of the 2-year flow are potentially significant. Mitigation Measure (MM) HYD-1 would require the preparation of a drainage and hydrology study to evaluate the difference between pre- and post-project storm flows, and establish drainage designs necessary to mitigate the increase and adequately collect and convey flood flows.

Existing or Planned Stormwater Drainage Systems

It is possible the existing detention basin that serves the airport would not be sufficient to meet the volume and/or water quality requirements of the full build-out scenario for future development. As discussed under Impact 3.8-1, it is expected that LID controls and parcel/project-specific flow control BMPs required under the IGP or MS4 Permit would result in no net increase in runoff from individual developments for more frequent peak flow events. Impact 3.8-1 also describes how parcel-specific stormwater systems would be planned, designed, constructed, and maintained adequately in accordance with applicable water quality regulations. However, sufficient detail is not available to know with certainty whether or not the capacity of the existing stormwater system would be exceeded under a full build-out scenario. Sufficient land is available (designated for airport-related or low intensity uses on the Byron Airport Master Plan) to accommodate modifications or additions to the site's existing stormwater system or detention basin. Implementation of MM-HYD-1 would ensure that the capacity of the detention basin is adequate to accommodate the project.

Impedance or Redirection of Flood Flows

According to FEMA, there is an SFHA (100-year flood hazard area, or a 1% annual chance flood hazard) associated with Brushy Creek (FEMA 2017). The flood zone widens significantly along Brushy Creek in an area located west of Runway 12-30 and west of Falcon Way, and spreads over low-lying areas between the two runways and south of Runway 5-23 (Figure 3.8-3, FEMA Flood Hazard Zones). The majority of the flood zone shown is largely confined to areas of the project site that would be designated as habitat management or low intensity use, which would not have development to impede or redirect flood flows. However, the flood zone intersects the northern end of the proposed airport-related uses south of Armstrong Road and north-northeast of Runway 12-30 (FEMA 2017). In this area, the 100-year flood hazard area overlaps approximately 11.5 acres of area zoned for airport-related uses to a width of up to 800 feet. Also shown in Figure 3.8-3 is a regulatory floodway along Brushy Creek, which ranges between 80 and 255 feet in width, and occupies approximately 2.2 acres out of the 11.5 acres area in which planned development and the flood hazard area overlap. Without proper design, proposed uses could impede or redirect flood flows.

Airport-related uses proposed on either side of Brushy Creek, especially those within the regulatory floodway, could constrict the cross-sectional area of the creek and lead to flooding concerns. Creek and habitat conservation buffers would prevent planned development from encroaching of the creek corridor itself and would likewise limit encroachment onto the regulatory floodway. However, considering up to 11.5 acres of the area zoned for airport-related uses is within the FEMA SFHA, the impact of the project on the impedance or redirection of flood flows is potentially significant. MM-HYD-2 would require compliance with existing floodplain management regulations, studies to determine and demonstrate the capacity of the creek corridor would be maintained, coordination with FEMA if the depth or boundaries of the floodplain would be changed as a result, and review and approval by the County Public Works Department.

Impact 3.8-4. The project would not risk release of pollutants due to project inundation in flood hazard, tsunami, or seiche zones. (Less than Significant)

There are three large bodies of water in the project vicinity: Clifton Court Forebay less than 2 miles east of the site, Bethany Reservoir approximately 3 miles to the south, and Los Vaqueros Reservoir 5 miles to the west. The project site is outside the mapped inundation area for Clifton Court Forebay, Bethany Reservoir, and Los Vaqueros Reservoir. As these water bodies are 2 to 5 miles from the project site, the project site is not subject to risk from a seiche. The project is not at risk of tsunami inundation due to its distance away from any coastline. This impact would be less than significant.

Impact 3.8-5. The project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant)

As discussed under Impact 3.8-1, the project would comply with applicable regulations and permits designed to comply with the Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin. As discussed under Impact 3.8-2, there is no sustainable GWMP currently adopted for the Tracy Groundwater Subbasin of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-022.15). It is expected that a GSP will be adopted by 2022; however, for the reasons discussed in Impact 3.8-2, the impacts of the project on the sustainable management of groundwater (e.g., aquifer depletion, well interference, and groundwater recharge) would be **less than significant**.

3.8.5 Mitigation Measures

Implementation of the following mitigation measures would reduce Impact 3.8-3 to a less-than-significant level.

MM-HYD-1 Hydrology and Drainage Study. Prior to approval of individual development plans, a Hydrology and Drainage Study shall be prepared for the project to refine the size and hydrologic characteristics of drainage areas that intersect the project site, to estimate pre- and post-project flow rates and volumes under 10- 25-, 50- and 100-year storm events, and to provide recommendations for needed improvements. The Hydrology and Drainage Study shall quantify the capacity of the existing detention basin; determine whether or not it will be sufficient to serve future land uses; and establish the hydrology performance criteria and design standards applicable to potential future tenants, based on the destination of runoff (i.e., detention basin or Brushy Creek) and the degree of impervious surface coverage. The study shall be consistent with the hydrology performance criteria and design standards contained within the Contra Costa County Drainage Ordinance (Division 914), which include but are not limited to:

- Drainage facilities shall be designed to convey a minimum (with sufficient freeboard) of the runoff produced by a) a 10-year storm event for facilities draining an area of less than 1 square mile, b) a 25-year storm event for facilities draining an area of between 1 and 4 square miles, and c) a 50-year storm event (and 100-year event without freeboard) for facilities draining an area of more than 4 square mile.
- Finished floors shall be elevated above the base flood elevation of the one-hundred-year frequency storm runoff, as determined using the maximum potential development of the drainage basin or watershed shall.

- Storm flows shall be collected and conveyed in a manner that avoids damage to any improvement, building site or dwelling which may be constructed as part of the project.
- Detention basins shall be sized to contain without freeboard a one-hundred-year average recurrence interval runoff, unless it can be shown that a one-hundred-year average recurrence interval runoff can be safely passed through the detention basin without damage to the detention basin or any other property.
- Drainage capacity shall be provided that accounts for the full build-out of uses anticipated with the drainage area.

The study shall be submitted to the Contra Costa County Public Works Department (Flood Control District) for review and approval prior to finalizing individual development plans. In addition, the Hydrology and Drainage Study shall be reviewed by Airports Division staff to ensure any drainage basins proposed are consistent with Federal Aviation Administration aviation obstruction standards for avian attractants (e.g., requirement to drain ponded water within 48 hours of a major storm event).

MM-HYD-2 **Drainage Protection and Flood Control**. For all areas of the project within the Federal Emergency Management Agency (FEMA) 100-year floodplain (Special Flood Hazard Area [SFHA]), Contra Costa County shall ensure that development proposals are consistent with the requirements of the Contra Costa County Floodplain Management Ordinance (Municipal Code Chapter 82-28), Contra Costa County Flood Control Ordinance, and FEMA National Flood Insurance Program. Development proposals in this area shall be submitted to the Contra Costa County Public Works Department for review and approval, and all requirements imposed by the department shall be satisfied. Such requirements may include floodproofing measures (such as elevating structures above the base flood elevation and providing the required freeboard). In the event development proposals involve encroachment onto or undergrounding of Brushy Creek, a Clean Water Act Section 404 Permit from the U.S. Army Corps of Engineers shall be obtained, per MM-BIO-6, and the Contra Costa County Public Works Department shall be provided with drainage studies and engineering reports sufficient to demonstrate that flood flows on Brushy Creek would not be impeded or redirected. For all development planned within the FEMA 100-year floodplain, subject to approval of the Contra Costa County Public Works Department, the developer would be required to file a Conditional Letter of Map Revision to process the change and shall obtain a FEMA modification of the SFHA as shown on the Flood Insurance Rate Map.

3.8.6 Level of Significance After Mitigation

With implementation of MM-HYD-1 and MM-HYD-2, the impacts of the project on hydrology and water quality (Impact 3.8-3) would be **less than significant**.

3.8.7 Cumulative Impacts

The setting for the cumulative analysis for surface water is the 243-square-mile Old River Watershed (HUC 1804000306), shown in Figure 3.8-1. The setting for the cumulative analysis for groundwater is the Tracy Groundwater Subbasin (DWR Basin No. 5-022.15). The cumulative effects of past and current projects in the cumulative scenario have resulted in water quality problems in the region's major waterways, which are described in Section 3.8.1 and are reflected in the plans and policies contained in the Basin Plan. Cumulatively considerable water quality issues are identified as water quality limited segments (or impaired water bodies) under CWA Section 303(d). As described in Table 3.8-3, impairments related to low dissolved oxygen, chlorpyrifos, TDS, and electrical conductivity are identified for Old River and its tributaries. Though CWA Section 303(d) does not apply to groundwater, the Basin Plan addresses groundwater through the establishment of water quality objectives for bacteria, chemical constituents, pesticides, radioactivity, salinity, tastes and odors, and toxicity. The groundwater basin is known to have elevated levels of TDS, chloride, nitrate, and boron. In many ways, the analysis of each impact in Section 3.8.4 is also a cumulative analysis, because the thresholds of significance considers even minor, localized, and temporary contributions of pollutants potentially significant, due to the cumulative effects of multiple projects within the watershed. The analysis of groundwater (Impact 3.8-2) considers the cumulative context of the whole basin.

The projects in the cumulative scenario that may result in contributions to water quality issues include all development projects that either result in land disturbance, creation of impervious surfaces, and/or release or discharge of pollutants to regional waters. This includes development identified in the County General Plan. Note that most of the land within the watershed is designated for agriculture, public use, open space, and delta recreation (see Figure 3.9-2, Existing General Plan, in Section 3.9, Land Use and Planning).

The NPDES permits relevant to the proposed project (e.g., Construction General Permit, MS4 Permit, and IGP) are aimed at maintaining the beneficial uses of the water bodies in the Basin Plan and meeting water quality objectives associated with specific pollutants of concern. Because adverse water quality and major hydrologic alterations are linked to the large-scale, cumulative effects of development projects and to commercial and/or agricultural land uses, the provisions within the NPDES permits, by their nature, seek to address cumulative conditions. The project, along with all other projects over 1 acre in size, would be required to obtain coverage under the NPDES Construction General Permit, which requires project proponents to identify and implement

stormwater BMPs that effectively control erosion and sedimentation and other construction-related pollutants. For cumulative projects under the jurisdiction of the surrounding County and municipalities, stormwater control ordinances and grading permit approval processes also require smaller projects (less than 1 acre) to implement a standard/minimum set of water quality BMPs. Furthermore, all development and redevelopment projects that create or replace impervious surfaces must comply with the regional MS4 Permit and ensure that they meet applicable water quality standards and performance criteria through source control measures, low-impact development BMPs, and other means.

Therefore, without compliance with existing regulations, and where required, implementation of mitigation measures, regional impacts on water quality from all projects in the cumulative scenario are potentially significant. With the project's compliance with the Construction General Permit, MS4 Permit, and IGP, and implementation of MM-HYD-1 and MM-HYD-2, the project's contributions to cumulatively significant water quality impacts are reduced to **less than significant with mitigation**.

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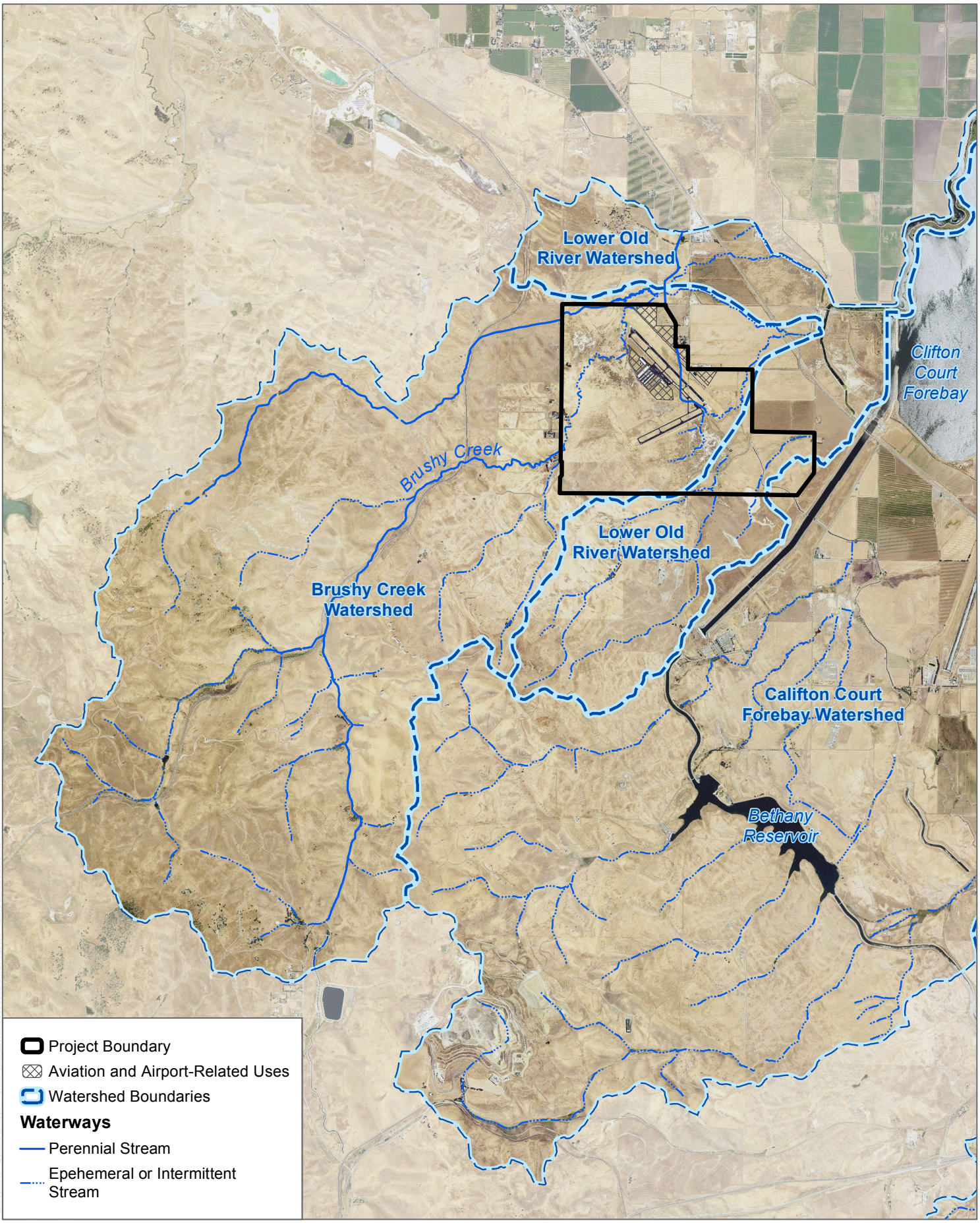

SOURCE: NAIP 2016, Contra Costa County 2017, DWR 2018

DUDEK

0 2,650 5,300 Feet

FIGURE 3.8-1

Creeks and Watersheds

Byron Airport Development Program EIR

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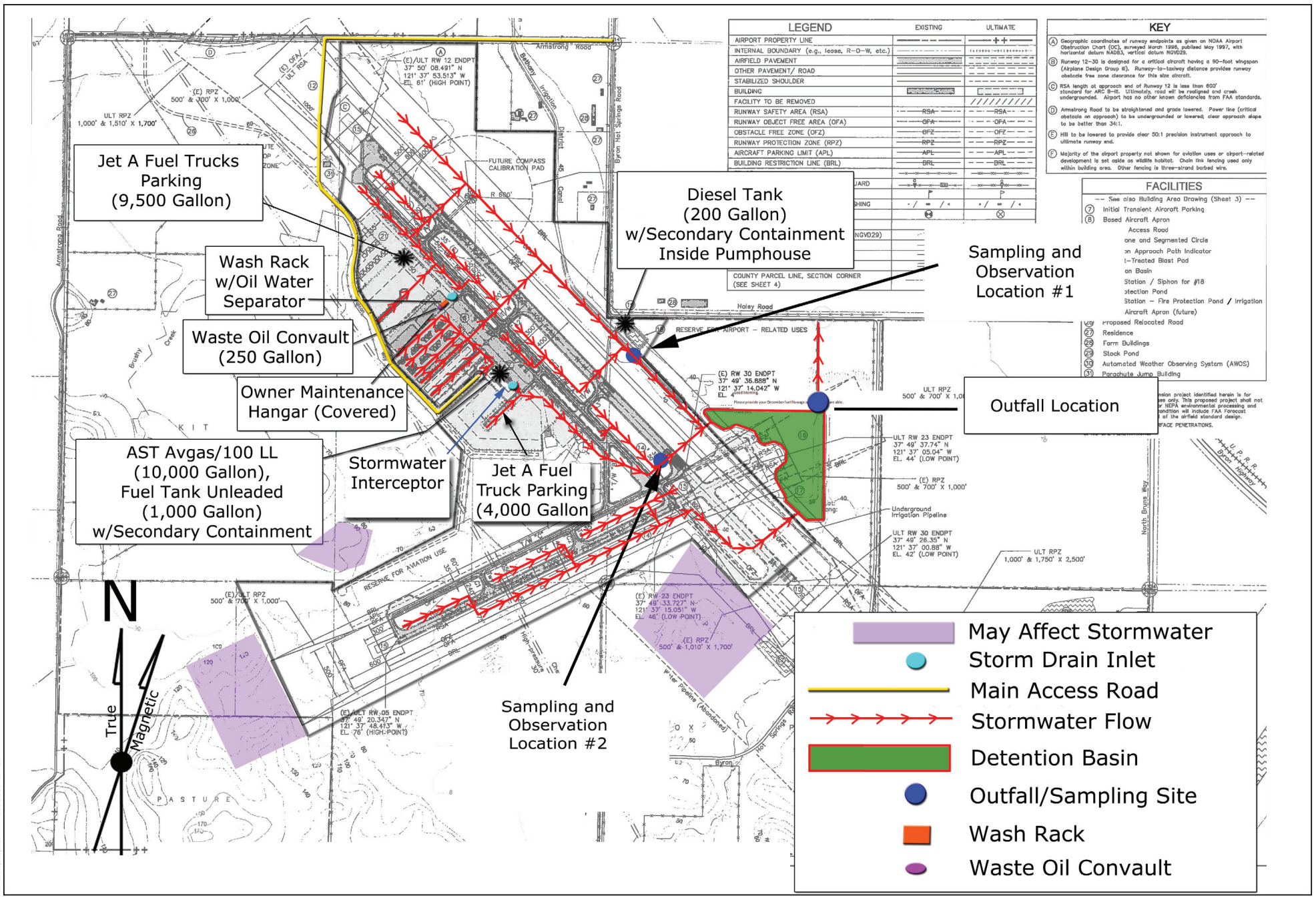

SOURCE: Byron Airport 2016 (Stormwater Pollution Prevention Plan)

FIGURE 3.8-2

Site Drainage

Byron Airport Development Program EIR

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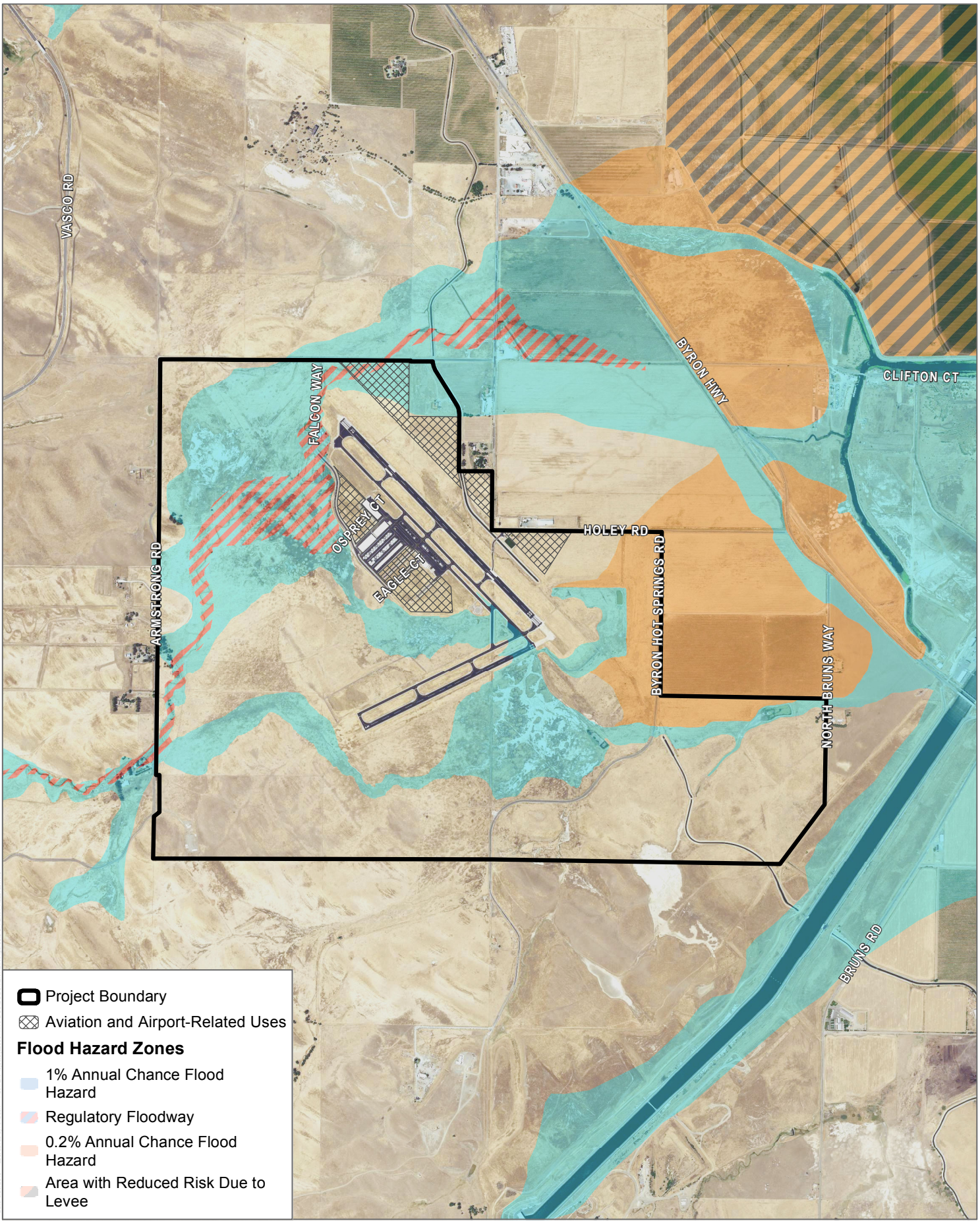

SOURCE: NAIP 2016, Contra Costa County 2017, FEMA 2019

DUDEK

0 1,000 2,000 Feet

FIGURE 3.8-3

FEMA Flood Hazard Zones

Byron Airport Development Program EIR

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3.9 LAND USE AND PLANNING

This section describes the existing land use and planning setting of the Byron Airport Development Program (project) site, including applicable federal, state, and regional regulations. This section considers the proposed amendments to the General Plan and zoning, the proposed update to the Airport Land Use Compatibility Plan (ALUCP) for Byron Airport, and the potential development that would result from these changes.

3.9.1 Existing Conditions

3.9.1.1 Regional

Byron Airport is located in southeastern Contra Costa County (County) (see Figure 2-1, Project Location, of Chapter 2, Project Description, of this Environmental Impact Report [EIR]). Uses around the airport primarily include agriculture (cattle grazing, vineyards, tree crops, and row crops); additionally, rural residential uses are located to the east and west of the project site. This small community is surrounded by agricultural lands and contains concentrated areas of single-family residential development, commercial and light industrial development centralized along Byron Highway, schools, churches, and wineries. Development is primarily located along Camino Diablo, Byron Highway, and Holway Drive. There are several industrial uses on Byron Hot Springs Road, including cement ready-mix and a recycling yard, between central Byron and the airport. Byron Hot Springs, a now abandoned resort and former World War II prisoner of war camp, is located north of the airport to the west of Byron Hot Springs Road.

Byron Highway is the primary regional access, located to the north and east of the project site. Byron Highway provides access to the community of Byron, and further north, Highway 4 and the City of Brentwood. To the south, Byron Highway provides access to the community of Mountain House, an unincorporated planned community in San Joaquin County, and Interstate 580.

The Byron-Bethany Irrigation Canal crosses the eastern portion of the project site. The Clifton Court Forebay is located less than 2 miles east of the site, Bethany Reservoir is approximately 3 miles to the south, and the Los Vaqueros Reservoir is 5 miles to the west. The area has numerous wind energy turbines located in the rolling hills of the Diablo Range west of the project site—some within 1 mile of the airport property. Byron Highway is located north and west of the project site. Other significant development in the immediate vicinity includes several high-voltage transmission lines within 3 miles east, west, and south, as well as a railroad line running parallel to Byron Highway.

3.9.1.2 Project Site

The project site consists of the airport property south of Armstrong Road, which is approximately 1,307 acres, and the 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres (see Figure 2-2, Project Site, of Chapter 2 of this EIR). The airport owns an additional 120 acres north of Armstrong Road that is not considered part of the project site.

The airport has two runways. The primary runway, Runway 12-30 (northwest–southeast), is 4,500 feet long and 100 feet wide. The crosswind runway, Runway 5-23, is 3,000 feet long and 75 feet wide. Both runways have 20-foot unpaved shoulders. General aviation facilities are generally concentrated in the "V" formed by the two runways, with approximately 10 acres of aircraft storage area, 4 acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these facilities were constructed when the airport was built in the early 1990s.

Infrastructure is limited, with a detention basin located east of the crosswind runway, in the corner formed by Holey Road and Byron Hot Springs Road. The water system consists of a domestic well with a 4,000-gallon holding tank and a booster pump with a chlorinator. The sewer system consists of a 3,000-gallon underground septic tank and lift station pumping to a leach field located southwest of the main aircraft ramp.

Approximately 814 acres of the property are reserved for habitat management, consisting of open grassland with scattered vernal pools and season wetlands and alkali grasslands.

3.9.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Aviation Administration

The primary role of the Federal Aviation Administration (FAA) is to promote aviation safety and control the use of airspace. The FAA enforces safety standards and investigates and corrects violations as appropriate. Federal regulations applicable to compatible land use include Federal Aviation Regulation Part 77: Safe, Efficient Use, and Preservation of the Navigable Airspace, and Code of Federal Regulations, Title 14, Part 150, Airport Noise Compatibility Planning.

Land use at airports is guided by an FAA-approved Airport Layout Plan (ALP), a technical set of drawings that is a graphical representation of the long-term development plan for the airport. Per FAA Advisory Circular 150/5070-6B, Airport Master Plans, an update of the ALP drawing set should be an element of an airport master plan. Per FAA Advisory Circular 150/5070-6B, FAA only approves the following elements:

- Forecasts of demand
- ALPs

The Byron Airport ALP was recently updated in 2016. The approved forecasts were not changed, and the forecasts in the 2005 Airport Master Plan remain in effect.

Code of Federal Regulations, Title 14, Part 77 (Part 77), establishes standards and notification requirements for objects affecting navigable airspace. Part 77 regulations allow the FAA to identify potential aeronautical hazards to prevent or minimize adverse impacts to the safe and efficient use of navigable airspace. As a part of this process, FAA reviews buildings (aeronautical and non-aeronautical) on a case-by-case basis through its Obstruction Evaluation/Airport Airspace Analysis program review (i.e., Form 7460). If approved, the subject building receives Form 7460 clearance, which indicates that the building conforms to maximum permissible height standards and would not create a hazard to aircraft.

State

California State Aeronautics Act

The purpose of the California State Aeronautics Act pursuant to Public Utilities Code (PUC), Section 21001 et seq., "is to protect the public interest in aeronautics and aeronautical progress." The State Aeronautics Act provides for the creation of an Airport Land Use Commission (ALUC) for every county that contains a public use airport. The purpose of an ALUC, per the State Aeronautics Act, is to conduct airport land use compatibility planning. ALUCs protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses (PUC Sections 21670–21679.5). The primary mechanism used to accomplish airport land use compatibility planning is the adoption of an ALUCP (PUC Sections 21674[c] and 21675).

The California Department of Transportation is involved in state aviation system planning and research through its Division of Aeronautics and its Office of Research and New Technology. California Department of Transportation prepares and regularly updates the California Aviation System Plan, the vehicle by which California Department of Transportation conducts continuous aviation system planning and guides aviation infrastructure investment priorities. The Division of Aeronautics also prepares the state's official guidance for preparing and implementing an ALUCP, known as the California Airport Land Use Planning Handbook (Handbook). The Handbook was first published in 1993 and updated in 2002. The latest edition of the Handbook was adopted in 2011.

Local

Airport Land Use Compatibility Plan

The ALUC with jurisdiction over the airport is the Contra Costa ALUC. The current ALUCP was adopted in 2000 (Contra Costa County 2000). The ALUCP includes countywide policies, policies specific to Buchanan Field and Byron Airport, and supporting information. Each airport has an Airport Influence Area (AIA), which is the area within which airport compatibility should be considered for land use decisions. The ALUCP considers four compatibility factors: noise, safety, airspace protection, and overflight. Land use plans, including codes, specific plans, and zoning ordinances, should be consistent with the ALUCP. Where the relevant land use plan has not been found consistent with the ALUCP, or a change is proposed to that land use plan, the ALUC will consider if the plan or land use action is consistent with the ALUCP. Note that the local land use agency may override the ALUC's decision, but in so doing removes any responsibility from the airport operator for land use conflicts.

The Byron ALUCP uses "composite zones," which integrate noise and safety criteria when determining the compatibility of a land use in any given area within the AIA. The 2000 ALUCP was developed under the 1993 version of the Handbook. The current Byron Airport AIA and compatibility zones are shown in Figure 3.9-1.

Contra Costa County General Plan

The current General Plan is the 2005–2020 General Plan, adopted in 2005. The General Plan Land Use Map identifies the project area as a combination of Public Service and Open Space (indicating the habitat management lands). The acquisition parcel is classified as Agriculture. See Figure 3.9-2 for the existing General Plan land use designations for the project site.

The General Plan Transportation and Circulation Element includes numerous policies that apply to airports and compatible development (Contra Costa County 2005).

Airports and Heliports Goals

Goal 5-Q To encourage the development and operation of two general purpose public airports in the county.

Goal 5-R To allow heliports, restricted to appropriate locations, which would add to the economic well-being and safety of the county.

Overall Airports Policies

Policy 5-58 Protect the Byron Airport environs from urban encroachment through a combination of land acquisition, easement acquisitions and land use regulations.

Policy 5-60 Work with the FAA and helicopter operators to minimize conflicts with residential areas and sensitive land uses, such as schools, hospitals, residences, and other sensitive noise receptors.

Special Policies that Apply to the East County Airport [Byron]

Policy 5-64 The County shall acquire fee title and/or conservation (development rights) easements to an appropriate amount of buffer land around the planned East County Airport.

Policy 5-65 The buffer land or conservation easements acquired around the airport shall ensure that incompatible uses will not be allowed to locate within the safety zone.

Policy 5-66 Establishment of commercial, industrial, or residential development around the planned airport shall not be allowed.

Policy 5-67 Water and sewer services to the airport will be limited to serve only the airport property; utilities will not serve growth on the adjacent properties.

Policy 5-68 No residential development or sensitive receptors, e.g. hospitals, schools, etc., shall be allowed within the projected 60 CNEL noise contours for the new airport.

Special Policies Regarding the Airport Land Use Commission

Policy 5-69 Structural heights shall be designated by the Federal Aviation Regulations (FAR) Part 77 surfaces associated with the various runway designations shown on the latest Airport Layout Plan.

Policy 5-70 The Structural Height Limits defines maximum structural height. Height limits will be placed on new buildings, appurtenances to buildings, all other structures and landscaping in accordance with the Airport Layout Plan except in special instances when for reasons of safety the Commission may impose a more restrictive structural height.

An applicant for any structure within the Airport Land Use Commission Planning Area proposed to penetrate any height limit surface shall submit an aeronautical analysis which specifies the proposed project's effect on airport instrument procedures for all runways, the effect on airport utility, and the effect on overall aviation safety. If, after reviewing the aeronautical study and other related information, it is determined that the proposed project would not have an adverse effect on safety and airport utility then, the project may be approved for heights other than those indicated by the FAR, Part 77, Structural Height Limits.

Policy 5-71 All major land use actions within the Buchanan Field and Byron Airport Influence Areas as shown upon Figure 5-5 shall be referred to the Contra Costa County Airport Land Use Commission for comment. The definition of what constitutes a major land use action is found on pages 2-6 through 2-8 of the Contra Costa County Airport Land Use Compatibility Plan adopted in December of 2000. If it is unclear whether or not an action falls within this listing, the County should err on the side of caution and refer the matter to the ALUC staff.

Policy 5-72 New construction or building exterior alterations located in areas of terrain penetration as defined by the ALUC Airspace Protection Surfaces will be reviewed on a case-by-case basis with consideration given to topography, flight patterns, existing vegetation and other factors which might affect airspace and safety. The County will rely on ALUC land use compatibility guidance and programs for considering airspace safety analysis issues and height limitations of structures.

Policy 5-73 Temporary structures, such as construction cranes or antennae, which would penetrate any adopted height limit surface, may be allowed after a case-by-case review, provided that obstruction lighting and marking is installed, and a two week notice of temporary structure emplacement is provided by the proponent to the County Manager of Airports. Temporary structure emplacement shall be subject to reasonable time limit.

Policy 5-74 The County may require an exterior building materials reflectivity analysis upon review of the proposed types of building materials, building height, and building location and use on site. Such analyses should be required for development of any structures on or adjacent to public airports which would be over three stories in height and utilize reflective surfaces. Reflectivity studies shall address the potential for pilot and airport operation interference, proposed mitigation to any identified potential interference resulting from reflected sunlight, and any other subject areas related to reflectivity which the County may deem appropriate. The County may include some or all of the proposed mitigation in its project approval process.

Policy 5-75 Within each safety zone designated by the ALUC, the following are incompatible uses (The ALUC Airport Influence Area Maps for Buchanan Field Byron Airports are shown on Figure 5-5.):

1. Any light source which would direct a steady light or flashing light of red, white, green, or amber color associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA approved facility.
2. Any construction which would cause sunlight to be reflected toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at the airport.
3. Any use which would generate smoke, attract large concentrations of birds, or may otherwise adversely affect safe air navigation within a safety zone.
4. Any use which would generate electrical interference that would be detrimental to the operation of aircraft and/or aircraft instrumentation.
5. Any use which would utilize or cause to be stored highly toxic, inflammable or otherwise hazardous materials which, in the event of an aircraft accident, could be released into the surrounding environment to threaten human life or property.
6. Within the safety zone clear area, any use which involves the erection of a permanent above ground structure other than FAA approved facilities.
7. Within the safety zones, excluding the clear areas, any use which on a regular basis would result in a density (excluding streets) in excess of 30

persons per acre or one person/500 square feet of gross building flood area, whichever is less.

8. Any of the following uses: new single and multiple family residences, shopping centers, restaurants, schools, hospitals, arenas, and other places of public assembly.

Policy 5-77 Within the ALUC Compatibility Zone B-1, no new lot splits shall be allowed and buildings on existing lots of record shall be located as far as practical from the extended runway centerline and shall be limited to two stories in height.

The following are suggested uses within the ALUC Compatibility Zones for the East Contra Costa Airport:

1. agriculture;
2. open space;
3. low intensity park and recreation uses;
4. low occupant density public uses; and
5. parking of automobiles.

Implementation Measures

Measure 5-bk Create a new zoning district for County-operated airports similar to the Planned Unit (P-1) District zone which provides for public review of on-site projects, and rezone both airports to that district.

Measure 5-bn Create a new zoning district to regulate private land use on the two public airports.

Zoning

The airport property south of Armstrong Road is zoned P-1 (Planned Unit District). The acquisition parcel is zoned A-3 (Heavy Agriculture). The remainder of the airport property north of Armstrong Road is zoned A-3. Figure 3.9-3 shows the existing zoning districts on and near the project site.

The Planned Unit District designation is intended to allow diversification in the relationship of various uses, buildings, structures, lot sizes and open space while ensuring substantial compliance with the General Plan and the intent of the Municipal Code in requiring adequate standards necessary to satisfy the requirements of public health, safety, and general welfare. Currently, the Byron Airport P-1 zoning only allows aviation-related uses, agriculture, and open space.

Chapter 86-4 of the County Zoning Ordinance, Airport Zoning, addresses land use compatibility for airports. However, this chapter refers only to Buchanan Field by name.

3.9.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts to land use and planning are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to land use and planning would occur if the project would:

1. Physically divide an established community.
2. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.
3. Conflict with any applicable habitat conservation plan or natural community conservation plan.

The project site is within the jurisdiction of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan. This is discussed in Section 3.3, Biological Resources.

3.9.4 Impacts Analysis

Impact 3.9-1. The project would not physically divide an established community. (No Impact)

The nearest community is Byron, located 2.5 miles north of the project site. There are some rural residences located near the airport. These scattered residences do not form a concentration that could be recognized as a distinct community. The project would be contained to airport property and the acquisition parcel adjacent to the airport property. Therefore, the project would not physically divide an established community. There would be **no impact**.

Impact 3.9-2. The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)

Implementation of the proposed project, specifically the airport-related development, would require amendments to the Byron ALUCP, the County General Plan, and the zoning for the airport.

ALUCP Update

As discussed above, the current ALUCP for the airport limits not only off-airport development, but on-airport development. The 2000 ALUCP is based on older guidance (the 1993 Handbook) and is also based on a previous Byron Airport Master Plan. As such, the ALUCP is no longer consistent with either current compatibility guidance from the State of California or the objectives of the airport. The proposed ALUCP update would bring the Byron Airport compatibility policies

into conformance with these plans without allowing incompatible land uses that could affect either surrounding residents or the future operations of the airport.

In order to develop economically beneficial uses on the airport, development intensities would be increased to a level more consistent with current Handbook guidance (Table 3.9-1). In addition, by de-coupling the noise and safety criteria, a greater range of industrial and commercial uses could be allowed at the airport. This approach would also create consistency with Buchanan Field, which does not use composite compatibility zones. However, the noise contours used to establish potential exposure to aircraft noise would not be revised. Airspace protection would not change, as the imaginary surfaces used to analyze navigation hazards would remain the same. In addition, the AIA would not change, although a larger notification area would be implemented (the area within which potential homebuyers must be notified of the presence of the airport and the potential for aircraft noise). As discussed below, the General Plan policies and zoning would only affect airport property, and no new land uses would be allowed near the airport that are not currently allowed. The airport environs would remain largely agricultural.

Table 3.9-1
Comparison of Proposed Airport Land Use Compatibility Plan Intensity Criteria and Caltrans Criteria

Current ALUCP (as amended) Intensity Criteria			Caltrans Handbook		
Compatibility Zone	*Average per Gross Acre*	*Maximum Single Acre*	*Safety Zone*	*Average per Gross Acre*	*Maximum Single Acre*
A	0	0	**1**	0	0
B1 and B3	40	80	**2**	10 to 40	2x gross acre
B2	70	210	**3**	50 to 70	3x gross acre
C1	100	300	**4**	70 to 100	3x gross acre
C2	70	210	**5**	50 to 70	3x gross acre
D	200	800	**6**	150 to 200	3x gross acre

Source: Caltrans 2011.
Note: ALUCP = Airport Land Use Compatibility Plan; Caltrans = California Department of Transportation.

General Plan Update

The proposed project would help implement Goal 5-Q, to encourage the development and operation of two general purpose public airports in the county, by providing for the economic development and financial self-sufficiency of Byron Airport.

The General Plan policies regarding the airport would be amended to clarify that compatible non-aviation uses would be allowed on airport property. General Plan Policy 5-66 would be amended to specify that commercial or industrial development would be allowed on-airport if it is consistent with the ALUCP and the Byron Airport Master Plan.

The incompatible uses listed in policy 5-75 would not change, to ensure the protection of airport operations. Policy 5-77 would be updated to reflect the new compatibility zone designations (Zone B-1 would become Safety Zone 2) and the additional on-airport uses that may be found compatible under the updated ALUCP. Policies protective of the future operation of the airport, and the health, safety, and welfare of the surrounding residents would not be changed.

Zoning Amendment

The P-1 district for Byron Airport would be revised to identify the land use categories used in the ALP: aviation, non-aviation, low intensity, and habitat management. Additional land uses that could be allowed within the aviation and non-aviation areas would be identified, as discussed in Section 2.6, Proposed Land Uses and Zoning, of this EIR. The Zoning Amendment would specify that all proposed land uses must be reviewed by County staff for consistency with the current ALUCP. The zoning would also implement the ALUCP and General Plan standards for compatible land use, including height restrictions.

As described above, the development of aviation and non-aviation land uses on the airport would not cause conflicts with the applicable land use plans. The impact would be **less than significant.**

3.9.5 Mitigation Measures

No mitigation measures are required.

3.9.6 Level of Significance After Mitigation

No mitigation measures are required. Land use impacts would be **less than significant** without mitigation.

3.9.7 Cumulative Impacts

Cumulative impacts for land use may occur if the proposed project, in conjunction with other projects, would have the potential to create land use conflicts that would not be significant on an individual basis. More specifically, multiple amendments to the General Plan, ALUCP, or Zoning Ordinance may create additional conflicts. No projects are proposed that would affect the airport General Plan designation, ALUCP, or Planned Unit District zoning. Therefore, no cumulative impacts would occur.

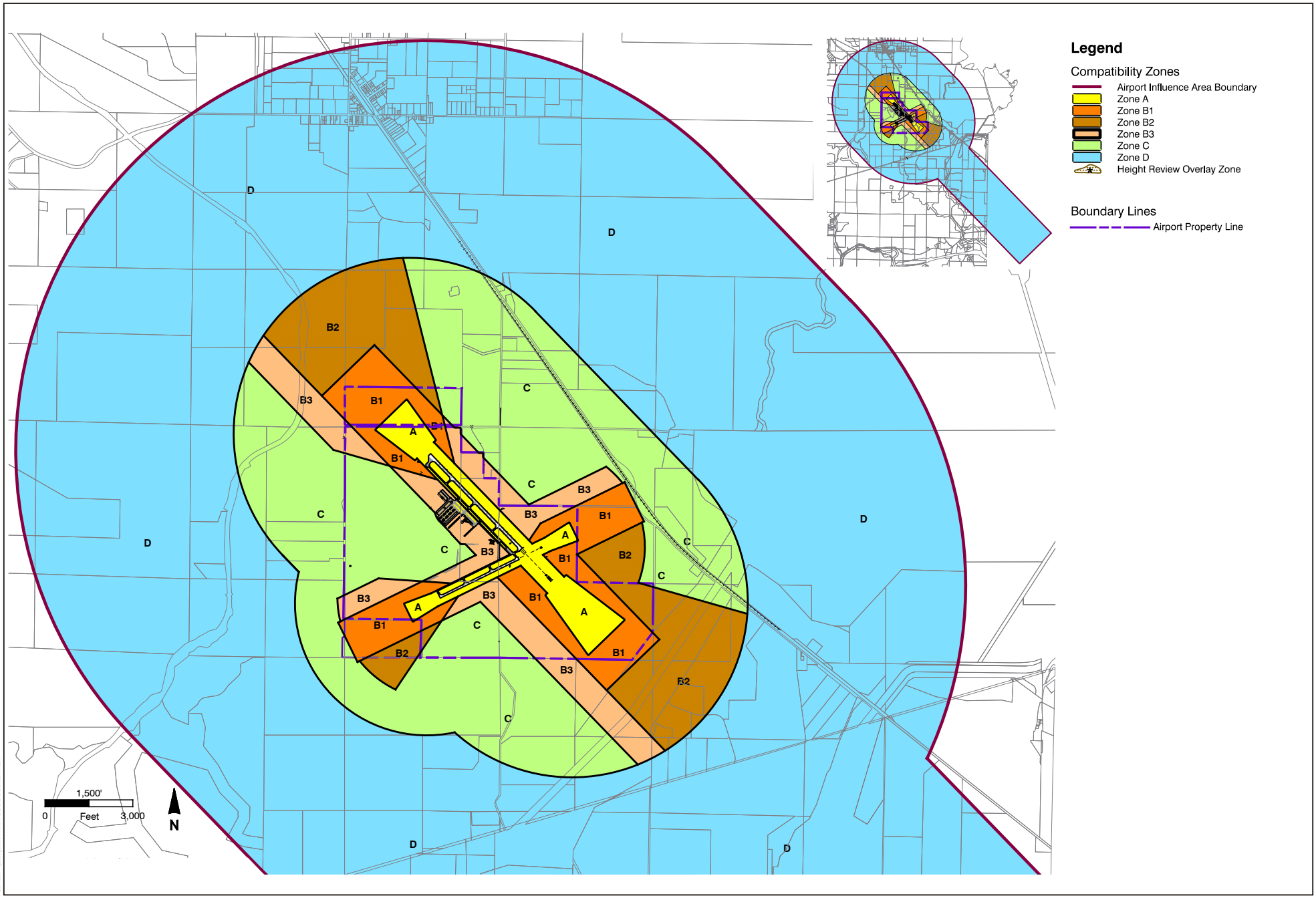
3.9.8 References Cited

Caltrans (California Department of Transportation). 2011. California Airport Land Use Planning Handbook. Division of Aeronautics. October 2011.

Contra Costa County. 2000. *Airport Land Use Compatibility Plan*. Adopted December 2000.

Contra Costa County. 2005. *General Plan 2005–2020, Chapter 5, Transportation and Circulation Element.* January 18, 2005. https://www.contracosta.ca.gov/DocumentCenter/View/30915/Ch5-Transportation-and-Circulation-Element?bidId=.

Contra Costa County. 2018. Municipal Code. Title 8. Zoning. Accessed December 15, 2018. https://library.municode.com/ca/contra_costa_county/codes/ordinance_code?nodeId=TIT8ZO.



SOURCE: Contra Costa County 2015

FIGURE 3.9-1

Airport AIA & Compatibility Zones

Byron Airport Development Program EIR

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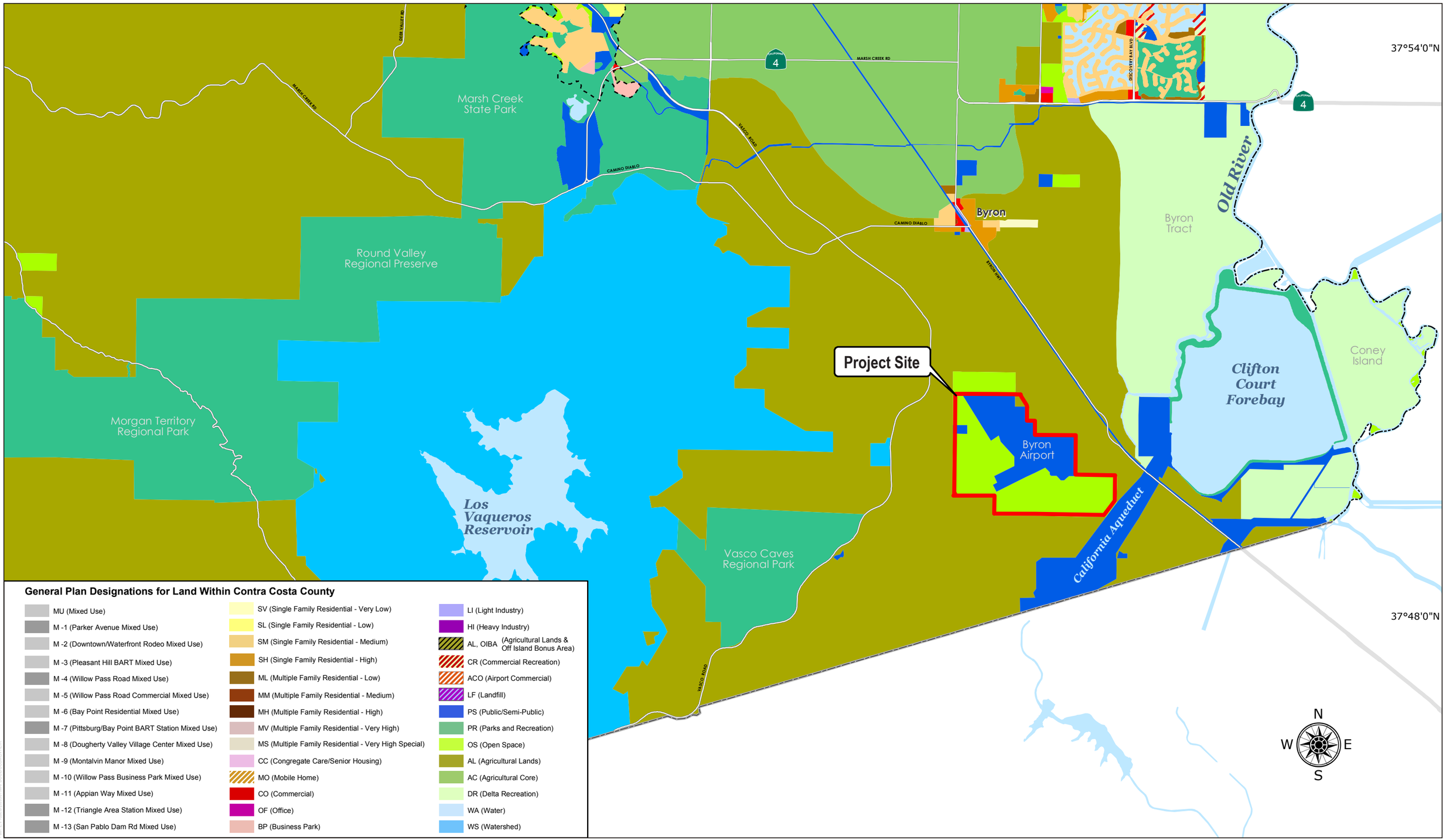

SOURCE: Contra Costa County 2014

FIGURE 3.9-2

Existing General Plan

Byron Airport Development Program EIR

DUDEK

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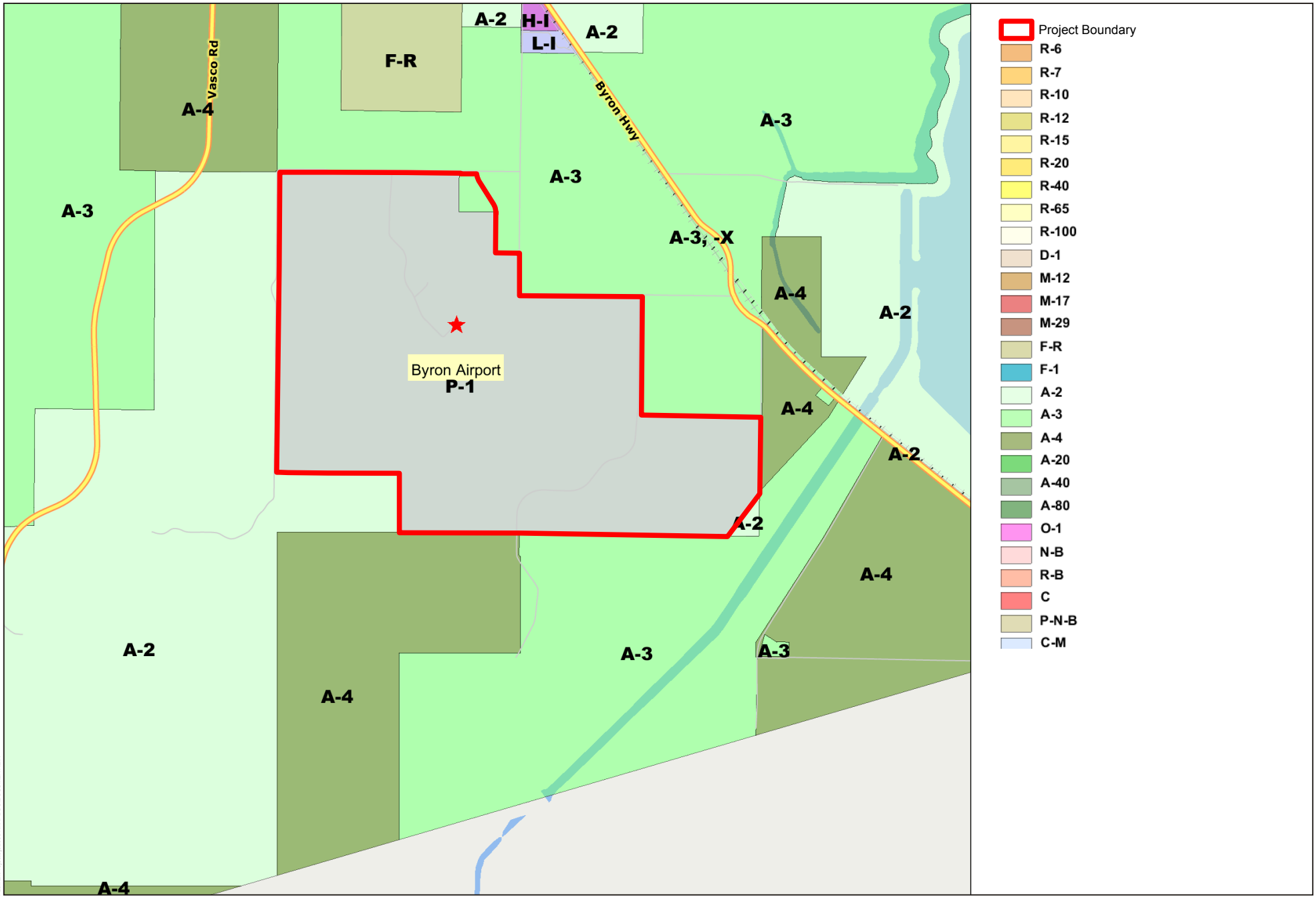

SOURCE: Contra Costa County 2015

DUDEK

FIGURE 3.9-3

Existing Zoning

Byron Airport Development Program EIR

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3.10 NOISE

This section describes the noise present in the proposed Byron Airport Development Program (project) area, and discusses applicable federal, state, and regional regulations pertaining to noise. This section also evaluates the potential effects related to noise associated with development of the proposed project.

3.10.1 Existing Conditions

This section describes the existing noise conditions in the project area, and also identifies the existing sensitive receptors that could be affected by the project.

3.10.1.1 Transportation Noise Sources

Aviation

Aircraft operations are the primary noise source emanating from Byron Airport. The most current airport noise contours are available in the Airport Land Use Compatibility Plan (ALUCP) (Contra Costa County 2000). Three noise-sensitive residential lots are located in the immediate vicinity of the airport, and based on the ALUCP, two residences are located within the 55 to 60 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL) noise contour. No residential uses are located within the 60 dBA CNEL contour line. Figure 3.10-1, Noise Contours, shows the Byron Airport noise contours.

Roadways

Vehicular traffic along Byron Highway is a principal contributor to the existing noise environment in the vicinity of the project site. Other roads in the vicinity of the project site, including Holey Road and Byron Hot Springs Road, are existing secondary contributors. Regional access to the project site is provided by Byron Highway. Access to the main portion of the project site is provided by Holey Road or Armstrong Road. Noise-sensitive receptors located along these roadways would experience traffic noise increases due to the proposed project.

3.10.1.2 Other Noise Sources

The project site is mostly undeveloped land that is relatively flat. Surrounding land uses include rural residential and agricultural/grazing land.

3.10.1.3 Noise-Sensitive Land Uses

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise. The Noise Element of the Contra Costa General Plan (Contra Costa County

2005a) identifies residential areas as one type of NSLU. Industrial and commercial land uses are generally not considered sensitive to noise, with the exception of commercial lodging facilities. NSLUs in the immediate vicinity of the project site are as follows:

- Residences located immediately east of the project site along Byron Hot Springs Road and Holey Road
- Residences along other roadways studied in the Traffic Impact Analysis Report for the proposed project (Appendix H of this Environmental Impact Report)

3.10.1.4 Vibration-Sensitive Land Uses

Land uses where groundborne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations (FTA 2006), are considered "vibration sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the groundborne vibration. Excessive levels of groundborne vibration of either a regular or an intermittent nature can also result in annoyance to occupants of residential land uses and the structures they inhabit.

3.10.1.5 Existing Noise Levels

Existing (pre-project) noise conditions present in the vicinity of the project site were inventoried by Dudek in April 2016. Four short-term (varying from 2- to 20-minute durations) measurements were performed along existing roadways to quantify and help characterize the outdoor ambient sound environment, likely dominated by roadway traffic, and support calibration of the traffic noise prediction model. The noise measurement locations are shown in Figure 3.10-2. The results of the traffic noise measurements are presented in Table 3.10-1. The highest measured average noise level was associated with traffic on Byron Highway, and was 77 dBA equivalent continuous sound level (L_{eq}) at a distance of approximately 10 feet from the edge of the pavement. The measured noise level along Holey Road was 67 dBA L_{eq} at a distance of approximately 23.5 feet from the centerline of the road on April 12, 2016, and 57 dBA L_{eq} at a distance of approximately 21 feet from the centerline of the road on April 16, 2016. These levels varied based on the duration of the measurement and the traffic volumes on the road during the measurement. The noise level along Falcon Way was 64 dBA L_{eq} at approximately 15.5 feet from the road centerline. The noise level along Armstrong Road was 58 dBA L_{eq} at approximately 23 feet from the road centerline.

Table 3.10-1
Traffic Noise Level Measurements (Existing)

Measurement No.	Measurement Date	Measurement Time Period[a]	dBA L_{eq}	Remarks
1	04/12/2016	11:50 a.m.– 12:30 p.m.	67	Along Holey Road east of project site
2	04/12/2016	1:34 p.m.– 1:48 p.m.	64	Along Falcon Way
3	04/12/2016	2:05 p.m.– 2:21 p.m.	77	Along Byron Highway
4	04/15/2016	2:28 p.m.– 2:30 p.m.	57	Along Holey Road east of project site
5	04/15/2016	3:10 p.m.– 3:30 p.m.	58	Along Armstrong Road

Source: Data measured by Dudek in April 2016.
dBA = A-weighted decibel; L_{eq} = equivalent continuous sound level.
[a] Measurement times varied within the time ranges specified based on traffic.

3.10.2 Relevant Plans, Policies, and Ordinances

Federal

The following federal regulations pertaining to noise would apply to the proposed project.

Federal Aviation Administration Standards

Enforced by the Federal Aviation Administration, Code of Federal Regulations Title 14, Part 150 prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. Title 14 also identifies those land uses that are normally compatible with various levels of exposure to noise by individuals. The Federal Aviation Administration has determined that interior sound levels up to 45 dBA L_{dn} (or CNEL) are acceptable within residential buildings. The Federal Aviation Administration also considers residential land uses to be compatible with exterior noise levels at or less than 65 dBA L_{dn} (or CNEL) (49 U.S.C. § 47501et seq, 1979).

Federal Transit Administration and Federal Railroad Administration Standards

Although the Federal Transit Administration (FTA) standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in the FTA Transit Noise and Vibration Impact Assessment Manual (FTA 2006) are routinely used for projects proposed by local jurisdictions. The FTA has published guidelines for assessing the impacts of groundborne vibration associated with transit projects, which have been applied by other jurisdictions to other types of projects. For example, the FTA guidance threshold for architectural damage risk pertaining to "engineered concrete and masonry (no plaster)" is 0.3 inches per second peak particle velocity (ppv), which can be applied when assessing construction-related vibration impacts upon proximate existing buildings

State

The following state regulations pertaining to noise would apply to the proposed project.

California Noise Control Act of 1973

Sections 46000 through 46080 of the California Health and Safety Code, known as the California Noise Control Act of 1973, states that excessive noise is a serious hazard to the public health and welfare, and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. The California Noise Control Act also identifies a continuous and increasing bombardment of noise in urban, suburban, and rural areas. The California Noise Control Act states that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the state to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

State Model Community Noise Control Ordinance

Contra Costa County (County) does not have a quantitative noise ordinance for regulating noise from mechanical equipment or construction. However, a Model Noise Control Ordinance was created by the State of California to provide guidance for communities to develop their own noise ordinances. The Model Noise Ordinance has not been adopted by the County and is not enforced by the state, but it is discussed in this analysis to help provide context for the potential noise impacts of the proposed project.

The exterior noise level limits recommended by the Model Community Noise Control Ordinance are shown in Table 3.10-2, Traffic Noise Level Measurements (Existing), and correspond to the median noise level (L_{50}). The L_{50} is the sound level in dBA that is met or exceeded 50% of time. These limits are not to be exceeded at the receiving land use for more than 30 minutes in 1 hour. The limits are to be adjusted based on the duration of the source, the level of the ambient noise, the character of the sound, and the location of the measurement.

Table 3.10-2
Traffic Noise Level Measurements (Existing)

Receiving Land Use Category	Time Period	Noise Level (L_{dn} dBA)		
		Rural Suburban	*Suburban*	*Urban*
One- and Two-Family Dwellings	10:00 p.m.–7:00 a.m.	40	45	50

Source: Veneklasen 1975.
dBA = A-weighted decibel; L_{dn} = day/night Level

In addition, the Model Community Noise Control Ordinance provides a noise limit of L_{dn} 80 dBA for short-term or intermittent construction activities adjacent to multi-family residential properties,

and a noise limit of L_{dn} 85 dBA at commercial properties.[1] Although the Model Community Noise Control Ordinance has not been adopted by the County, this reference is provided as context for assessing the proposed project's noise levels. Some activity or equipment noise cannot meet this standard (such as back-up alarms, which are required by state safety regulations).

Local

Contra Costa County Noise Element

The Noise Element of the County General Plan (Contra Costa County 2005a) sets various goals and policies that apply to all development projects in the County. Most of these policies address land use compatibility standards for evaluating new projects. Applicable noise goals, policies, and implementation measures of the Noise Element are as follows (Contra Costa County 2005a):

Goal 11-B To maintain appropriate noise conditions in all areas of the County.

Goal 11-C To ensure the new developments will be constructed so as to limit the effects of exterior noise on the residents.

Policy 11-1 New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines contained in Figure 11-6.

Policy 11-2 The standard for outdoor noise levels in residential areas is a DNL of 60 dB [decibels]. However, a DNL of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints. One example is small balconies associated with multi-family housing. In this case, second and third story balconies may be difficult to control to the goal. A common outdoor use area that meets the goal can be provided as an alternative.

Policy 11-6 If an area is currently below the maximum "normally acceptable" noise level, an increase in noise up to the maximum should not be allowed necessarily.

[1] L_{dn} stands for day/night level. The L_{dn} is the average equivalent sound level over a 24-hour period, with a penalty added for noise during the nighttime hours of 10 p.m. to 7 a.m. During the nighttime period, 10 dB is added to reflect the impact of the noise.

Policy 11-8 Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

Policy 11-11 Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

Figure 3.10-3, Land Use Compatibility Criteria, presents the ranges for acceptable, conditionally acceptable, and unacceptable noise exposure levels for different land uses in the County pursuant to General Plan Noise Element Policy 11.1 and Figure 11-6 (Contra Costa County 2005).

The Noise Element also discusses how noise increases are perceived by people (Contra Costa County 2005a), as follows:

> An important factor in assessing a person's subjective reaction is to compare the new noise environment to the existing noise environment. In general, the more a new noise level exceeds the prior existing level, the less acceptable it is. Therefore, a new noise source will be judged more annoying in a quiet area than it would be in a noisier location. Knowledge of the following relationships is helpful in understand how changes to noise and noise exposure are perceived.
>
> - Except under special conditions, a change in sound level of 1 dB cannot be perceived;
> - Outside a laboratory, a 3 dB change is considered a just-noticeable difference;
> - A change in level of at least 5 dB is required before any noticeable change in community response would be expected; and
> - A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

The following implementation measures related to development review are included in the Noise Element (Contra Costa County 2005a):

Measure 11-a Continue to require a review and analysis of noise-related impacts as part of the existing project development review procedures of the County.

Measure 11-b Evaluate the noise impacts of a proposed project upon existing land uses in terms of the applicable Federal, State, and local codes, and the potential for adverse community response, based on a significant increase in existing noise levels.

Contra Costa County Transportation Element

The following policy related to noise is included in the County General Plan Transportation and Circulation Element (Contra Costa County 2005b):

> **Policy 5-68** No residential development or sensitive receptors, e.g. hospitals, schools, etc., shall be allowed within the projected 60 CNEL noise contours for the new airport [Byron].

Contra Costa County Municipal Code

The County's Municipal Code does not contain quantitative standards for regulating noise from mechanical equipment. However, Section 716-8.1004 of the Municipal Code addresses hours of operation for excavation and grading activities. If operations under the permit are within 500 feet of residential or commercial occupancies, except as otherwise provided by conditions of approval for the project, grading operations are limited to weekdays and to the hours of between 7:30 a.m. and 5:30 p.m., except that maintenance and service work on equipment may be performed at any time (Contra Costa County 2018).

Contra Costa County Airport Land Use Compatibility Plan

Chapter 4 of the County ALUCP addresses noise and states that "from a community land use planning stand-point, noise contours are most appropriately applied at the general plan, specific plan, or other broad-scale level" (Contra Costa County 2000). Table 4A of the ALUCP describes the compatibility of various land uses with the different airport noise contours (Figure 3.10-4, Airport Compatibility Criteria, of the ALUCP). The ALUCP also sets 45 dBA CNEL as the maximum acceptable interior noise level from aircraft-related activities (Contra Costa County 2000).

3.10.3 Thresholds of Significance

The significance criteria used to evaluate the proposed project's impacts related to noise are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to noise would occur if the project would result in:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

2. Generation of excessive groundborne vibration or groundborne noise levels.
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, and if so, the project would expose people residing or working in the project area to excessive noise levels.

Contra Costa County Significance Criteria

Noise Significance Criteria

As summarized in Section 3.10.2, Relevant Plans, Policies, and Ordinances, standards established by the County General Plan Noise Element were used to establish quantitative significance thresholds with respect to airborne noise. The Noise Element defines noise sensitive areas as residential areas (Contra Costa County 2005a).

Figure 3.10-3 (corresponding to Figure 11-6 of the Noise Element) identifies the noise compatibility criteria for various land uses. In addition, Noise Element Policy 11-2 identifies 60 dBA L_{dn} as the level normally compatible with residential uses. According to the Noise Element, an increase in outdoor sound level of greater than 10 dB would be expected to cause an adverse community response. Policy 11-6 states that if an area is currently below the normally acceptable noise level, an increase up to the maximum should not necessarily be allowed (Contra Costa County 2005a). Therefore, for assessment of operational noise impacts to the exterior of residential receptors due to the proposed project, which includes separate consideration of transportation noise sources and stationary noise sources (e.g., operating heating, ventilation, and air conditioning [HVAC] systems featured on newly proposed project structures), a project-related increase above 60 dB L_{dn} or a change of 10 dB in outdoor ambient levels would be a potentially significant impact.

For noise levels inside residences, a threshold of 45 dBA L_{dn} would be used and would be compatible with the California Building Code.

For construction activity, per Noise Element Policy 11-8 and County Code Section 716-8.1004, an expected outdoor ambient level increase of greater than 10 dB or exceeding 60 dBA L_{dn} would be a significant impact if occurring outside of the allowable hours of 7:30 a.m. to 5:30 p.m., Monday through Friday.

Groundborne Vibration Significance Criteria

In the absence of local regulatory significance thresholds for vibration from construction equipment, the proposed project uses guidance from the California Department of Transportation to assess vibration-related impact significance, which includes a vibration limit of 0.3 inches per second (in/sec) ppv with respect to building damage risk for "older residential structures," and

0.5 in/sec ppv for "new residential structures" and "modern industrial/commercial buildings" when continuous or frequent vibration sources are anticipated (Caltrans 2013). For adverse human reaction, the proposed projected used a "strongly perceptible" annoyance criterion of 0.1 in/sec ppv (Caltrans 2013), consistent with nuisance prevention per Section 716-8.1008 of the County Municipal Code.

3.10.4 Impacts Analysis

3.10.4.1 Methods of Analysis

The project setting was developed by reviewing available information on noise and sensitive receptors in the project vicinity. This review was supplemented with noise measurements. Sound level measurements were performed using a Rion NL-62 integrating sound level meter, which is classified by the American National Standards Institute as a Type I (precision-grade) device. The sound level meter was calibrated before each measurement using a Rion NC-74 calibrator.

To evaluate existing and future noise levels from traffic, the CadnaA noise modeling software was used. CadnaA includes traffic noise algorithms based on the Federal Highway Administration's Transportation Noise Model (TNM Version 2.5). The model was first calibrated. Traffic counts were made during the noise measurements. To calibrate the noise model, the same traffic volume and vehicle composition ratios counted during the noise measurements were used, along with the observed vehicle speed (which may differ from the posted speed limit for the roadway). Using vehicle counts and observed speeds, the modeled noise values were within 2 dB of the measured noise levels, which confirms the accuracy of the inputs used in the noise model. The proposed project's traffic engineers (GHD 2019) provided trip generation data and resulting roadway traffic volumes for each of the major roadways in the project area for the existing, proposed project, and cumulative scenarios. The representative existing and proposed future modeled receivers are shown in Figure 3.10-3. As part of the CNEL calculation process, it was assumed that the average hourly traffic volume was approximately equal to 10% of the average daily trips.

To assess noise exposure for NSLUs situated along roadways, the analysis used the greatest anticipated future roadway traffic volume. This is the scenario associated with the cumulative-plus-project traffic forecast. Using the existing roadway location data and identified future traffic volumes (from project development and cumulative traffic), traffic noise along each of the main project-related roadways was modeled with CadnaA. Receptor points in the noise model were placed at representative existing NSLUs.

3.10.4.2 Analysis

Impact 3.10-1. The project would result in generation of a substantial permanent increase in ambient noise levels in the vicinity of the project area in excess of standards established in the local general. (Potentially Significant)

Operation

Roadway Noise

Off-Site Impacts

Project-generated traffic would have the potential to affect off-site existing NSLUs. Using the Traffic Impact Analysis Report prepared by the project's traffic engineers (GHD 2019 [Appendix H]), the roadway segments with the most project-related traffic trips and with adjacent existing NSLUs were identified and modeled in CadnaA. These modeling locations are shown in Figure 3.10-5, Noise Modeling Locations. Table 3.10-3, Existing and Cumulative Off-Site Traffic Noise, summarizes the traffic-related noise levels at the representative off-site NSLUs for existing, existing plus project, cumulative, and cumulative plus project traffic scenarios. As shown in Table 3.10-3, project-related traffic noise increases would be less than 3 dB (the normal level of perception) at 10 of the modeled receivers, but not at M1, M2, or M3. At M1, M2, and M3, project-related traffic noise increases would be 10 dB or greater. For M1, the existing plus project traffic noise level is predicted to be 60 dBA CNEL, and the existing traffic noise level is 46 dBA CNEL. For M2, the existing plus project traffic noise level is predicted to be 54 dBA CNEL, and the existing traffic noise level is 44 dBA CNEL. For M3, the existing plus project traffic noise level is predicted to be 57 dBA CNEL, and the existing traffic noise level is 47 dBA CNEL.

Per the significance thresholds, an increase of 10 dB or more is significant when ambient noise levels without the project are less than 60 dBA. Since M1, M2, and M3 would experience an increase of 10 dB or greater when the project-related traffic is added, the threshold would be exceeded. These receivers are indicated in Table 3.10-3 in bold. Off-site impacts would be **potentially significant**.

Table 3.10-3
Existing and Cumulative Off-Site Traffic Noise (dBA CNEL)

Modeled Receiver	Description	Existing	Existing plus Project	Increase with Project from Existing	Cumulative	Cumulative plus Project	Increase with Project in Cumulative Condition
M1	Holey Road Residence	46	60	14	49	60	11

Table 3.10-3
Existing and Cumulative Off-Site Traffic Noise (dBA CNEL)

Modeled Receiver	Description	Existing	Existing plus Project	Increase with Project from Existing	Cumulative	Cumulative plus Project	Increase with Project in Cumulative Condition
M2	Byron Hot Springs Road Southern Residence	44	54	10	46	54	8
M3	Byron Hot Springs Road North Residence	47	57	10	49	57	8
M4	Byron Highway Representative Residence 1	67	68	1	69	70	1
M5	Byron Highway between Camino Diablo Road to Holway Drive Representative Residence 2	68	70	1	70	71	1
M6	Byron Highway Northern Representative Residence 3	66	67	1	67	67	0
M7	SR4 Representative Residence	65	65	0	66	66	0
M8	Camino Diablo Road West Residence	43	44	1	47	47	0
M9	Camino Diablo Road between Vasco Road and Holway Drive Residence	63	64	1	65	66	1
M10	Camino Diablo Road Holway Drive and Bryon Highway Residence	63	64	1	64	65	1
M11	Camino Diablo Road East Residence	60	61	1	62	62	0
M12	Holway Drive between Camino Diablo and Byron Highway	64	64	0	65	65	0
M13	Vasco Road Southern Residence	50	50	0	52	52	0

Source: Data measured by Dudek in April 2016.
Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level.
Assumed traffic speed for all roads was 55 miles per hour.
Bold = threshold would be exceeded

Noise from Proposed On-Site Land Uses

Implementation of the project would result in changes to existing noise levels on the project site by developing new stationary sources of noise and by increasing human activity throughout the project site. These sources may affect NSLUs adjacent to the project site. Potential noise-generating land uses on site include commercial and industrial uses.

Commercial

Potential operational noise sources associated with commercial development within the project site would consist of HVAC equipment, commercial truck deliveries, and noise at surface parking lots.

Mechanical HVAC equipment located on the ground or on rooftops of buildings have the potential to generate noise levels that average 71 dBA CNEL at a distance of 50 feet when equipment is operating continuously for 24 hours. Depending on where it is located, HVAC equipment could have the potential to disrupt nearby residents. For a single point source, such as a piece of mechanical equipment, the sound level typically decreases by approximately 6 dB for each doubling of distance from the source under "hard-surface" conditions typical of a developed commercial site. Therefore, it was assumed that HVAC equipment would generate noise levels that would exceed 60 dBA L_{dn} CNEL within approximately 150 feet of the equipment. Consequently, any proposed HVAC equipment within 150 feet of an existing off-site residence could result in a potentially significant impact. The nearest off-site residences are located east of the project site approximately 160 feet or more from proposed project buildings. Therefore, impacts to off-site receptors related to on-site HVAC equipment would be **less than significant**.

When back-up alarms are used on site, reference sound pressure levels are anticipated to be 75 dBA at 50 feet (based on Federal Signal Model 252 or similar). The corresponding hourly L_{eq} would depend on how often such an alarm may be used. Assuming not more than 1 minute per hour, the resulting sound level would be 57 dBA at 50 feet. Since the closest residences are more than 100 feet away from the project site, the hourly L_{eq} would less than 51 dBA. Due to the short duration, the noise impact of back-up alarm operations would be **less than significant**.

Noise sources from parking lots and storage facilities include car alarms, door slams, radios, and tire squeals. A noise assessment for the Historic Town Center in the City of San Juan Capistrano provides typical noise levels for different parking lot events. This source indicates that car door slams and engine start-ups usually are 60 to 70 dBA at 50 feet, a car alarm noise is between 65 and 70 dBA at 50 feet, and car pass-bys range from 55 to 70 dBA at 50 feet (Mestre Greve Associates 2011). These sources are generally short-term and intermittent. Noise levels from these typical parking lot noise sources would be less than 64 dBA at NSLUs located more than 100 feet away. These operations would result in noise levels less 60 dBA L_{dn} CNEL due to the short duration and intermittent nature expected on the project site. Thus, parking lot noise impacts would be **less than significant**.

Construction

Construction of the proposed development would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity and equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures. Noise from construction equipment generally exhibits point-source acoustical characteristics. A point-source sound is attenuated (i.e., reduced) at a rate of 6 dB per doubling of distance from the source for "hard site" conditions, and 7.5 dB per doubling of distance for "soft site" conditions. These rules apply to the propagation of sound waves with no obstacles between source and receivers, such as topography (ridges or berms) or structures. The range of maximum noise levels for various types of construction equipment is depicted in Table 3.10-4.

Table 3.10-4
Construction Equipment Noise Levels

Equipment Description	Acoustical Use Factor (Percent)	Measured L_{max} at 50 feet (dBA, slow)
Backhoe	40	78
Compactor (ground)	20	83
Compressor (air)	40	78
Crane	16	81
Dozer	40	82
Dump Truck	40	76
Excavator	40	81
Flat Bed Truck	40	74
Front-End Loader	40	79
Generator	50	81
Grader (spec)	40	85
Man Lift	20	75
Pavement Scarifier	20	90
Paver	50	77
Pickup Truck	40	75
Pneumatic Tools	50	85
Roller	20	80
Tractor (spec)	40	84
Warning Horn	5	83
Welder/Torch	40	74

Source: FTA 2006.
L_{max} = Maximum sound level; dBA = A-weighted decibel.

All proposed development would involve grading and site preparation, as well as utilities installation, building construction, external/internal building work, and paving. Standard

equipment (e.g., dozers, loaders, scrapers, miscellaneous trucks) would be used for construction. Typical operating cycles may involve 2 minutes of full power, followed by 3 or 4 minutes at lower levels. Special construction techniques such as blasting or pile driving are not anticipated.

The nearest off-site NSLUs to the project site are the residences located immediately adjacent to the project site on the northeastern site boundary. Although the adjacent residences could be exposed to elevated construction noise levels, the exposure would be short term and would cease upon construction completion. It is anticipated that project construction would comply with the County ordinance limiting noise-generating construction activities to between 7:30 a.m. and 5:30 p.m., Monday through Friday. Construction noise impacts would, therefore, be less than significant.

Summary

Project operations would result in substantial traffic-related increases in outdoor ambient noise levels at three residential locations. This impact would be **potentially significant**.

Impact 3.10-2. The project would not result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels. (Less than Significant)

Construction of new on-site facilities, such as the proposed warehousing structures located adjacent to private properties along Armstrong Road, Byron Hot Springs Road, and Holey Road, would involve operation of heavy construction equipment during allowable daytime hours. The shortest apparent distance between these construction activities and the nearest inhabited buildings would be approximately 125 feet (e.g., the apparent farm house associated with the private parcel at 3773 Armstrong Road). At this distance and per FTA general assessment estimation techniques that include a reference vibration level of 0.21 in/sec ppv at 25 feet, groundborne vibration from a vibratory roller operating as close as the project property line would propagate to a level of 0.02 in/sec at the façade of this nearest receptor position. This vibration velocity magnitude does not exceed the aforementioned 0.3 in/sec ppv for building damage risk or the more stringent 0.1 in/sec California Department of Transportation-based guidance threshold for human annoyance; thus, construction activity vibration impacts from the proposed project would be **less than significant**.

The same vibration-sensitive residential buildings and their occupants discussed above with respect to proposed project construction vibration are already exposed to potential sources of groundborne vibration associated with the airport's existing and on-going general aviation operations. However, general aviation takeoffs, landings, and taxiing are unlikely to cause perceptible levels of groundborne vibration velocity impacts due to the relatively long distances between the runway and taxiways and the nearest inhabited structures on adjoining private properties. For this reason, groundborne vibration velocity level impacts (and noise due to excitation of building structural surfaces from this groundborne vibration) associated with proposed project operation would be **less than significant**.

Impact 3.10-3. The project is located within an airport land use plan and would not expose people residing or working in the project area to excessive noise levels. (Less than Significant)

Airport Noise Contours

The noise-sensitive receptors (i.e., residential land uses) that surround the project site are already exposed to noise levels due to operation of Byron Airport (refer to Figure 3.10-1 for the existing airport noise contours). The proposed project would not affect general aviation activities or forecasts. The proposed ALUCP update would not change the Byron Airport noise contours (as shown in **Figure 3.10-6, Proposed ALUCP Noise Policy Map**), nor would it change the compatibility criteria for NSLUs. Additionally, no new noise-sensitive receptors would be established in the vicinity of the proposed project: the development considered in this project consists of aviation facilities per the Byron Airport Master Plan, and a potential range of non-aviation uses, including industrial and commercial uses. Therefore, aircraft noise impacts would be **less than significant**.

3.10.5 Mitigation Measures

No feasible mitigation measures have been identified for Impact 3.10-1. Installation of noise walls is not a feasible mitigation measure in these locations due to the position of the residences and driveway access.

3.10.6 Level of Significance After Mitigation

Impact 3.10-1 would remain **potentially significant**, since there are no feasible mitigation measures to reduce this impact. Residential uses (sensitive receptors) would be exposed to significant traffic noise due to the project. Traffic noise walls in the vicinity of the impacted sensitive receptors, while potentially effective, are not feasible due to the location of the receptors. Thus, traffic noise impacts would be **significant and unavoidable**. Other operational impacts, such as commercial activities, would be **less than significant**.

3.10.7 Cumulative Impacts

Impact 3.10-1 incorporates cumulative traffic volumes to determine the significance of potential noise impacts. The cumulative effect of traffic noise is potentially significant. Noise walls are not a feasible mitigation measure in the locations where potentially significant impacts would occur. Thus, this cumulative traffic noise impact is **potentially significant**. No other reasonably foreseeable development would affect temporary or permanent ambient noise levels in the project vicinity. Aircraft operations at Byron Airport are expected to be consistent with the aviation

forecasts relied upon in the ALUCP update. Therefore, all non-traffic cumulative noise impacts would be **less than significant**.

3.10.8 References Cited

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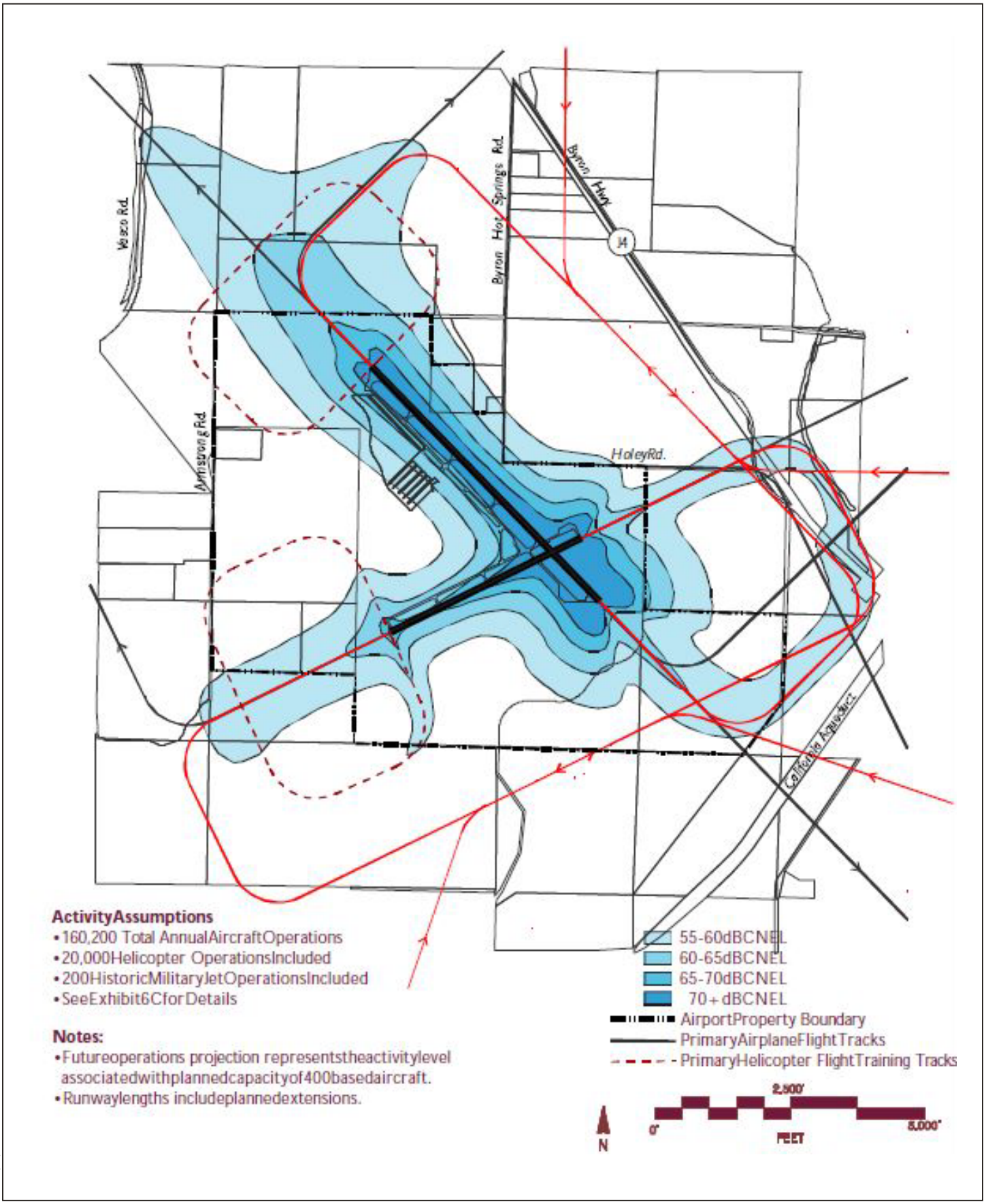

FIGURE 3.10-1

Noise Contours

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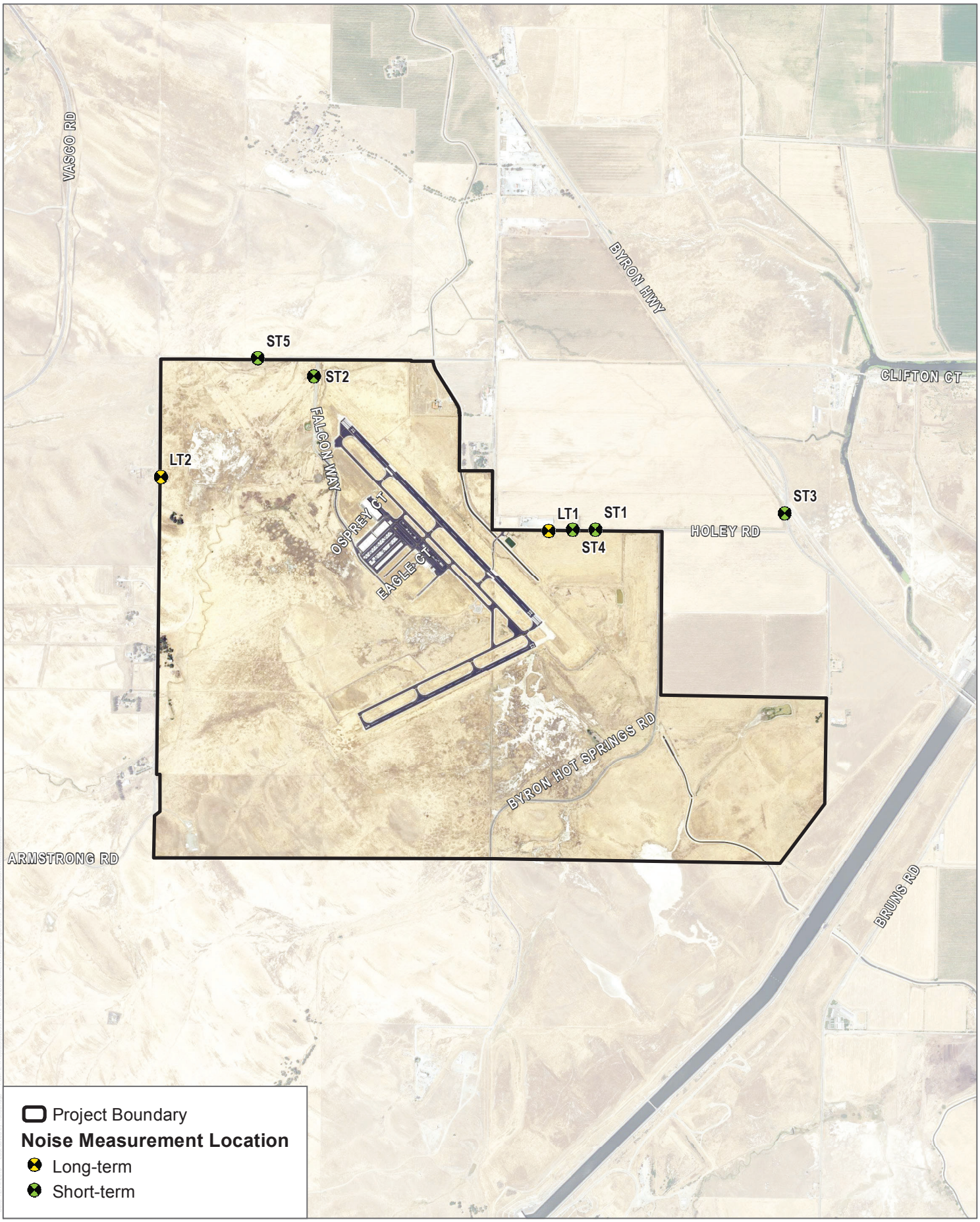

SOURCE: USDA 2016; Contra Costa County 2017

DUDEK

0 1,000 2,000 Feet

FIGURE 3.10-2

Noise Measurement Locations

Byron Airport Project

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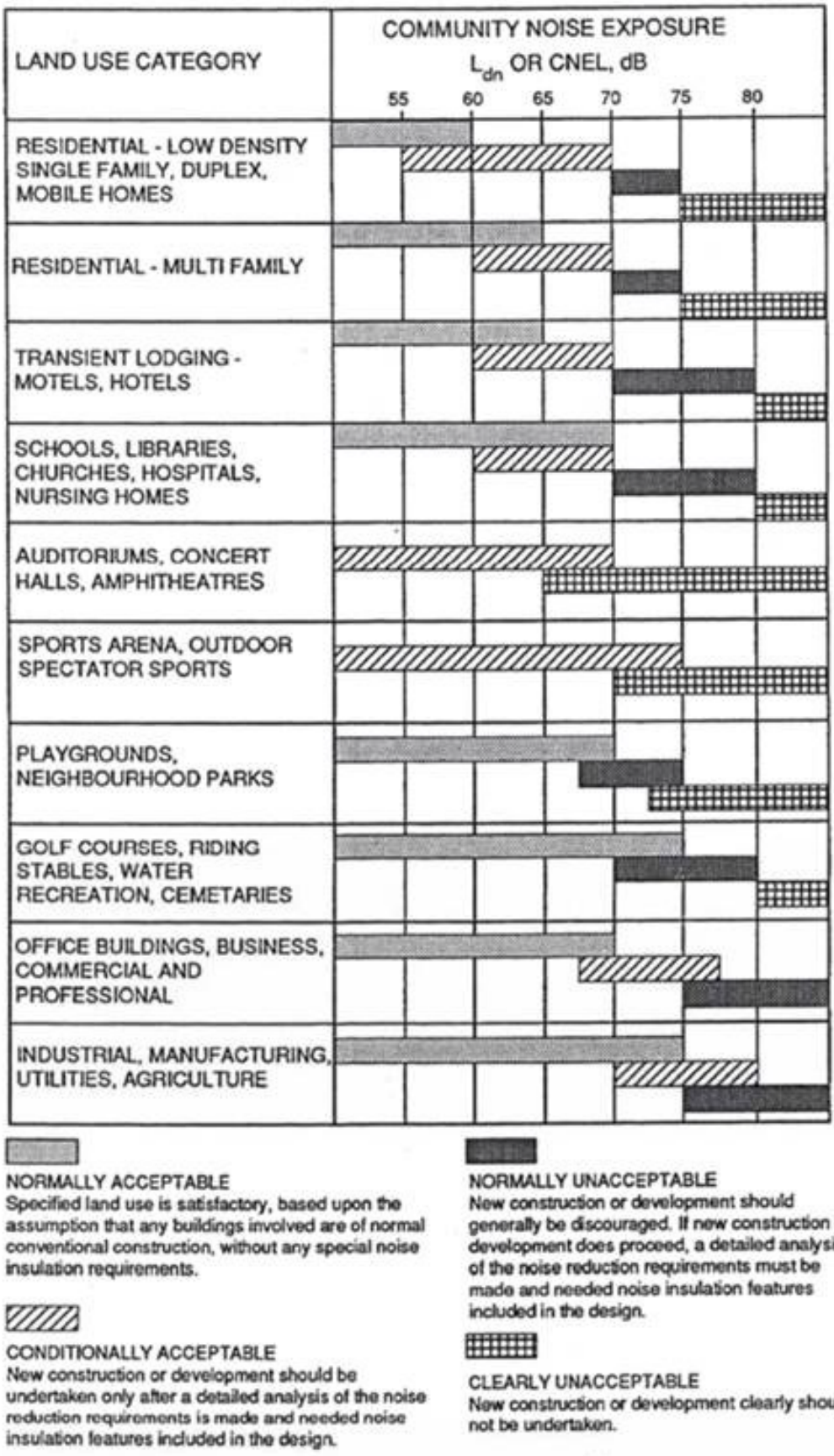

FIGURE 3.10-3

Land Use Compatibility Criteria

Byron Airport Development Program Noise Analysis

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Land Use Category	CNEL (dB) 50–55	55–60	60–65	65–70	70–75
Residential					
single-family, mobile homes	+	–	–	– –	– –
multi-family, apartments, condominiums	++	o	–	– –	– –
Public					
schools, libraries, hospitals, nursing homes	+	o	–	– –	– –
churches, auditoriums, concert halls	+	+	o	–	– –
transportation, parking, cemeteries	++	++	++	+	o
Commercial and Industrial					
motels, hotels	++	+	o	–	–
offices, retail trade	++	+	o	o	–
service commercial, wholesale trade, warehousing, light industrial	++	++	+	o	o
general manufacturing, utilities, extractive industry	++	++	++	+	+
Agricultural and Recreational					
cropland	++	++	++	++	+
livestock breeding	++	+	o	o	–
parks, playgrounds, zoos	++	+	+	o	–
golf courses, riding stables, water recreation	++	++	+	o	o
outdoor spectator sports	++	+	+	o	–
amphitheaters	+	o	–	– –	– –

Land Use Acceptability		Interpretation/Comments
++	*Clearly Acceptable*	The activities associated with the specified land use can be carried out with essentially no interference from the noise exposure.
+	*Normally Acceptable*	Noise is a factor to be considered in that slight interference with outdoor activities may occur. Conventional construction methods will eliminate most noise intrusions upon indoor activities.
o	*Marginally Acceptable*	The indicated noise exposure will cause moderate interference with outdoor activities and with indoor activities when windows are open. The land use is acceptable on the condition that outdoor activities are minimal and construction features which provide sufficient noise attenuation are used (e.g., installation of air conditioning so that windows can be kept closed). Under other circumstances, the land use should be discouraged.
–	*Normally Unacceptable*	Noise will create substantial interference with both outdoor and indoor activities. Noise intrusion upon indoor activities can be mitigated by requiring special noise insulation construction. Land uses which have conventionally constructed structures and/or involve outdoor activities which would be disrupted by noise should generally be avoided.
– –	*Clearly Unacceptable*	Unacceptable noise intrusion upon land use activities will occur. Adequate structural noise insulation is not practical under most circumstances. The indicated land uses should be avoided unless strong overriding factors prevail and should be prohibited if outdoor activities are involved.

FIGURE 3.10-4

Airport Compatibility Criteria

Byron Airport Development Program Noise Analysis

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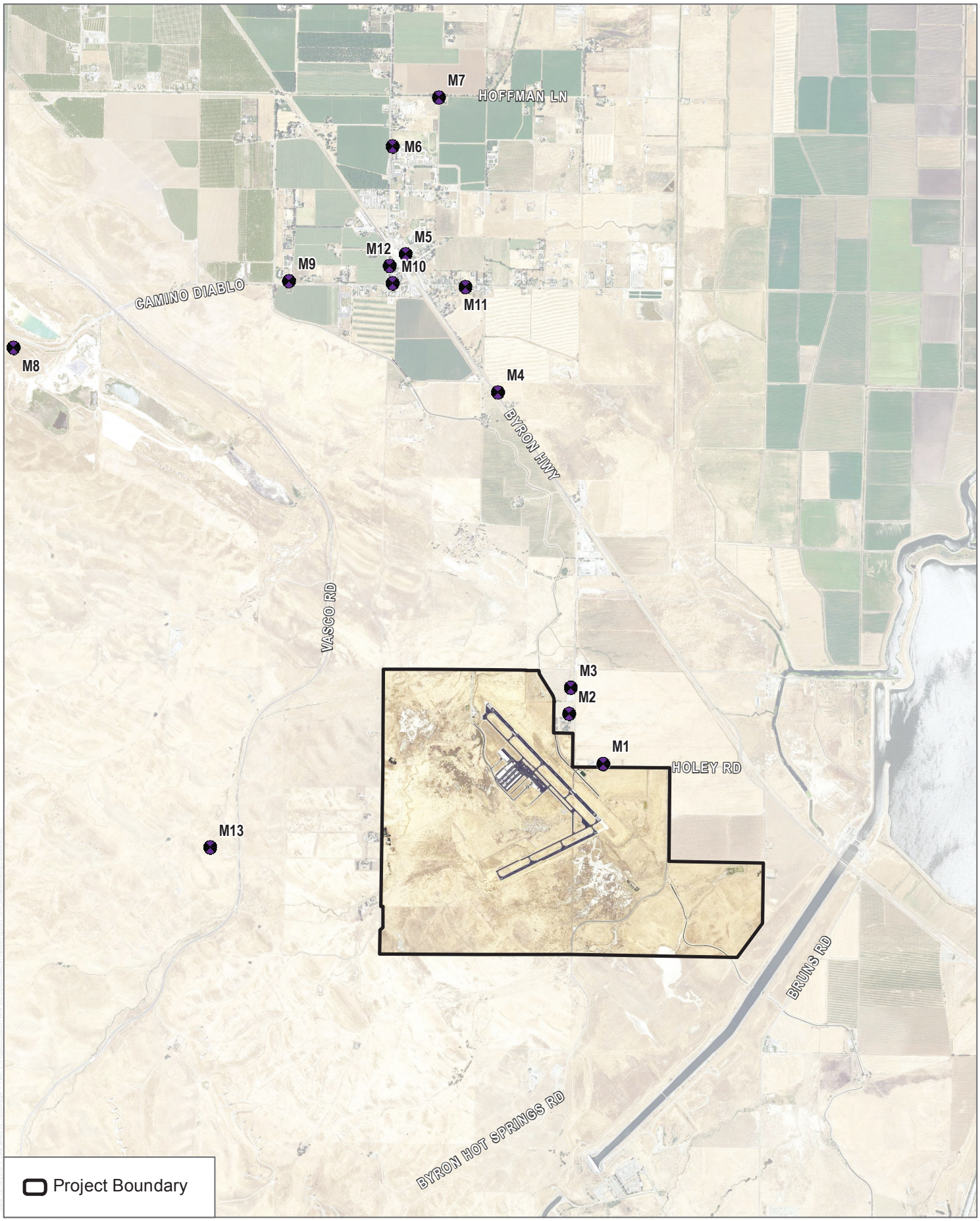

SOURCE: USDA 2016; Contra Costa County 2017

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0 1,750 3,500 Feet

FIGURE 3.10-5

Noise Modeling Locations

Byron Airport Project

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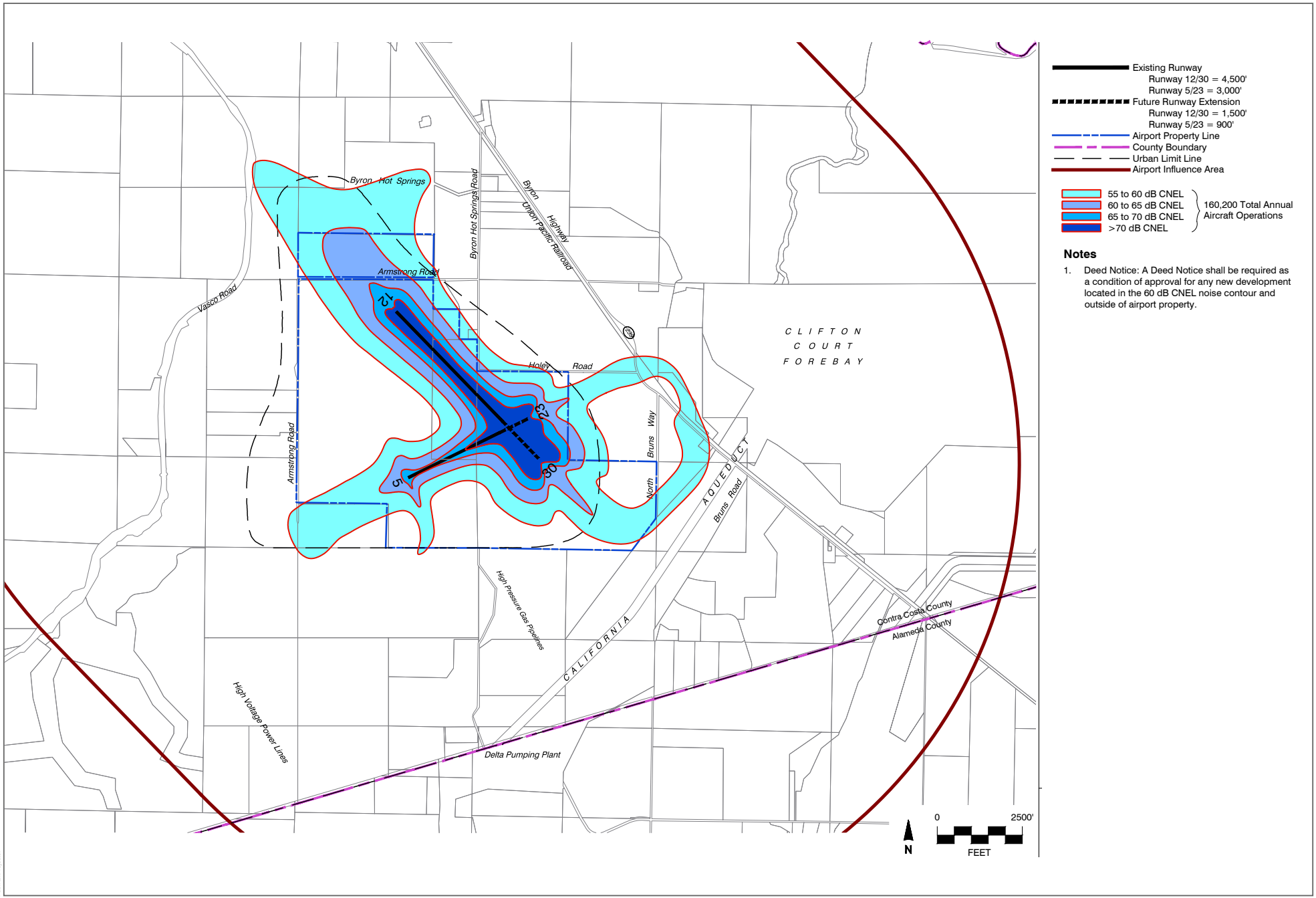

SOURCE: Mead & Hunt 2021

FIGURE 3.10-6

Proposed ALUCP Noise Policy Map

Byron Airport Development Program Noise Analysis

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3.11 POPULATION, HOUSING, AND GROWTH

This section describes the existing setting of the Byron Airport Development Program (project) site as it relates to population, housing, and growth; identifies associated regulatory requirements; and evaluates potential impacts. No mitigation measures are included in this section because no potentially significant impacts were identified.

3.11.1 Existing Conditions

3.11.1.1 Regional Setting

The project site is located in eastern Contra Costa County (County), which includes the cities of Pittsburg, Antioch, Oakley, and Brentwood. The southeastern area where Byron Airport is located includes the unincorporated communities of Byron and Discovery Bay. The unincorporated eastern part of the County is mainly rural, with the exception of the Town of Discovery Bay (Discovery Bay). The nearest community to the project site is Byron, which had a 2010 population of 1,277 (U.S. Census Bureau 2010). Population trends for the County, including the eastern County subarea, are shown in Table 3.11-1, Population Growth Trends.

Table 3.11-1
Population Growth Trends

Area	2010 Population	Projected 2020 Population	Projected 2030 Population	Projected Population Change from 2010 to 2030
East Unincorporated Subarea	43,545	44,000	46,600	+7%
Central Unincorporated Subarea	64,306	64,800	66,900	+4%
West Unincorporated Subarea	51,934	52,900	55,500	+7%
Total Unincorporated	**159,785**	**161,700**	**169,000**	**+6%**
Cities and Towns	889,240	957,400	1,050,900	+18.2%
Total County	**1,049,025**	**1,123,500**	**1,224,400**	**+16.7%**

Source: Contra Costa County 2014.

Since 2000, the cities in the eastern part of the County have experienced massive population growth. This is particularly true for Brentwood, whose population grew 251% from 2000 to 2017. Most growth in the unincorporated east County area has occurred in Discovery Bay, where subdivisions approved in the 1990s are still being built (Contra Costa County 2014).

Unemployment for the communities of Byron and Discovery Bay is shown in Table 3.11-2, Unemployment Rate. Note the available Census data likely overstates the unemployment rate, due to the recession of 2008. Employment opportunities in the unincorporated east County area exist mainly in the agriculture, service, and construction sectors.

Table 3.11-2
Unemployment Rate

Area Name	Labor Force	Number Unemployed	Unemployment Rate
Byron CDP	444	32	7.2%
Discovery Bay CDP	6,716	725	10.8%

Source: Contra Costa County 2014.
CDP = Census Designated Place.

3.11.1.2 Project Site

One single-family residence is located within the project site, on the parcel proposed for acquisition at 3790 Armstrong Road. Properties adjacent to Byron Airport are used for agriculture or open space, with scattered rural residences.

3.11.2 Relevant Plans, Policies, and Ordinances

3.11.2.1 Federal

There are no federal laws or regulations addressing population, employment, or housing that are relevant to the proposed project.

3.11.2.2 State

California State Aeronautics Act

The purpose of the California State Aeronautics Act pursuant to Public Utilities Code (PUC) Section 21001 et seq. "is to protect the public interest in aeronautics and aeronautical progress." The California State Aeronautics Act provides for the creation of an Airport Land Use Commission (ALUC) for every county that contains a public-use airport. The purpose of an ALUC, per the California State Aeronautics Act, is to conduct airport land use compatibility planning. ALUCs protect public health, safety, and welfare by ensuring the orderly growth of airports and adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses (PUC Sections 21670–21679.5). The primary mechanism used to accomplish airport land use compatibility planning is adoption of an Airport Land Use Compatibility Plan (ALUCP) (PUC Sections 21674[c] and 21675).

3.11.2.3 Local

Airport Land Use Compatibility Plan

The Contra Costa County Airport Land Use Compatibility Plan, adopted in 2000, is discussed in Section 3.9, Land Use and Planning. The Airport Land Use Compatibility Plan restricts residential development within the Airport Influence Area.

Contra Costa County General Plan

The County General Plan contains goals, policies, and implementation measures applicable to development projects in the unincorporated areas of the County. The Housing Element contains nine goals and 29 policies related to production of new housing, maintenance of existing housing stock, and expansion of housing opportunities (Contra Costa County 2014). Since residential development is not considered a compatible land use on the project site, these goals and policies are not applicable to the project or Byron Airport.

The County General Plan Land Use Element contains the following goals and policies that relate to economic development and are applicable to the proposed project (Contra Costa County 2005a):

Goal 3-D To provide for a range and distribution of land uses that serve all social and economic segments of the county and its subregions.

Goal 3-K To develop a balance between job availability and housing availability with consideration given to wage levels, commute distance, and housing affordability.

Policy 3-2 Job infill shall be supported and stimulated where the jobs/housing ratio shows an overabundance of housing to jobs.

Policy 3-3 As feasible, areas experiencing rapid urban growth shall be developed so as to provide a balance of new residential and employment opportunities.

Policy 3-30 A variety of appropriately sized, well-located employment areas shall be planned in order that industrial and commercial activities can contribute to the continued economic welfare of the people of the county and to the stable economic and tax bases of the county and the various cities.

Policy 3-41 The continuing orderly development of research facilities, regional offices, and light industrial uses shall be encouraged in designated areas in order to improve the economic base and provide local employment.

Policy 3-42 Industrial development shall be concentrated in select locations adjacent to existing major transportation corridors and facilities.

Policy 3-44 Industries which employ the skills of county residents shall be encouraged to locate within the county.

The County General Plan Transportation and Circulation Element contains the following policies regarding growth around Byron Airport that are applicable to the proposed project (Contra Costa County 2005b):

Policy 5-64 The County shall acquire fee title and/or conservation (development rights) easements to an appropriate amount of buffer land around Byron Airport.

Policy 5-65 The buffer land or conservation easements acquired around the airport shall ensure that incompatible uses will not be allowed to locate within the safety zone.

Policy 5-66 Establishment of commercial, industrial, or residential development around the planned airport shall not be allowed.

Policy 5-67 Water and sewer services to the airport will be limited to serve only the airport property; utilities will not serve growth on the adjacent properties.

Policy 5-68 No residential development or sensitive receptors, e.g., hospitals, schools, shall be allowed within the projected 60 CNEL noise contours for the airport.

Policy 5-77 The following are suggested uses within the ALUC Compatibility Zones for Byron Airport: agriculture; open space; low-intensity park and recreation uses; low occupant density public uses; and parking of automobiles.

3.11.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts are based on Appendix G of the California Environmental Quality Act Guidelines. According to Appendix G, a significant impact related to population and housing would occur if a project would:

1. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).

2. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

The project would include an update to the ALUCP. Therefore, the following additional issue is considered:

3. Would the project result in the substantial displacement of planned housing that would necessitate the construction of additional housing elsewhere?

3.11.4 Impacts Analysis

Impact 3.11-1. The project would not induce substantial unplanned population growth in the area, either directly or indirectly. (Less than Significant)

The project does not propose new residential land uses. The current and proposed General Plan policies and zoning do not permit residential land uses on the airport property. The project would expand aviation uses and airport-related industrial and commercial development consistent with the Airport Master Plan. Additional employment opportunities at the project site could slightly increase the demand for housing in the region. However, it is anticipated that most of the jobs would be filled by people living in the area, since the eastern County area has a large workforce. As noted in the County General Plan Housing Element, the County provides "bedroom communities" for the workforce of other Bay Area counties (Contra Costa County 2014). New employment opportunities at Byron Airport would help to address the imbalance of jobs and housing in the County, and particularly in the eastern County subregion. Overall, the impact on housing and population growth would be **less than significant**.

Impact 3.11-2. The project would not displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere. (Less than Significant)

No residential uses are located on the airport property. The project would include potential acquisition and demolition of one single-family residence on an adjacent property. This would be a willing sale by the owner and would not displace a substantial number of people. The impact would be **less than significant**.

Impact 3.11-3. The project would not result in the substantial displacement of planned housing that would necessitate the construction of additional housing elsewhere. (No Impact)

Consistent with state guidance, ALUCPs generally discourage or prohibit residential units within certain safety zones in Airport Influence Areas. This planning principle is based on the goal of

protecting the safety of people living near airports and the airplane passengers and crew (by avoiding dense residential areas near air traffic patterns). Local general plans, specific plans, and zoning ordinances are required by the California State Aeronautics Act to be consistent with the ALUCP. Therefore, planned residential uses and densities should be consistent with the ALUCP. When an ALUCP is amended or updated to reduce allowed residential uses, these changes should be reflected in local plans and ordinances, which could reduce the number of future residential units within the Airport Influence Area. The regional need for housing would then increase demand in areas where residential density is not constrained by the ALUCP. This is commonly referred to as "displacement." Potential unplanned growth in areas where displacement occurs could result in significant effects to the environment.

The current ALUCP for Byron Airport restricts residential development, with no residential uses allowed within the runway protection zone and allowable density increasing as distance from the approach/departure zone increases. The proposed ALUCP update would revise the safety zones to be more consistent with current state guidance, including minor changes in the shape of the zones, and a relaxation of commercial and industrial use restrictions. Residential density standards, however, would not be relaxed. Table 3.11-3 shows the current and proposed residential standards.

Table 3.11-3
Comparison of Current and Proposed Airport
Land Use Compatibility Plan Residential Density

Current ALUCP		Proposed ALUCP	
Compatibility Zone	*Average Units per Acre*	*Safety Zone*	*Average Units per Gross Acre*
A	0	1	0
B1/B3	1a	2	1a
B2	0.1	3	0.1
C1	0.2	4	0.2
C2	0.2	5	0.2
D	No restriction	6	No restriction

ALUCP = Airport Land Use Compatibility Plan
[a] One residential unit may be developed on an existing lot. No residential subdivisions are permitted.

As shown, no additional limitations would be placed on residential units in the proposed ALUCP. In addition, no changes to the General Plan land use designations or zoning designations for the properties surrounding Byron Airport are proposed. The areas around the airport are designated "Agricultural Lands" in the General Plan and zoned primarily for agricultural use (see Figure 3.9-3, Existing Zoning, of Section 3.9 of this Environmental Impact Report). The minimum parcel sizes for agricultural districts are 5 acres (A-2 Zone), 10 acres (A-3 Zone), or 40 acres (A-4 Zone). These zones are as, or more, restrictive than the recommended densities in the ALUCP update.

Therefore, planned residential densities would not be reduced, and no displacement would occur. There would be **no impact** related to housing displacement.

3.11.5 Mitigation Measures

No mitigation is required.

3.11.6 Level of Significance After Mitigation

The proposed project's impacts related to population, housing, and growth would be less than significant without mitigation.

3.11.7 Cumulative Impacts

Cumulative impacts to population and housing would result from a combination of projects that induce population growth. As described in Section 3.11.4, Impacts Analysis, for Impact 3.11-1, the project does not propose residential land uses, and these uses are not permitted on airport property by the current or proposed General Plan policies and zoning. Additional employment opportunities at the project site could slightly increase the demand for housing in the region. However, it is anticipated that most of the jobs produced by the project would be filled by people living in the area, since the eastern part of the County has a large workforce. Residential development within the County has the highest potential to result in population growth in the area. Section 6.2, Housing Needs Assessment, of the County's General Plan Housing Element identifies the nature and extent of housing needs for current and future residents of the County. This section of the General Plan quantifies the share of the region's housing growth that has been allocated to the County. This estimate is based on projected household growth, the amount of units needed to account for the normal and appropriate level of vacancies, and the replacement of units lost to conversion or demolition (Contra Costa County 2014). In 2013, the Association of Bay Area Governments completed a Regional Housing Needs Assessment (RHNA) for 2015–2023, which provides a breakdown of the County's share of future regional housing needs by four income categories: very low, low, moderate, and above moderate. The RHNA determined that over the 2015–2023 period, the total housing need within the County would be 20,630 new units. Of this, 1,367 new units would be needed within the unincorporated areas of the County (ABAG 2013). The County has already planned for required new units in the County, and is required to identify sites available for new housing development to meet the RHNA. There are no planned developments in the eastern part of the County in excess of the County's RHNA goals (ABAG 2013; Contra Costa County 2014). Therefore, there would be **no cumulative impact** related to substantial unplanned population growth.

Because the project site would not displace substantial numbers of existing people or housing necessitating the construction of replacement housing elsewhere, the project would not result in

cumulative impacts related to displacement (see Impact 3.11-2). Additionally, the project would not result in changes to the General Plan land use designations or zoning designations for the properties surrounding Byron Airport. Therefore, the project would not change planned residential densities surrounding the site, and no displacement would occur (see Impact 3.11-3). The proposed project would have **no cumulative impacts** related to displacement of housing or people.

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3.12 PUBLIC SERVICES

This section describes the existing setting of the Byron Airport Development Program (project) site as it relates to public services, identifies associated regulatory requirements, and evaluates potential impacts. No mitigation measures are included in this section because no potentially significant impacts were identified.

3.12.1 Existing Conditions

3.12.1.1 Fire Protection and Emergency Medical Services

Fire protection for the project site and its vicinity is provided by the East Contra Costa Fire Protection District (ECCFPD). The ECCFPD serves approximately 249 square miles with three fire stations staffed by three firefighters each, for a total district staffing of nine firefighters per day (ECCFPD 2019a). The closest fire station to the project site is Station 59 located approximately 8 miles (driving distance) north on Bixler Road in the Town of Discovery Bay (Discovery Bay) (Aubert 2019). The other two stations are located in Brentwood and Oakley. ECCFPD's divisions, which include the Fire Suppression/Operations Division, Training/EMS/Safety Division, Public Education Division, Fire Prevention Division, and Hazardous Waste Management Division, are supervised by one fire chief. The largest division within the ECCFPD is the Fire Suppression/Operations Division, which provides emergency medical services, fire suppression, rescue, hazardous conditions response, and all other emergency and non-emergency calls for service. In January 2019, the ECCFPD received 689 calls for service, with an average response time of 8 minutes. Notably, only two of these calls were for major calls for commercial structural fires (ECCFPD 2019b). At this time, the ECCFPD is budgeted for 36 personnel, and 35 of these positions are filled. ECCFPD personnel include one fire chief, three administration personnel, four battalion chiefs, nine captains, nine engineers, and nine firefighters (ECCFPD 2019a, 2019b). The Contra Costa County (County) Airports Division also maintains an aircraft rescue and firefighting truck at Byron Airport.

3.12.1.2 Law Enforcement

Law enforcement services at the project site are provided by the County Sheriff's Office. The Sheriff's Patrol Division provides uniformed law enforcement services to greater than 1 million residents over 715 miles in the County. The station house closest to the project site is Delta Station, located at 210 O'Hara Avenue in Oakley. The Delta Station serves the eastern part of the County, including the unincorporated areas around Antioch, Oakley, and Brentwood, and the communities of Bethel Island, Knightsen, Byron, and Discovery Bay. The station includes 23 sworn staff positions, including one lieutenant (station house commander), five sergeants; 15 beat deputies, and two special district deputies. The station also has non-sworn staff consisting of two community services officers and one crime prevention specialist. Non-sworn staff consists of two community

services officers and one crime prevention specialist (Contra Costa County Sheriff's Office 2019). The Sheriff's Office also operates the Discovery Bay Annex, staffed by two deputies and one crime prevention specialist, located on Discovery Bay Boulevard. Local funding for the Sheriff's Office comes from the County's general fund and special tax assessment areas.

3.12.1.3 Schools

The project site is served by the Byron Union School District and Liberty Union High School District. The closest schools to the project site are Byron Elementary and Excelsior Middle, which share a campus approximately 3 miles north (BUSD 2019).

3.12.1.4 Parks and Recreation Facilities

The County Public Works Department manages numerous parks and recreation facilities within the County. The County's parks system also consists of several regional park districts, including the East Bay Regional Park District. The County also includes more than 1,200 miles of hiking trails (Contra Costa County 2019). The East Bay Regional Park District spans Alameda and Contra Costa Counties and contains approximately 121,397 acres in 73 regional parks, including more than 1,250 miles of trails. Recreational opportunities offered in these parks include hiking, biking, picnicking, horseback riding, camping, fishing, boating, golfing, and nature study (EBRPD 2019). There are no general recreation parks in the unincorporated community of Byron, but several general recreation parks are located in Discovery Bay to the north. Additionally, the Bethany Reservoir State Recreation Area is 2.5 miles south of the project site.

3.12.1.5 Library Services

The County Library provides 26 library branches throughout the County. The project site is served by the Discovery Bay Library Connection, which is a service of the County Library. The library branch closest to the project site is the Brentwood Library, located approximately 7.5 miles north.

3.12.2 Relevant Plans, Policies, and Ordinances

This section describes applicable federal, state, and local laws, regulatory guidance, and policies that govern public services in the County.

3.12.2.1 Fire Protection and Emergency Medical Services

Federal

Federal Fire Prevention and Control Act of 1974/Federal Fire Safety Act of 1992

The Federal Fire Prevention and Control Act of 1974 was created to provide federal assistance to states and communities for research and development, education, and training on fire problems; setting priorities; and identifying possible solutions to problems. The 1974 act was amended in 1992 by the Federal Fire Safety Act of 1992 to require, among other things, automatic sprinkler systems or an equivalent level of safety on buildings having more than 25 employees that have been purchased, constructed, or renovated with federal funds.

National Fire Protection Association Codes and Standards

The National Fire Protection Association is a membership organization that develops and monitors the use of more than 300 fire codes and standards that have been widely incorporated into state and local fire codes. There are no legislative enforcement mechanisms in place. By working through numerous technical committees, the National Fire Protection Association uses a consensus approach to solve many safety-related issues. The National Fire Protection Association standards are updated every 3 to 5 years (NFPA 2018).

State

State Fire Regulations

The California Fire Code (CFC) is Part 9 of Title 24 of the California Code of Regulations, which includes regulations concerning building standards (as also set forth in the California Building Code), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training. It was created by the California Building Standards Commission and is based on the International Fire Code created by the International Code Council. It is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The CFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The CFC and the California Building Code use a hazard classification system to determine what protective measures are required to protect fire and life safety (24 CCR Part 9). These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the CFC employs a permit system based on hazard classification. The CFC is updated every 3 years and was most recently updated in 2016, with an effective date of January 1, 2017.

Local

Contra Costa County General Plan, Public Facilities/Services Element

The County's General Plan establishes goals and policies related to public services (fire protection, law enforcement, schools, libraries, and others). Most are contained in the Public Facilities/Services Element (Contra Costa County 2005a). Those relevant to the proposed project are listed below under the appropriate topic areas. The following are from the Public Facilities/Services Element (Contra Costa County 2005a):

Goal 7-Y To ensure a high standard of fire protection, emergency, and medical response services for all citizens and properties throughout Contra Costa County.

Goal 7-Z To reduce the severity of structural fires and minimize overall fire loss.

Goal 7-AA To incorporate requirements for fire-safe construction into the land use planning and approval process.

Goal 7-AD To provide special fire protection for high-risk land uses and structures.

Policy 7-62 The County shall strive to reach a maximum running time of 3 minutes and/or 1.5 miles from the first-due station, and a minimum of 3 firefighters to be maintained in all central business district (CBD), urban, and suburban areas.

Policy 7-64 New development shall pay its fair share of costs for new fire protection facilities and services.

Policy 7-71 A set of special fire protection and prevention requirements shall be developed for inclusion in development standards applied to hillside, open space, and rural area development.

Policy 7-72 Special fire protection measures shall be required in high-risk uses (e.g., mid-rise and high-rise buildings, and those developments in which hazardous materials are used and/or stored) as conditions of approval or else be available by the district prior to approval.

Policy 7-80 Wildland fire prevention activities and programs such as controlled burning, fuel removal, establishment of fire roads, fuel breaks and water supply, shall be encouraged to reduce wildland fire hazards.

Policy 7-81 All structures located in Hazardous Fire Areas, as defined in the Uniform Fire Code, shall be constructed with fire-resistant exterior materials, such as fire safe roofing, and their surroundings are to be irrigated and landscaped with fire-resistant plants, consistent with drought resistance and water conservation policies.

3.12.2.2 Law Enforcement

Federal

There are no federal regulations relevant to law enforcement.

State

There are no state regulations relevant to law enforcement.

Local

Contra Costa County General Plan, Public Facilities/Services Element

Goal 7-V To provide a high standard of police protection services for all citizens and properties throughout Contra Costa County.

Goal 7-W To incorporate police protection standards and requirements into the land use planning process.

Policy 7-57 A sheriff facility standard of 155 square feet of station area per 1,000 population shall be maintained within the unincorporated area of the County.

Policy 7-60 Levels of service above the countywide standard requested by unincorporated communities shall be provided through the creation of a County Service Area or other special governmental unit.

3.12.2.3 Schools

Federal

There are no federal regulations relevant to schools.

State

California Education Code Section 17620 and Senate Bill 50

California Senate Bill 50, the School Facilities Act of 1998, and the bond procedures under Proposition 1A of 1998 amended state law to reform school facilities financing and to set the California Environmental Quality Act (CEQA) standards for mitigation for school facilities. As amended by Senate Bill 50, California Education Code Section 17620 authorizes school districts to levy a fee against new development, including residential and non-residential, within the school district to fund construction, reconstruction, and/or modernization of school facilities. The school district must demonstrate the need for school construction or reconstruction, and demonstrate that the fee does not exceed the cost of construction or reconstruction necessary to meet this need. Senate Bill 50 also amended California Government Code Sections 65966–65968 to prohibit a local agency from either denying approval of a land use project because of inadequate school facilities or imposing school impact mitigation measures other than the designated fees provided for in the Education Code. However, in any year that a proposed statewide bond measure for K–12 school facilities fails, Senate Bill 50 would permit a local agency to deny a development project requiring legislative approval on the basis of inadequate school facilities.

Local

Contra Costa County General Plan, Public Facilities/Services Element

Goal 7-AO To assure the provision of adequate primary, secondary, and college facilities in the County.

Policy 7-136 The environmental review process shall be utilized to monitor the ability of area schools to serve development.

Policy 7-142 Adequate provision of schools and other public facilities and services shall be assisted by coordinating review of new development with school districts the cities and other service providers through the Growth Management Program, the environmental review process, and other means.

3.12.2.4 Parks and Recreation Facilities

Federal

There are no federal regulations relevant to parks and recreation facilities.

State

Quimby Act

In 1975, the Quimby Act (California Government Code Section 66477, as amended in 1982) granted cities and counties authority to pass ordinances requiring developers to set aside land, donate conservation easements, or pay in-lieu fees for park improvements. The goal of the Quimby Act was to require developers to help mitigate the impacts of their developments. Special districts must work with cities and counties to receive parkland dedication and/or in-lieu fees. The fees must be paid and land conveyed directly to the local public agencies that provide park and recreation services to the affected community. Revenues generated through the Quimby Act cannot be used for operation and maintenance of park facilities.

Local

Contra Costa County General Plan, Open Space Element

The County's General Plan establishes goals and policies related to parks. These are contained in the Open Space Element (Contra Costa County 2005b). Those relevant to the project are as follows:

Goal 9-H To develop a sufficient amount of conveniently located, properly designed, park and recreational facilities to serve the needs of all residents.

Goal 9-I To develop a system of interconnected bicycle, pedestrian, and riding trails and paths suitable for both active recreational use and transportation/circulation.

Goal 9-J To promote active and passive recreational enjoyment of the County's physical amenities for the continued health, safety, and welfare of the citizens of the County.

Goal 9-K To achieve a level of park facilities of four acres per 1,000 population.

Policy 9-33 A well-balanced distribution of local parks, based on character and intensity of present and planned residential development and future recreation needs, shall be preserved.

Policy 9-40 Recreational activity shall be distributed and managed according to an area's carrying capacity, with special emphasis on controlling adverse environmental impacts, such as conflict between uses and trespass. At the same time, the regional importance of each area's recreation resources shall be recognized.

Policy 9-r Require that new development meet the park standards and criteria included in the Growth Management Program and set forth in Table 9-1 [of the General Plan]. Ensure that credit for the park dedication ordinance requirements be given for private recreation facilities only after a finding has been adopted that the facilities will be open to and serve the public.

3.12.2.5 Library Services

Federal

There are no federal regulations relevant to library services.

State

There are no state regulations relevant to library services.

Local

Contra Costa County General Plan, Public Facilities/Services Element

Goal 7-AW To assure that high quality civic, medical, and other community facilities are provided to meet the broad range of needs within unincorporated areas of the County.

Policy 7-159 Services provided by the County Library System shall be maintained and improved by providing adequate funding for ongoing operations, and by providing new library facilities to meet the needs of County residents, particularly in growing areas where library service standards are not being met.

3.12.3 Thresholds of Significance

The significance criteria used to evaluate impacts to public services are based on Appendix G of the CEQA Guidelines. A significant impact related to public services would occur if a project would:

1. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
   a. Fire protection.

b. Police protection.

c. Schools.

d. Parks.

e. Other public facilities.

3.12.4 Impacts Analysis

Impact 3.12-1 The project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services. (Less than Significant)

Fire Protection

The ECCFPD provides fire protection services and emergency medical services to approximately 249 square miles within the County, including the project site. The ECCFPD has three fire stations staffed by three firefighters, for a total district staffing of nine firefighters per day. In addition, the ECCFPD is served by one fire chief, three administration personnel, four battalion chiefs, nine captains, and nine engineers (ECCFPD 2019a, 2019b). ECCFPD's Master Plan estimates that nine stations would be needed to provide coverage to ECCFPD's citizens and businesses in the long term (ECCFPD 2016). Additionally, the ECCFPD strictly enforces the County Fire Code (the California Fire Code with County-specific amendments), which provides strict requirements for fire suppression systems, use of fire-resistant building materials, and use of visible address signage. The nearest fire station to the project site is Station 59, which is located approximately 8 miles to the north.

The project site consists of four separate development areas: aviation, non-aviation, low-intensity use, and habitat management. Proposed land uses in the aviation area include airport infrastructure, hangars, fixed-base operators, businesses that directly support aviation and travel, and businesses that rely on aviation. Approximately 46.6 acres would support non-aviation uses, which includes commercial and light-industrial uses that are compatible with airport operations and would benefit from being located at an airport. Low-intensity-use areas and habitat management lands would not include any buildings or structures. Section 3.11, Population, Housing, and Growth, of this Environmental Impact Report (EIR) determined that the proposed project would not cause substantial population growth within the area, since the project would not include new residential land uses and would not increase demand for housing in the region. Most calls for service are residential calls, including emergency medical service (ECCFPD 2019b). Project elements would comply with federal, state, and local requirements

regarding fire protection, including California Government Code Section 51182 and Public Resources Code Section 4291, which would reduce fire hazards to buildings and structures. Byron Airport maintains its own water system for fire suppression, which would be expanded prior to any airport-related industrial or commercial development.

An ECCFPD study concluded that to adequately provide service to eastern Contra Costa County, additional staff and facilities would be required (ECCFPD 2016). In particular, additional stations should be located in Discovery Bay and Brentwood. The most recent Municipal Service Review prepared by the County Local Agency Formation Commission noted that the primary hurdles to achieving better levels of service were a lack of an adequate property tax base and a lack of alternative funding sources (Contra Costa County LAFCO 2016). The proposed project would provide needed tax revenue (with private airport-related development on County property). New development on site would also meet current fire codes, reducing additional demand for fire protection services. Additional tax revenues would assist with funding of ECCFPD staff and facilities. The potential construction and expansion of ECCFPD facilities would occur within the urban areas of Discovery Bay and Brentwood. Impacts of such development would be consistent with the County General Plan and Brentwood General Plan. There is no substantial evidence that the construction of future planned fire facilities would have a significant effect on the environment. Impacts related to fire protection would be **less than significant**.

Police Protection

The County Sheriff's Office provides law enforcement services within the County. The nearest County Sheriff's station to the project site is Delta Station, located approximately 12.2 miles northwest in Oakley. Although the project would expand aviation and non-aviation uses at the site, which would increase the number of people on the site, the project would not include residential uses that would cause substantial population growth in the County. Furthermore, the project would primarily employ people residing in the region and would not substantially increase demand for housing or result in population growth (see Section 3.11 of this EIR). Population is used by the Sheriff's Office to determine the need for new or expanded facilities (General Plan Policy 7-57; Contra Costa County 2005a). The project is not expected to increase demand for police protection services such that new or expanded facilities would be required. Impacts related to police protection would be **less than significant**.

Schools

The project would not include residential uses. Although additional employment opportunities at the project site could induce slight population growth in the eastern part of the County, it is anticipated that most of the jobs would be filled by people already living in the area, since the region has a large workforce. Nevertheless, private development at the project site would pay

impact fees to the Byron Union School District and Liberty Union High School District. These fees are intended to mitigate for this type of development. Impacts related to school facilities would be **less than significant**.

Parks

The County Public Works Department provides park and recreational services to the unincorporated County, including the project site. The project would not involve development of residential uses or result in a direct or indirect population growth that would, in turn, increase demand on regional parks and open spaces. Therefore, impacts related to parks and recreational resources would be **less than significant**.

Library Facilities

The County Library provides library services to the project site. The proposed project would not involve development of residential uses, and would not result in a direct or indirect population growth that would, in turn, increase demand on regional libraries. Therefore, impacts related to libraries facilities would be **less than significant**.

3.12.5 Mitigation Measures

No mitigation is required.

3.12.6 Level of Significance After Mitigation

The project's impacts related to public services would be **less than significant** without mitigation.

3.12.7 Cumulative Impacts

The context for cumulative service impacts is the eastern part of the County and growth evaluated in the County General Plan. The project would not include residential uses, and would therefore not contribute to a substantial increase in population that would increase demands for schools, parks and recreation facilities, or library facilities. The project would allow for aviation and non-aviation uses that would require fire and police protection for property and employees. The County General Plan states that new stations would be required in the County and additional equipment would be required at existing stations to maintain an acceptable level of service for fire protection (Contra Costa County 2005a). Furthermore, the County General Plan EIR concluded that build-out of the General Plan would result in the need for increased police protection staff and equipment to maintain acceptable service ratios (Contra Costa County 2005c). The County General Plan includes policies to address the effects of growth, including a requirement that new development pay its fair share of costs for new fire and police protection facilities and services. The General Plan EIR concluded that, with implementation of the General Plan policies, the impacts of

expanded fire and police protection facilities would be less than significant (Contra Costa County 2005c). The proposed project would not contribute to growth inconsistent with the General Plan, and would not contribute to a cumulative impact that is not addressed by existing policies. Therefore, cumulative impacts would be **less than significant**.

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3.13 TRANSPORTATION

This section describes the existing transportation setting of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

This section is based on the Transportation Impact Analysis (TIA) Report prepared by Dudek for the proposed project (April 2021). A complete copy of the Transportation Impact Analysis Report is included as Appendix H of this Environmental Impact Report (EIR). The TIA for the project has been prepared per Contra Costa County Transportation Analysis Guidelines (TAG) (June 2020) which establishes the approach and methodology to evaluate project impacts on the County's transportation system using vehicle miles traveled (VMT) for CEQA and the level of service (LOS) metric for General Plan consistency requirements. This section uses VMT as the basis for evaluating transportation impacts under CEQA, consistent with CEQA Guidelines Section 15064.3. The project's effects on LOS are included in the TIA (Appendix H) for the proposed project.

3.13.1 Transportation Setting

This section describes the existing transportation network in the vicinity of the project site, including the roadway, transit, pedestrian, and bicycle systems.

Roadway System

Roadway characteristics for key vicinity roads are described below. The regional roadway network is shown in Figure 3.13-1.

Interstate 205 (I-205) is an east-west divided state highway that is generally 8 lanes and is located between Interstate 5 to the east, to Interstate 580 to the west. I-205 is in San Joaquin County and runs near Lathrop on the east and near Tracy on the west. The posted speed limit is 65 MPH and primary interchanges within the vicinity of the project site are located at Mountain House Parkway and E Eleventh Street.

Vasco Road is a north-south, 2-lane undivided roadway within the study area, extending from John Marsh Highway (CA 4) from the north to Contra Costa County limits to the south. The posted speed limit is 55 MPH. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Vasco Road is designated as an Expressway in the Contra Costa County General Plan Roadway Network Plan.

State Route 4 (SR-4) is an east-west, 2-lane undivided roadway within the study area, extending from Marsh Creek Road to the west, to Byron Highway to the east. SR-4 then extends onto Byron Highway south of Marsh Creek Road for approximately one-half mile, at which point it splits from Byron

Highway and continues towards the Contra Costa County limits to the east. SR-4 is a 4-lane undivided roadway when overlapping the one-half mile segment of Byron Highway. The posted speed limit is 50 MPH along the Marsh Creek Road/State Route 4 segment west of Byron Highway, and 55 MPH along the State Route 4 segment east of Byron Highway. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. The Marsh Creek Road/State Route 4 roadway segment is designated as an Expressway, and the State Route 4 roadway segment east of Byron Highway is designated an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Marsh Creek Road is an east-west, 2-lane undivided roadway within the study area, extending from Clayton City limits to the west, to Byron Highway to the east. East of Vasco Road, Marsh Creek Road becomes SR-4 until its junction with Byron Highway. The posted speed limit is generally 50 MPH along the segment of Marsh Creek Road, west of its intersection with Byron Highway . There are no paved sidewalks along either side of the roadway and parking is generally not permitted along either side of the roadway. West of Vasco Road, Marsh Creek Road is designated an Arterial road, whereas east of Vasco Road, the Marsh Creek/State Route 4 roadway segment is designated as an Expressway in the Contra Costa County General Plan Roadway Network Plan.

Byron Highway is a north-south, 2-lane undivided roadway within the study area, extending from Delta Road to the north to San Joaquin County to the south/southeast. Within San Joaquin County, Byron Highway becomes Byron Bethany Road which in turn becomes Byron Road at the San Joaquin County line. The posted speed limits within the limits of Byron's census designated place (CDP) boundary is generally 35 MPH; outside of the CDP boundary, posted speed limits generally range between 45 and 55 MPH. There are minimal sections of paved sidewalk along both sides of the roadway within both Byron and Tracy (San Joaquin County) city limits. There are no paved sidewalks outside of city limits, and parking is generally not permitted along either side of the roadway. Byron Highway is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan and as a Principal Arterial (and a Minor Arterial when Byron Highway becomes Byron Road) in Figure TM-1 of the San Joaquin County Mobility Element. Byron Highway is also designated as County Route J4.

Camino Diablo is an east-west, 2-lane undivided roadway within the study area, connecting Byron Highway to the east, and Marsh Creek Road to the west. East of Byron Highway, Camino Diablo extends east and ends at a private road serving mostly residential and rural properties. The posted speed ranges from 25 MPH to 35 MPH within the unincorporated, CDP of Byron and increases to 50 MPH west of Byron. There are small sections of paved sidewalk along Camino Diablo between Byron Highway and Holway Drive, and parking is generally not permitted along either side of the roadway. Camino Diablo is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Walnut Boulevard is a north-south, 2-lane undivided roadway within the study area, extending from Brentwood City limits to the north, to Camino Diablo to the south. The posted speed limit is 45 MPH. There are no paved sidewalks along either side of the roadway (until Brentwood City limits are reached), and parking is generally not permitted along either side of the roadway. Walnut Boulevard is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Mountain House Parkway is a north-south, 6-lane divided roadway within the study area, extending from Byron Highway to the north, to W Schulte Road to the south. South of W Schulte Road, Mountain House Parkway becomes Patterson Pass Road. The posted speed limit is 45 MPH. There are small sections of paved sidewalk along both sides of the road at the I-205 ramps as well as longer sections of paved sidewalk along the west side of the roadway north of W Grant Line Road. Mountain House Parkway is designated as a Minor Arterial in Figure TM-1 of the San Joaquin County Mobility Element.

Byron Hot Springs Road is a north-south, 2-lane undivided roadway within the study area, extending from Byron Highway to the north, and Holey Road to the south. There is no posted speed limit. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Bryon Hot Springs Road is designated as a Collector road in the Contra Costa County General Plan Roadway Network Plan.

Holey Road is an east-west, 2-lane undivided roadway within the study area, extending from Byron Hot Springs Road to the west, to Byron Highway to the east. There is no posted speed limit. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Holey Road is designated as a Collector road in the Contra Costa County General Plan Roadway Network Plan.

Transit System

Eastern Contra Costa Transit Authority (Tri Delta) Tri Delta Transit serves the eastern parts of Contra Costa County (CCTA 2019). However, there are no transit systems near the project site. The nearest Tri Delta Transit bus service is located north of the project area in the City of Brentwood. Routes 385, 391 and 393 operate and provide service at the nearest bus stop.

Route 385 operates between Brentwood Park and Ride and Antioch BART Station via Slatten Ranch Shopping Center. The service is currently available on weekdays only at a frequency of approximately an hour throughout the day.

Route 391 operates between Brentwood Park & Ride and Pittsburg Center Station. The service is currently available on weekdays only at a variable frequency between 25 minutes to an hour throughout the day.

Route 393 operates between Brentwood Park & Ride and Antioch BART Station. The service is currently available on weekends only at a frequency of approximately an hour throughout the day.

TRACER The City of Tracy offers seven fixed bus routes. Routes A, B, and F operate along Grant Line road; however, no routes extend past the City limits to service areas near the project site.

The nearest passenger train service, including Bay Area Rapid Transit (BART) and Amtrak, is located in the City of Antioch to the north.

There are no other transit system facilities that service the project area. Figure 3.13.2 identifies the nearest transit facilities within the study area.

Bicycle and Pedestrian Facilities

The Contra Costa Countywide Bicycle & Pedestrian Plan (CBPP) (CCTA 2018) identifies the following bicycle facility classifications and descriptions:

- **Shared-Use Path (Class I Bikeway) –** Bike paths provide a completely separate right of way that is designated for the exclusive use of people riding bicycles and walking with minimal crossflow traffic.
- **Bike Lane** (**Class II Bikeway)** – Using special lane markings, pavement legends, and signage, bike lanes provide designated street space for bicyclists, typically adjacent to the outer vehicle travel lanes.
- **Buffered Bike Lanes (Class II Bikeway) –** Increase separations through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (such as driveways or intersections).
- **Bike Route (Class III bikeway)** – Provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and/or traffic calming treatments, and provide continuity to a bikeway network.
- **Bicycle Boulevards (Class III Bikeway)** – Further enhanced bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables.
- **Protected Bikeway (Class IV Bikeway)** – Referred to as cycle tracks or separated bikeways, these are set aside for the exclusive use of bicycles and physically separated from vehicle traffic with vertical separation, including grade separation, flexible posts, physical barriers, or on-street parking.

In addition to the above classifications, the CBPP further categorizes existing and proposed bicycle facilities through a Level of Traffic Stress (LTS) analysis, which assigns a LTS score to the bicycle

facility depending on the perceived stress of the cyclist. A brief description of each LTS score is provided below, as defined in the CBPP. Low traffic stress correlates with a LTS score of 1 or 2, and high traffic stress correlates with a LTS score of 3 or 4.

- **LTS 1** – Physically separated from traffic or low-volume, mixed-flow traffic at 25 mph or less; bike lanes are six-feet wide or more;
- **LTS 2** – Bicycle lanes are 5.5-feet wide or less, next to 30 mph auto traffic; unsignalized crossings of up to five lanes at 30 mph;
- **LTS 3** – Bicycle lanes next to 35 mph auto traffic, or mixed-flow traffic at 30 mph or less;
- **LTS 4** – No dedicated bicycle facilities; traffic speeds 40 mph or more.

In the study area, Marsh Creek Trail, a shared-use path (Class I Bikeway), runs north of Concord Avenue from Creek Road to Central Boulevard, and is approximately 10 miles northwest from the project site. Marsh Creek Trail bikeway can be accessed via Marsh Creek Road, south of Concord Avenue. Currently, there are no bicycle facilities along Marsh Creek Road; however, the CBPP has planned bicycle facilities for Byron Highway, Camino Diablo, Bixler Road, Byer Road, and SR-4. Currently, these roadways do not have designated bicycle facilities. Figure 3.13-2, identifies existing and planned regional bicycle facilities in the project vicinity.

Local Bicycle Network in the County is shown on Figure 3.13-3. Per CBPP, Class II bicycle lanes are proposed along Byron Hot Springs Road and Holey Road from project site to Byron Highway. The local bicycle network would connect to the low-stress bikeway (Class II) proposed along Byron Highway.

The San Joaquin County Bicycle Master Plan also identifies similar bicycle facilities to those noted above, including Class I Shared Use Paths, Class II Bicycle Lanes, Class II Buffered Bicycle Lanes, and Class III Bicycle Routes (San Joaquin County 2020). The Mountain House community area includes several Class III Bicycles Routes; however, no other San Joaquin County bicycle or pedestrian facilities are located near the project site.

Currently, there are no pedestrian facilities within the project vicinity. Due to the lack of connectivity and significant development in the immediate project vicinity, pedestrian activity is very light. Long-range planning for Byron Highway includes possible pedestrian facilities in terms of sidewalks and a Class I multi-use path (Appendix H).

3.13.2 Relevant Plans, Policies, and Ordinances

Federal

Federal Aviation Administration

The Federal Aviation Administration's primary role is to promote aviation safety and control the use of airspace. The Federal Aviation Administration enforces safety standards and investigates and corrects violations as appropriate. Federal regulations applicable to compatible land use include Federal Aviation Regulation Part 77: Safe, Efficient Use, and Preservation of the Navigable Airspace, and 14 Code of Federal Regulations Part 150 Airport Noise Compatibility Planning.

State

Senate Bill 743

On September 27, 2013, Governor Brown signed SB 743, which became effective on January 1, 2014. The purpose of SB 743 is to streamline the review under the CEQA process for several categories of development projects including the development of infill projects in transit priority areas and to balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions. SB 743 adds Chapter 2.7: Modernization of Transportation Analysis for Transit Oriented Infill Projects to the CEQA Statute (Public Resources Code Section 21099). Section 21099(d)(1) provides that aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment. In addition, SB 743 mandates that alternative metric(s) for determining impacts relative to transportation shall be developed to replace the use of LOS in CEQA documents.

In the past, environmental review of transportation impacts focused on the delay that vehicles experience at intersections and on roadway segments, which is often measured using LOS. Mitigation for impacts on vehicular delay often involves increasing capacity such as widening a roadway or the size of an intersection, which in turn encourages more vehicular travel and greater pollutant emissions. Additionally, improvements to increase vehicular capacity can often discourage alternative forms of transportation such as biking and walking. SB 743 directed the OPR to develop an alternative metric(s) for analyzing transportation impacts in CEQA document. The alternative shall promote the state's goals of reducing greenhouse gas emissions and traffic-related air pollution, promoting the development of multimodal transportation system, and providing clean, efficient access to destinations. Under SB 743, it was anticipated that the focus of transportation analysis will shift from vehicle delay to VMT within transit-priority areas (i.e., areas well served by transit).

Pursuant to SB 743, OPR released the draft revised CEQA Guidelines in November 2017, recommending the use of VMT for analyzing transportation impacts for all projects. Additionally, OPR released Updates to Technical Advisory on Evaluating Transportation Impacts in CEQA, to provide guidance on VMT analysis. In this Technical Advisory, OPR provides its recommendations to assist lead agencies in screening out projects from VMT analysis and selecting a significance threshold that may be appropriate for their particular jurisdictions. While OPR's Technical Advisory is not binding on public agencies, CEQA allows lead agencies to "consider thresholds of significance ... recommended by other public agencies, provided the decision to adopt those thresholds is supported by substantial evidence" (CEQA Guidelines Section 15064.7[c]).

In December 2018, the CEQA Guidelines were updated to add new Section 15064.3, Determining the Significance of Transportation Impacts, that describes specific considerations for evaluating a project's transportation impacts using the VMT methodology.

CEQA Guidelines Section 15064.3(b) is divided into four subdivisions as follows:

1. **Land Use Projects.** Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.
2. **Transportation Projects.** Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.
3. **Qualitative Analysis.** If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.
4. **Methodology.** A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to

> reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project.

The OPR's regulatory text indicated that a public agency may immediately commence implementation of the new transportation impact guidelines, and that the guidelines must be implemented statewide by July 1, 2020. However, the OPR Technical Advisory allows local agencies to retain their congestion-based LOS standards in general plans and for project planning purposes. As mentioned in the County's TAG, use of both metrics is required in a project's transportation analyses.

Therefore, this EIR relies on VMT as the basis for evaluating transportation impacts under CEQA. The project's LOS effects have been documented in the TIA prepared by Dudek for the proposed project.

California Department of Transportation

As the owner and operator of the State Highway System, the State of California Department of Transportation (Caltrans) implements established state planning priorities in all functional plans, programs, and activities. Caltrans has the responsibility to coordinate and consult with local jurisdictions when proposed local land use planning and development may impact state highway facilities. To comply with SB 743 implementation, the Caltrans Transportation Impact Study Guide (May 2020), replaced the Guide for the Preparation of Traffic Impact Studies (Caltrans 2002). Per the 2020 Transportation Impact Study Guide, Caltrans' primary review focus is VMT, replacing LOS as the metric used in CEQA transportation analyses. Caltrans recommends use of OPR's recommended thresholds and guidance on methods of VMT assessment found in OPR's Technical Advisory (OPR 2018). In addition to VMT, Caltrans has developed an Interim Land Development and Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance (July 2020) which may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the State Highway System and connections with the State Highway System (Caltrans 2020).

To comply with this requirement, an assessment of off-ramp queuing at freeway ramps serving the project has been included in the EIR.

Local

Contra Costa County General Plan

The purpose of the Contra Costa County General Plan is to express the broad goals and policies, and specific implementation measures, which will guide decisions on future growth, development, and the conservation of resources. The various elements or chapters of the plan are intended to provide objectives, principles, and standards to decision-making bodies in the County, as well as numerous other public agencies, that will be making decisions about the development of private and public lands and the locations and extent of improvements such as transportation infrastructure (CCTA TAG 2020). The Growth Management Element and the Transportation and Circulation Element of the General Plan are described below.

i. Growth Management Element

In November 2004, Contra Costa voters renewed the original Measure C, Transportation Improvement and Growth Management Program (GMP), a 0.5% sales tax to fund transportation projects and programs, with a new ballot measure called Measure J. Measure J funds the County's GMP, which plans for cooperative growth management among jurisdictions within the County and sets performance standards. Measure J requires local jurisdictions to be in compliance with the GMP by adopting a Growth Management Element (GME); adopting a local and regional Development Mitigation Program; participating in an on-going cooperative, multijurisdictional planning process; addressing housing options; developing a 5-year capital improvement program; adopting a Transportation Systems Management Ordinance or Resolution; and adopting a voter-approved urban limit line.

A key principle for the GMP is that growth-inducing development within the County should be required to pay for transportation facilities to meet the demands resulting from that growth. To ensure this, the CCTA has created a regional Development Mitigation Program that requires transportation fees to be paid by growth-inducing development to fund transportation improvements. Furthermore, the Growth Management Implementation Guide of the GMP establishes guidelines for review of General Plan amendments to ensure compliance with the cooperative planning requirements of Measure J. The GMP also provides performance standards to evaluate streets and public services associated with projects and General Plan amendments.

ii. Transportation and Circulation Element

The County's Transportation and Circulation Element ("TCE") establishes transportation goals, policies, and specific implementation measures to assure that the transportation system of the County will have adequate capacity to efficiently serve planned growth in Contra Costa County. The intention of the TCE is to provide a plan and implementing measures for an integrated, multi-modal

transportation system that will safely and efficiently meet the transportation needs of all economic and social segments of the County and provide for the transport of goods and services throughout Contra Costa County (CCTA TAG 2020).

Relevant General Plan policies were considered in the establishment of thresholds of significance (Section 3.13.3, Thresholds of Significance) for the proposed project. These policies are as follows:

Circulation Phasing and Coordination

5-2 Appropriately planned circulation system components shall be provided to accommodate development compatible with policies identified in the Land Use Element.

5-3 Transportation facilities serving new urban development shall be linked to and compatible with existing and planned roads, bicycle facilities, pedestrian facilities and pathways of adjoining areas, and such facilities shall use presently available public and semi-public rights of way where feasible.

5-4 Development shall be allowed only when transportation performance criteria are met and necessary facilities and/or programs are in place or committed to be developed within a specified period of time.

5-5 Right of way shall be preserved to meet requirements of the Circulation Element and to serve future urban areas indicated in the Land Use Element.

Circulation Safety, Convenience and Efficiency

5-7 Through-traffic along arterials shall be improved by minimizing the number of new intersecting streets and driveways; and, when feasible, by consolidating existing street and driveway intersections.

5-8 Access points on arterials and collectors shall be minimized.

5-9 Existing circulation facilities shall be improved and maintained by eliminating structural and geometric design deficiencies.

5-11 The use of freeways for community circulation shall be minimized by prioritizing transit circulation, safe, direct non-motorized routes, and secondarily by additional arterials and expressways.

5-13 The use of pedestrian and bicycle facilities shall be encouraged. Proper facilities shall be designed to accommodate bikes, pedestrians, and transit.

5-14 Physical conflicts between pedestrians, bicyclists, and vehicular traffic, bicyclists, and pedestrians shall be minimized.

5-16 Curbs and sidewalks shall be provided in appropriate areas.

5-17 Emergency response vehicles shall be accommodated in development project design.

5-20 New development (including redevelopment and rehabilitation projects) shall contribute funds and/or institute programs to reduce parking demand and/or provide adequate parking.

5-21 New development shall contribute funds and/or institute programs to provide adequate bicycle and pedestrian facilities where feasible.

Alternative Transportation/Circulation Systems

5-23 All efforts to develop alternative transportation systems to reduce peak period traffic congestion shall be encouraged.

5-24 Use of alternative forms of transportation, such as transit, bike, and pedestrian modes, shall be encouraged in order to provide basic accessibility to those without access to a personal automobile and to help minimize automobile congestion and air pollution.

5-n Enforce County TDM (Transportation Demand Management) Ordinances consistent with State law and encourage neighboring jurisdictions to adopt similar ordinances.

5-ak Provide safe and convenient pedestrian and bike ways in the vicinity of schools and other public facilities and in commercial areas and provide convenient access to bus routes.

5-al Ensure that pedestrian connectivity is preserved or enhanced in new developments by providing short, direct pedestrian connections between land uses and to building entrances.

5-as Provide sidewalks with a clear path wide enough to accommodate anticipated pedestrian use and wheelchairs, baby strollers or similar devices. This area clear zone must be free of street furniture, signposts, utility poles or any other obstruction.

5-at Traffic calming measures should be designed so they improve pedestrian and bicycle movement in residential neighborhoods and commercial districts as well as strategic corridors between them that help form the comprehensive bicycle network.

5-39 Reduce conflicts among motorists, pedestrians, and bicyclists.

5-aw Use curb extensions and pedestrian islands and other strategies to reduce pedestrian crossing distances.

5-ax Use traffic control devices such as signs, signals, or lights to warn motorists that pedestrians or bicyclists are in the roadway.

5-ay Provide buffers between roads and sidewalks utilizing planter strips or buffer zones that provide streetscape improvements.

5-be Incorporate sidewalks, bike paths, bike lanes, crosswalks, pedestrian cut-throughs, or other bicycle pedestrian improvements into new projects.

Capital Road Improvement and Preservation Program

The Capital Road Improvement & Preservation Program ("CRIPP") is a programming document for the funding of capital road improvement projects within Contra Costa County. It includes estimated project costs, funding source information, and scheduling information for known potential projects within the next seven fiscal years. It also includes revenue projections and a summary of estimated project-related expenditures for each funding source (CCTA TAG 2020). County of Contra Costa has identified several proposed (funded and unfunded) projects in the CRIPP for funding year (FY) 2020/21 and FY 2026/27 and some of those improvements have been referenced as potential improvements in the proposed project's TIA.

Complete Streets

On July 12, 2016, the Board of Supervisors (BOS) adopted Resolution No. 2016/374 approving the Complete Streets Policy of Contra Costa County. This Policy expanded on a 2008 General Plan amendment to support Complete Streets policies (CCTA TAG 2020). The County has established Complete Streets Principles, Implementation measures, and Exceptions that may apply to plans or projects from incorporating Complete Streets design elements.

Vision Zero Contra Costa County

The County is developing a Vision Zero Plan (Plan) to address severe and fatal collisions on County-owned roadways. The Plan, to be adopted by the BOS this year or next, would include strategies moving the County towards the goal of zero fatalities and major injury collisions on its roadway network. The strategies outlined in the Plan include engineering, education, and/or enforcement measures, which implement the primary goals such as meeting requirements for developing a Local Road Safety Program, to eliminate fatal and serious injury collisions, prioritize infrastructure projects that are in alignment with the Vision Zero Program, developing Vision Zero campaign, eliminate high-risk behavior through Education and Enforcement, and fostering relationship among various agencies related to the Vision Zero Program.

County Ordinance Code

The County Ordinance Code is the implementation tool of the General Plan and contains specific provisions that address on and off-site circulation with the intent of preserving and improving the quality and efficiency of the County transportation system. All land development proposals must demonstrate compliance with these provisions.

i. Section 74-04.006 – Electric Vehicle (EV) Charging

In 2015, the Board of Supervisors adopted Ordinance No. 2015-22 amending the 2013 California Green Building Standards Code to establish electric vehicle parking and charging station building standards for the unincorporated County. County Code Section 74-4.006 - Amendments to CGBSC – Electric Vehicle Charging standards apply to residential (single and multi-family) and non-residential development.

ii. Chapter 82-16 – Off-Street Parking

The County's Off-Street Parking Ordinance provides a unified set of standards for off-street vehicle and bicycle parking to meet the needs of persons employed at, or making use of, each land use during peak hours of parking needs. It is intended to encourage the use of features, design strategies, materials, products, and best construction practices that preserve natural resources, conserve water and energy, and maximize energy efficiency in the design of parking facilities and also intended to balance the needs of pedestrians, vehicles, bicycles, and public transportation.

iii. Chapter 82-32 – Transportation Demand Management

The County's Transportation Demand Management Ordinance intends to further the transportation goals of the County General Plan, the Measure J Growth Management Program, Contra Costa County's Congestion Management Program, and the Bay Area Clean Air Plan. Its purpose is to implement the provisions of the General Plan to promote a more balanced transportation system that takes advantage of all modes of transportation by:

- Incorporating pedestrian, bicycle, and transit access into improvements proposed in development applications;
- Incorporating the overall intent and purpose of this chapter into the land use review and planning process;
- Allowing requests for reductions in the off-street parking requirements for residential or nonresidential projects that have a conceptual TDM Program;
- Providing information to residents on opportunities for walking, bicycling, ridesharing and transit.

The County TDM Ordinance applies to:

- Residential projects containing thirteen or more dwelling units; and
- Any non-residential or mixed-use development proposal.

Contra Costa Transportation Authority

CCTA comprises of representation from all 19 cities, the unincorporated County, and the transit agencies, and is responsible for ensuring the completion of a wide variety of projects that were included in the original Measure C Expenditure Plan and the Measure J (approved by Contra Costa voters in November 2004) Expenditure Plan. CCTA works cooperatively with local agencies on funding and implementation of transportation projects.

i. Final 2017 Countywide Transportation Plan

On September 20, 2017, the CCTA adopted the Final 2017 Countywide Transportation Plan Update, which provides goals, strategies, projects, and actions for achieving and maintaining a balanced and functional transportation system within the County while considering land use (CCTA 2017c). In addition, as part of the Countywide Transportation Plan, the regional transportation planning committees updated their Action Plans for Routes of Regional Significance (Action Plans). These Action Plans establish quantitative service objectives to assess the conditions of the transportation system and impacts of land use decisions. The Action Plans help local jurisdictions meet the requirement of the Measure J GMP that requires local jurisdictions to participate in a cooperative, multijurisdictional planning process.

ii. CCTA Countywide Bicycle and Pedestrian Plan

The Countywide Bicycle and Pedestrian Plan (CBPP) builds on and expands the goals, policies and strategies of the Countywide Transportation Plan. Both plans set goals for increasing walking and bicycling and identify actions the Authority and its partners should take to achieve them. Within the project vicinity, the County has goals for bicycle and pedestrian facilities that are contained in the CBPP. The CBPP was originally adopted in 2003 and most recently updated in 2018. The CBPP supports the Countywide Transportation Plan by adding goals, policies, and strategies specifically focused on increasing walking and bicycling in the County (CCTA 2018). Facilities planned within the CBPP that are located near the project site are shown in Figure 3.13-2 and Figure 3.13-3.

iii. CCTA Action Plans for Routes of Regional Significance

East County Action Plan for Routes of Regional Significance: In accordance with Measure J requirements, the most recent update of the East County Action Plan for Routes of Regional Significance (ECAP) was adopted in September 2017. The ECAP identifies routes of regional

significance within eastern Contra Costa County, establishes multimodal transportation service objectives for these routes, and establishes actions for achieving those objectives (TRANSPLAN 2017). The purpose of the ECAP is to work cooperatively with local jurisdictions to establish overarching goals; set integrated performance measures (i.e., multimodal transportation service objectives) for designated "Routes of Regional Significance"; and outline a set of projects, programs, measures, and actions that will support achievement of the multimodal transportation service objectives. Furthermore, the ECAP creates a Development Mitigation Program to reduce the impacts of projects on the transportation system.

Within the project vicinity, Routes of Regional Significance are Byron Highway south of SR-4, Camino Diablo Road west of Vasco Road, SR-4, and Vasco Road. In addition, the planned TriLink (see subheading below) is designated as a Route of Regional Significance.

iv. 2017 Contra Costa County Priority Development Area Strategy

The 2017 Contra Costa County PDA Strategy was adopted on May 17, 2017. The PDA Strategy defines the criteria for selecting projects that support Plan Bay Area, the Regional Transportation Plan developed by the Metropolitan Transportation Commission (CCTA 2017b). PDAs are prioritized for development by local city or county governments. The PDA Strategy assists the CCTA by providing guidelines for how the CCTA will support the development of PDAs in the County. The PDA Strategy provides strategies to encourage and support development within PDAs in the County. Along with this, the PDA Strategy identifies transportation and non-transportation infrastructure needed to support development of designated PDAs, and coordinates investment in projects that support and encourage development of PDAs for the maintenance and improvement of the broader transportation system. Each update of the PDA Strategy documents progress made since the previous update and includes transportation investments that are currently being targeted to promote housing and job growth in areas with multimodal transportation options.

v. TriLink (SR-239) Feasibility Study Final Report

SR-239 was first identified in 1959 as a legislatively approved, but unconstructed, route in the California state highway system. SR-239 would act as a potential multimodal link between SR-4 near Brentwood and I-205 west of Tracy in San Joaquin County. Although the route has not been adopted by the California Transportation Commission, the County completed the TriLink Feasibility Study Final Report on May 30, 2014, to evaluate the feasibility of the corridor (CCTA 2014). In August 2015, a Project Study Report was prepared to establish the range of potential alternatives, and gain approval for formal studies and environmental documentation. SR-239 could potentially improve access for those who live and work in the region and could support inter-regional goods movement that would create jobs locally (Caltrans 2015b). The TriLink proposal

includes the Vasco–Byron Connector, which would connect Vasco Road to Byron Highway along the Armstrong Road alignment north of Byron Airport.

Since the alignment and funding of the TriLink project has not been finalized, the transportation analysis provided in the Project's TIA (VMT and LOS) do not assume any of the roadway facilities or improvements associated with the TriLink project.

vi. Travel Demand Model

Both the Measure C Growth Management Program (GMP) and the State congestion management legislation require CCTA to develop and maintain a travel demand model. These models use information on current and future population and employment, transit ridership, expected roadway improvements, and observed travel behavior to forecast traffic on the regional transportation system. The travel demand model is used to analyze the effects of new development and changes in their general plans, analyze the effects on new transportation improvements and to analyze the effects of its plans and programs, including the CTP and the Congestion Management Program (CMP). Consistent with these requirements, the CCTA model was used in the proposed project's VMT and LOS analyses.

3.13.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts to traffic and circulation are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to traffic and circulation would occur if the project would:

1. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.
2. Conflict or be inconsistent with CEQA Guidelines Section 15064.3(b).
3. Substantially increase hazards due to a geometric design feature (e.g., sharp curves, or dangerous intersections) or incompatible uses (e.g., farm equipment).
4. Result in inadequate emergency access.

Program, Plan, Ordinance and Policy

The programs, plans, ordinance, and policies listed in Section 3.13.1 were analyzed for their applicability to the proposed project under Threshold 1.

Vehicle Miles Traveled

The Updated CEQA Guidelines state that "…*generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts…*" and define VMT as "…*the amount and distance of automobile travel attributable to a project…*". It should be noted that "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). Other relevant considerations may include the effects of the project on transit and non-motorized travel.

Consistent with the OPR guidelines and CEQA Guidelines Section 15064.3 (b), the following specific VMT metrics are recommended by the County to complete a VMT impact assessment:

- **Residential Projects:** VMT per resident for all home-based trips.
- **Employment Projects:** VMT per employee for only the home-based-work trip purpose and would apply to office, industrial, and institutional projects.
- **Regional Retail (>50,000 square feet):** Total VMT per service population for trips taken by both workers and visitors.
- **Mixed-Use:** Total VMT per service population.
- **Other:** Total VMT per service population for trips taken by both workers and visitors.

The project proposes a mix of office, warehousing and commercial land uses and therefore is considered to be an employment project. Therefore, home-based work VMT per employee metric was chosen for the project's VMT analysis.

A proposed project should be considered to have a significant impact if the project VMT is greater than:

- **Employment Projects** (office, industrial and institutional projects): 15% below the Bay Area average commute VMT per employee.

The project's detailed VMT analysis was conducted using the Contra Costa Countywide Travel Demand Model and is provided under Threshold 2. For significant VMT impacts found, appropriate VMT reduction strategies such as the implementation of Transportation Demand Management (TDM) measures, or other VMT-reducing measures, have been provided to mitigate project impacts.

Hazardous Features (Project Access and Off-ramp Queuing)

The analysis evaluates whether the project would result in hazards due to design features by determining whether the 95th percentile queuing at the Project access intersections and Caltrans

off-ramp intersections would exceed the storage pockets lengths. The following intersections were analyzed for queuing impacts under Threshold 3:

- Byron Highway/Holey Road;
- Byron Highway/Byron Hot Springs Road;
- Mountain House Parkway/ I-205 westbound ramps; and
- Mountain House Parkway/I-205 eastbound ramps.

Emergency Access

The emergency access analysis evaluates whether the project would comply with County's emergency access and/or evacuation requirements including those imposed by the Fire Department.

Project Trip Generation

Trip generation estimates for the proposed project are based on daily and AM and PM peak hour trip generation rates and fitted curve equations obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th and 10th Editions* (ITE 2012; 2017).

As the proposed project contains warehousing, industrial, general commercial, and office land uses, this project is considered a multi-use development. The ITE rate for General Aviation Airport (022) from the ITE *Trip General Manual, 9th Edition* was used for the proposed aviation land use as rates provided in the 10th Edition. For the proposed general commercial land use, the ITE rate for Shopping Center (820) is the most reflective of trip generation and pass-by for this use. Pass-by trips were calculated using the average pass-by trip percentage presented within the *ITE Trip Generation Manual, 10th Edition,* for the Shopping Center land use. Internal trip capture is anticipated between the warehouse, industrial, general commercial, and office land uses.

Trip generation rates and the resulting trip generation estimates for the project are summarized in Table 3.13-1.

Table 3.13-1
Project Trip Generation for Byron Airport Development Program

Trip Rates[1]									
				AM Peak Hour			PM Peak Hour		
Land Use	ITE Code	Units	Daily	% In	% Out	Total	% In	% Out	Total
Mini-Warehouse	151	TSF	1.51	60%	40%	0.10	47%	53%	0.17
General Light Industrial	110	TSF	4.06	88%	12%	0.52	13%	87%	0.63
Shopping Center	820	TSF	61.96	62%	38%	2.16	48%	52%	5.57
General Office Building	710	TSF	10.68	86%	14%	1.26	16%	84%	1.15

Table 3.13-1
Project Trip Generation for Byron Airport Development Program

Trip Rates[1]										
					AM Peak Hour			PM Peak Hour		
Land Use	*ITE Code*	*Units*		*Daily*	*% In*	*% Out*	*Total*	*% In*	*% Out*	*Total*
General Aviation Airport[2]	022	BA		5.00	50%	50%	0.41	55%	45%	0.52
Trip Generation										
					AM Peak Hour			PM Peak Hour		
Land Use	*ITE Code*	*Size*	*Units*	*Daily*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Warehouse	151	274	TSF	414	16	11	27	22	25	47
To General Commercial				*0*	*0*	*0*	*0*	*0*	*0*	*0*
To Office				*0*	*0*	*0*	*0*	*0*	*0*	*0*
Industrial	110	213	TSF	865	97	13	111	17	117	134
To General Commercial				*0*	*-3*	*0*	*-3*	*-2*	*-17*	*-19*
To Office				0	0	0	0	0	0	0
General Commercial	820	91	TSF	5,639	122	75	197	243	264	507
To Commercial Recreation				*0*	*-1*	*-1*	*-2*	*-7*	*-9*	*-16*
To Office				*0*	*-3*	*-3*	*-6*	*-15*	*-4*	*-19*
To Warehouse				*0*	*0*	*0*	*0*	*0*	*0*	*0*
To Industrial				*0*	*0*	*-3*	*-3*	*-17*	*-2*	*-19*
Office	710	81	TSF	865	88	14	102	15	78	93
To General Commercial				*0*	*-3*	*-3*	*-6*	*-4*	*-15*	*-19*
To Warehouse				*0*	*0*	*0*	*0*	*0*	*0*	*0*
To Industrial				*0*	*0*	*0*	*0*	*0*	*0*	*0*
Aviation Uses	022	167	BA	835	34	34	68	48	39	87
Project Trips				**8,617**	**348**	**138**	**486**	**300**	**476**	**776**
Shopping Center Pass-by (15% AM, 30% PM reduction)				*0*	*-52*	*-21*	*-73*	*-45*	*-71*	*-116*
Net New Project Trips				**8,617**	**296**	**117**	**413**	**255**	**405**	**660**

Notes: BA = Based Aircraft; TSF = Thousand Square Feet

1 Trip rates based on fitted-curve equations or average rates from the ITE Trip Generation Manual, 10th Edition (ITE 2017).

2 Trips rate based on average rates for General Aviation Airport, provided in the Trip Generation Manual, 9th Edition (ITE 2012).

As shown in Table 3.13-1, the proposed project would generate 8,617 daily trips, 486 AM peak hour trips (348 inbound and 138 outbound), and 776 PM peak hour trips (300 inbound and 476 outbound). When accounting for shopping center pass-by trip reductions, the proposed project would generate 8,617 net new daily trips, 413 AM net new peak hour trips (296 inbound and 117 outbound), and 660 PM net new peak hour trips (255 inbound and 405 outbound).

While trip generation is not used in the EIR for the purpose of determining impacts based on traffic delay or congestion, it is helpful in assessing issues such as access and traffic hazards. Trip generation also plays an important role in evaluating mobile emissions and noise impacts.

3.13.4 Impacts Analysis

Impact 3.13-1. The project would conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.

The Contra Costa General Plan including GME and TCE, CRIPP, Complete Streets, Vison Zero Contra Costa, County Ordinance Code and CCTA include plans, programs and policies that address the circulation system in the County. If the proposed project does not implement a particular program, plan, or policy, it would not necessarily result in a conflict as some of these programs must be implemented by the County or other related agencies, over time and a broad area. Rather, the proposed project would result in a conflict if it would preclude the County from implementing adopted transportation-related programs, plans and policies.

The proposed project has the potential to conflict with the plans, programs, ordinances, and policies described in the Section 3.13.1 that focus on policies or standards adopted to protect the environment and support multimodal transportation options and reduce VMT. However, as shown below the proposed project has taken the following measures to address any potential conflicts with the circulation system:

- Consistent with the County's General Plan which establishes policies and standards for safe and efficient performance of the transportation system and the CCTA TAG 2020 guidelines that requires land development projects be evaluated against operational and efficiency standards of LOS and VMT, the proposed project has prepared a TIA report (Appendix H). Based on the analysis provided in the TIA of the proposed project, mitigation measures for CEQA impacts (as described in Section 3.13.4 and shown in Appendix H) and transportation improvement measures for General Plan consistency (or Non CEQA) requirements (shown in Appendix H) have been identified for the proposed project.
- The proposed project would comply with the County's Ordinance Code to include required EV charging stations and parking as well as the off-street parking standards. The details of parking requirements would be addressed at the Design Review stage of the proposed project. The proposed project would comply with the County's TDM ordinance (described in detail in Section 3.13.5).
- As discussed in Section 3.13.2, Transportation Setting, there is currently no transit service to the project site or within the vicinity of the project site. The proposed project would result in an increase in population and employment in the County, increasing the number of people who may use public transit services. However, the project site is not directly served by any transit routes. The closest existing transit stop is approximately 7 miles

northwest of the project site in the City of Brentwood. No planned public transit facilities or services are planned for the project vicinity.

- There are no bicycle facilities that serve the project site. However, the Contra Costa CBPP (CCTA 2018) has planned bicycle facilities for Byron Highway, Camino Diablo, Bixler Road, Byer Road, and SR-4 (Figure 3.13-2). Per CBPP, as shown on Figure 3.13-3, Class II bicycle lanes are proposed along Byron Hot Springs Road and Holey Road from project site to Byron Highway. The local bicycle network would connect to the low-stress bikeway (Class II) proposed along Byron Highway. The proposed project shall provide adequate bike parking, change, and shower facilities on-site and improve accessibility for on-site bicycle movement as well connections to immediate off-site locations by facilitating connections with Class II bike lanes along Holey Road and Byron Hot Springs Road.
- In addition, there are no existing pedestrian facilities within the project vicinity. Due to the lack of connectivity and significant development in the immediate project vicinity, pedestrian activity is very light at present. However, with development of the proposed project, pedestrian traffic is expected to increase due to the general commercial and office components of the proposed project. Long-range planning for Byron Highway includes possible pedestrian facilities in terms of sidewalks and a Class I multi-use path. Consistent with County General Plan policies and Complete Street Policy, the proposed project is expected to provide continuous sidewalks along the project frontage (where development fronts a public street). Internally, pedestrian sidewalks, crosswalks, and accessible paths of travel should be provided within the project site, as follows:
    - Within the developed core to allow easy access to each building
    - Between public street and the developed core

Where feasible, sidewalks would be configured to channel pedestrians to crosswalks.

The proposed project would comply with the County's Complete Streets Policy, which requires the needs of all users (including pedestrians, cyclists, motorists, and transit riders) to be met during street design. The County's Complete Streets Policy was adopted by Resolution No. 2016-374 by the Board of Supervisors of Contra Costa County on July 12, 2016 (Contra Costa County 2016).

There is limited availability of alternative transportation facilities in the vicinity of the project site. The proposed project would not disrupt or interfere with existing or planned bicycle or pedestrian facilities, conflict with adopted pedestrian or bicycle system plans or policies, create a substantial demand for mass transit services above existing or planned capacity, or interfere with existing or planned transit facilities. However, the proposed project would not preclude the County or CCTA from implementing any programs, plans and policies that would improve accessibility to transit, bicycle, and pedestrian facilities in its vicinity.

Therefore, with the implementation of project-related actions described above, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Impacts would be **less than significant**.

Impact 3.13-2. The project would potentially conflict or be inconsistent with CEQA Guidelines Section 15064.3(b). (Potentially Significant)

The following discusses the Proposed Project's VMT impacts and its consistency with CEQA Guidelines section 15064.3, subdivision (b).

Per the County's guidelines, if a project meets any one of the following criteria it would not require a detailed VMT analysis:

- Projects that:
  - Generate or attract fewer than 110 daily vehicle trips1: or,
  - Projects of 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day.

As shown in project trip generation, the project would generate 8,617 daily trips and therefore would not meet the small project screening criteria.

- Residential, retail, office projects, or mixed-use projects proposed within ½ mile of an existing major transit stop[2] or an existing stop along a high-quality transit corridor[3.]

The project is not located within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor per Public Resources Code Section 21155 and therefore, would not meet the transit proximity screening.

- Residential projects (home-based VMT) at 15% or below the baseline County-wide home-based average VMT per capita, or employment projects (employee VMT) at 15% or below

[1] CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).). Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

[2] Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

[3] Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

the baseline Bay Area average commute VMT per employee in areas with low VMT that incorporate similar VMT reducing features (i.e., density, mix of uses, transit accessibility)

As shown in the following VMT analysis, the project is not located within an area with low VMT and the project's employee VMT is above the baseline Bay Area average commute VMT per employee. Therefore, the project does not meet the low VMT screening.

- Public facilities (e.g., emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities) and government buildings.
- The project proposes warehouse, office, and commercial uses which would complement the existing airport use. Since it is not proposing public facilities and government buildings, therefore, the project type screening would not apply.

The proposed project does not meet the screening criteria identified above; therefore, further assessment of project's VMT impact under base year conditions (year 2018) and cumulative conditions (year 2040) is provided below using available significance thresholds and guidance from the County.

Project Level Analysis

The 2010 CCTA model was utilized for VMT analysis of the proposed project. The CCTA is a trip-based model that has been developed using Metropolitan Transportation Commission (MTC) travel demand model. The 2010 Decennial update of the CCTA Model was a major update in which the land use, network assumptions and model processes were updated to reflect the most recent MTC travel demand model. The CCTA model uses TransCAD Version 5.0 (Build 1515) software and generally follows the processes of the MTC trip-based model while providing additional detail within Contra Costa. The model network is updated to reflect the MTC transportation 2035 (T-2035) RTP network. The traffic analysis zones (TAZs) in the Countywide Model began with MTC's 1,099-zone model for the Bay Area that existed at the time the Countywide Model was first developed. Later, approximately 1,700 TAZs were added in the Contra Costa/Tri-Valley Study Area.

The current MTC model consists of 3,120 TAZs, of which 1,495 are located within Contra Costa. Land use and demographic data are required for each TAZ. The demographic data provides the basis for estimating trip generation. Both the demographic and transportation network data are used in predicting trip distribution patterns and mode of travel. The land use data for the model is updated every two to four years. The model land use and demographic inputs for traffic zones within Contra Costa consist of variables such as number of households, residents, employment, household income, high school, and college enrollment, etc. The highway and transit networks for the Countywide Model are based on the existing and planned transportation system, including

freeways, arterials, major collectors, and selected minor collectors and include virtually all signalized intersections in the study area. The transit network is based on MTC's transit networks with refinements based upon local review by the transit operators. For both highway and transit networks, detailed networks within Contra Costa are combined with MTC networks outside the county. The CCTA Model uses the auto ownership, trip generation, trip distribution and mode choice modules within MTC's BAYCAST-90 model. The model is used to generate highway and transit outputs such as link volumes, intersection turn movements, volume to capacity ratios and vehicle miles traveled as standard outputs.

Consistent with standard modeling practice, to identify VMT from the project, a traffic analysis zone (TAZ) for the project was included in the CCTA model and select zone runs were conducted for year 2018 and 2040. Since the primary purpose of SB 743 is to reduce home-based automobile travel, only the employee VMT related to home-based work (HBW) passenger vehicle travel are reported from the model for the project, the County, and the Bay Area. The findings of the project's VMT analysis for the base year (Year 2018) with and without the project are shown in Table 3.13-2 below. Appendix A includes the VMT output from the CCTA model for year 2018 and 2040.

Table 3.13-2
Summary of Project's Home-Based-Work VMT per Employee

Criteria	Year 2018 (no Project)	Year 2018 (with Project)
Bay Area Commute VMT (Existing Baseline)	***14.9***	***14.9***
Contra Costa County VMT	14.0	14.0
Byron Airport Zone (Project) VMT	***22.7***	***21.2***
15% below Bay Area Commute VMT(Threshold of Significance)	12.7	12.7
Is the Project above or below Threshold?	—	Above the Threshold
% Reduction Required	—	40%

Source: Contra Costa Countywide Travel Demand Model

The HBW VMT per employee for the project is 21.2, for the County is 14.0 and for the Bay Area is 14.9. As shown in Table 3.13-2, the HBW VMT per employee under with Project scenario, decreases (from 22.7 to 21.2) nominally compared to the no project scenario. HBW VMT per employee is an efficiency metric which is the ratio of total HBW employee VMT and number of employees. Although the HBW VMT and number of employees in the airport zone increase under with project scenario compared to the no project scenario, the ratio of total HBW employee VMT and number of employees decreases nominally. A slight decrease in VMT per employee under with project conditions compared to the without project conditions indicates that the project would improve VMT efficiency in the region. However, it should be noted that the VMT significance of threshold requires comparison of the project VMT with the regional average (i.e., Bay Area Average), and not a comparison of with project and no project scenarios. The County threshold

for Employment Projects (office, industrial, and institutional projects) is that the project VMT should be 15% below Bay Area average commute VMT per employee (i.e., home-based work VMT per employee). The project's HBW VMT per employee (21.2) is higher than the Bay Area VMT per employee (14.9). To meet the threshold of 15% below Bay Area Average and have a less than significant VMT impact, the HBW VMT per employee for the project should be approximately 12.7, which would require a 40% reduction. Therefore, the proposed project would have a **potentially significant VMT impact.** Transportation demand management strategies and mitigation measures that can potentially achieve VMT reductions are provided in Section 3.13.5.

Cumulative Analysis

Per the County's guidelines, cumulative impacts should be evaluated for consistency with the County General Plan. If a project is consistent with the County General Plan (Envision 2040) and the General Plan remains consistent with its VMT projections as originally analyzed, the project's cumulative impacts shall be less-than significant. However, if the project is inconsistent with the adopted County General Plan, then the analysis should evaluate the project's cumulative VMT impacts and determine if the Countywide VMT increases or decreases with the proposed project relative to the VMT generated by full General Plan buildout.

It should be noted that the County is currently updating its General Plan (Envision 2040) and as mentioned in the project description, the project is proposing to update the ALUCP which would allow non-residential development that are compatible with the land use plan for Byron Airport. Therefore, the project would be increasing jobs and hence employment-related VMT compared to the current General Plan and ALUCP. Table 3.13-3 provides the total employment VMT estimate from the CCTA model for the Contra Costa County and the Byron Airport zone for the year 2040. It should be noted that for VMT analysis, the cumulative analysis is based on comparing the total VMT with and without project for the Byron Airport Zone with the County, whereas the project analysis is based on comparing the efficiency metric i.e., the HBW VMT per employee of the project zone with the regional average (i.e., Bay Area Average).

Table 3.13-3
Cumulative VMT (Total Employment VMT)

Criteria	Year 2040 (no Project)	Year 2040 (with Project)	Net Increase in VMT
Contra Costa County VMT	20,611,607	20,635,911	24,304
Byron Airport Zone (Project) VMT	2,557	32,046	29,489

Source: Contra Costa Countywide Travel Demand Model

Since the Countywide VMT would increase with the proposed project relative to the total VMT generated by the County under year 2040 conditions, the project's cumulative impacts would be considered significant.

Impact 3.13-3. The project would substantially increase hazards due to a geometric design feature (e.g., sharp curves, or dangerous intersections) or incompatible uses (e.g., farm equipment). (Potentially Significant)

The following discussion describes the potential for increased hazards as a result of geometric design features of the project, and/or as a result of the addition of project traffic to adjacent roadway facilities.

Project Site Access

Regional access to Byron Airport and the project site is provided via SR-4 to the north, I-205 to the south, and Byron Highway to the east. Direct access to the project site is provided via Holey Road and Byron Hot Springs Road from Byron Highway. Both Holey Road and Byron Hot Springs Road are two-lane collector roads, with minor street stop control at their intersections with Byron Highway. Additionally, Armstrong Road provides a connection to Falcon Way and the western portion of the project site from Byron Hot Springs Road.

The levels of service at the two project access roads from Byron Highway (intersections #1 and #2) is provided in the following chapters and summarized in Table 3.13-4 below for all analysis scenarios.

Table 3.13-4. Project Access Level of Service

Scenario	Peak Hour	# 1. Byron Highway/Holey Road		#2. Byron Highway/Byron Hot Springs Road	
		Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
Existing plus Project	AM	25.1	D	**85.6**	**F**
	PM	**183.7**	**F**	**>300**	**F**
Future Year 2040 plus Project	AM	29.6	D	**>300**	**F**
	PM	**>300**	**F**	**>300**	**F**

Notes
1 Delay in seconds per vehicle
2 Level of Service (LOS)
XX – Unsatisfactory Level of Service

Both intersections were analyzed as two-way stop controlled (TWSC) intersections. As such, the turning movement with the highest delay is reported. As shown in Table 3.13-4, both project access study intersections are forecast to operate at LOS F during the PM peak hour at Intersection 1, and during both peak hours at intersection 2 in both study scenarios. The western leg of the intersection is stop controlled at both intersections, and the eastbound left-turning movement is the primary cause for the deficient LOS during all scenarios. All other movements at the intersection operate at LOS A or B.

A queuing analysis was prepared at the intersections of Holey Road and Byron Hot Springs Road with Byron Highway to determine the potential for queuing hazards both on the minor streets and along Byron Highway. Queuing summaries for Existing and Future Year 2040 conditions are provided in Tables 3.13-5 and 3.13-6, respectively.

As shown in Tables 3.13-5 and 3.13-6 the calculated 95th percentile (design) queues for the Existing and Future Year plus Project conditions, respectively, exceed available vehicle storage capacities at both intersections. As no turning pockets or two-way-left-turn (TWLTL) facilities are provided along Byron Highway at the project access study intersections, storage capacity does not exist and therefore has been assumed to be zero. For stop-controlled side-street movements, storage capacity is measured from the study intersection to the nearest paved intersecting roadway for the purpose of this analysis.

Queuing on Byron Highway, specifically at the northbound left turning movements onto Byron Hot Springs Road and Holey Road, could lead to increased delays and degradation of Byron Highway traffic operations. Although the project would directly not add northbound left-turning movements to the intersection of Byron Highway/Byron Hot Springs Road, increased project traffic at other movements (i.e., eastbound left-turning movement from Byron Hot Springs Road) would impact queueing of the northbound travel lane. Both intersections operate at deficient levels of service, therefore improvement measures are identified for both intersections in the project's TIA. Implementation of these improvement measures would reduce queuing at both intersections with improvements to the delay and therefore impact would be **less than significant**.

The project has the potential to increase the volume of truck traffic on the roadway network to serve warehousing and light industrial development. Although regional roadways, such as Byron Highway and SR-4, already safely handle significant volumes of truck traffic, the rural roads providing access to Byron Airport may not support the increase in truck traffic. For example, Byron Hot Springs Road south of Armstrong Road narrows to 20 feet wide with 3-foot-wide gravel shoulders (providing 10-foot-wide travel lanes for two-way traffic). Armstrong Road has adequate width (16-foot-wide travel lanes), although the turn radius at Armstrong Road and Byron Hot Springs may require large trucks to travel off of the paved street section (onto a soft shoulder). Holey Road, which would provide an important southerly access to the airport-related development area, narrows to 21 feet of paved road width with narrow shoulders. Although existing traffic volumes can be handled on these roads, they may be inadequate for increased volumes of project-related traffic, including increased truck traffic. Therefore, this impact would be **potentially significant**. Therefore, the project proponent would construct the street improvements along Armstrong Road, Byron Hot Springs Road, and Holey Road described in **MM-TRAF-9** to reduce access impacts related to heavy truck traffic.

Freeway Ramp Queuing

Due to the potential for the proposed project to add traffic to Caltrans facilities within the study area, the following Caltrans freeway off-ramps were analyzed for queuing impacts:

- Mountain House Parkway/ I-205 westbound ramps
- Mountain House Parkway/I-205 eastbound ramps

As shown in Table 3.13-**7**, no peak 95th percentile queues are expected to exceed the storage pocket lengths in the Existing plus Project conditions. However, as shown in Table 3.13-8, peak 95th percentile queues are expected to exceed storage pocket lengths in the Future Year 2040 plus Project, AM peak hour conditions at the Mountain House Parkway/I-205 westbound ramp intersection and for the following turning movements:

- Westbound left-thru lane (WBLT): This is a storage lane that extends from the intersection to approximately 700 feet from the stop bar. It is expected that forecast queues would extend past the available pocket length and contribute to queuing in the adjacent westbound right turn lane (WBR1 and WBR2), which serve as the primary off-ramp lanes from the freeway mainline.
- Westbound right-turn lane 1 (WBR1): This is a primary off-ramp lane that extends from the intersection to approximately 1,515 feet to the gore line at the I-205 mainline. It is expected that forecast queues would extend past the available storage length and contribute to existing queueing into the mainline.
- Westbound right-turn lane 2 (WBR2): This is a primary off-ramp lane that extends from the intersection to approximately 1,515 feet to the gore line at the I-205 mainline and serves as an exit-only lane from the 11th Street on-ramp, approximately 1-mile upstream. It is expected that forecast queues would extend past the available storage length and contribute to existing queueing into the mainline within this exit-only lane.

When comparing the Future Year 2040 scenario with the addition of the proposed project, queueing is forecast to increase for all movements during the AM peak hour at the Mountain House Parkway/I-205 westbound ramps; vehicle traffic would continue to spill into the mainline lanes in Future Year 2040 no Project and plus Project conditions.

No current funded or planned improvements are identified at the I-205 westbound ramps with Mountain House Parkway. The TriLink (SR-239) Feasibility Study Final Report identifies potential alignments for the proposed SR-239 corridor between SR-4 to the north and I-580 and/or I-205 to the south, which would reduce traffic volumes on I-580, Vasco Road, and Byron Highway (CCTA 2014). As such, shifts in regional traffic patterns could also reduce congestion and queuing at the Mountain House Parkway/I-205 westbound ramps. However, as the SR-239 Feasibility Study does not identify specific improvements, nor are specific improvements planned or funded in the area, hazards related to queuing at this off-ramp would remain **significant and unavoidable**.

Table 3.13-5
Project Access Queuing Summary - Existing plus Project

No.	Intersection	Movement	Vehicle Storage Length[1]	Existing				Existing plus Project				Improvement Warranted?
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
				95th Percentile Queue[2]	Exceeds Vehicle Storage Length?	95th Percentile Queue[2]	Exceeds Vehicle Storage Length?	95th Percentile Queue[2]	Exceeds Vehicle Storage Length?	95th Percentile Queue[2]	Exceeds Vehicle Storage Length?	
1	Byron Highway/Holey Road	EBLR	2040	22	No	28	No	56	No	330	No	No
		NBLT	0	3	**Yes**	15	**Yes**	207	**Yes**	204	**Yes**	**Yes[3]**
		SBTR	0	0	No	0	No	8	**Yes**	7	**Yes**	No[4]
2	Byron Highway/Byron Hot Springs Road	EBLR	1705	62	No	48	No	186	No	895	No	No
		NBLT	0	33	**Yes**	0	No	129	**Yes**	0	No	**Yes[3]**
		SBTR	0	9	**Yes**	7	**Yes**	16	**Yes**	20	**Yes**	No[4]

Source: Appendix H

Notes: NBLR = northbound left-through lane; EBLR = eastbound left-right lane; SBTR = southbound through-right lane.

1 Available storage length (feet) is measured from the study intersection to the nearest paved intersecting roadway for stop-controlled side-street movements. No existing storage lanes are provided along Byron Highway; therefore, the storage length is assumed to be zero.

2 Based on 95th percentile (design) queue length (feet) in SimTraffic 10.

3 Queuing could result in delays and degradation of Byron Highway traffic operations.

4 Although queues may extend onto Byron Highway for SBTR movements, these lengths (less than one car length) would result in negligeable degradation to the flow of southbound traffic and would not warrant improvements.

Table 3.13-6
Project Access Queuing Summary – Future Year 2040 plus Project

No.	Intersection	Movement	Vehicle Storage Length[1]	Future Year 2040				Future Year 2040 plus Project				Improvement Warranted?
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	
1	Byron Highway/Holey Road	EBLR	2040	26	No	57	No	83	No	737	No	No
		NBLT	0	28	**Yes**	43	**Yes**	347	**Yes**	305	**Yes**	**Yes[3]**
		SBTR	0	0	No	0	No	13	**Yes**	7	**Yes**	No[4]
2	Byron Highway/Byron Hot Springs Road	EBLR	1705	866	No	136	No	857	No	859	No	No
		NBLT	0	62	**Yes**	0	No	195	**Yes**	0	No	**Yes[3]**
		SBTR	0	13	**Yes**	0	No	16	**Yes**	8	Yes	No[4]

Source: Appendix D

Notes: NBLR = northbound left-through lane; EBLR = eastbound left-right lane; SBTR = southbound through-right lane.

1 Available storage length is measured from the study intersection to the nearest paved intersecting roadway for stop-controlled side-street movements. No existing storage lanes are provided along Byron Highway; therefore, the storage length is assumed to be zero.

2 Based on 95th percentile (design) queue length in SimTraffic 10.

3 Although queuing would not impact the nearest paved intersection roadway, queuing could increase delays and degradation of Byron Highway traffic operations.

4 Although queues may extend onto Byron Highway for SBTR movements, these lengths (less than one car length) would result in negligeable degradation to the flow of southbound traffic and would not warrant improvements.

Table 3.13-7
Existing plus Project Caltrans Off-Ramp Queuing Summary

No.	Intersection	Movement	Pocket Length[1]	Existing Conditions				Existing plus Project				Improvement Warranted
				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		
				95th Percentile Queue[2]	Exceeds Turn Pocket Length?	95th Percentile Queue[2]	Exceeds Turn Pocket Length?	95th Percentile Queue[2]	Exceeds Turn Pocket Length?	95th Percentile Queue[2]	Exceeds Turn Pocket Length?	
15	Mountain House Parkway/I-205 westbound ramps	WBLT	700	278	No	167	No	250	No	164	No	No
		WBR1[3]	1515	54	No	53	No	53	No	60	No	No
		WBR2[3]	1515	51	No	50	No	53	No	50	No	No
16	Mountain House Parkway/I-205 eastbound ramps	EBL[3]	1555	63	No	75	No	61	No	84	No	No
		EBLT[3]	1555	47	No	78	No	61	No	82	No	No
		EBR	465	57	No	38	No	63	No	37	No	No

Source: Appendix H

Notes: Caltrans = California Department of Transportation; I = Interstate; EBL = eastbound left-turn lane; EBR = eastbound right-turn lane; EBLT = eastbound left-thru lane; WBLT = westbound left-thru lane; WBR = westbound right-turn lane (#1, 2, etc. indicates multiple right turn lanes)

1 Measured in feet.

2 Based on 95th percentile (design) queue length in SimTraffic 10.

3 Primary off-ramp lane; approximate length measured from freeway mainline. Length measured from stop bar to gore line at mainline.

Table 3.13-8
Future Year 2040 plus Project Caltrans Off-Ramp Queuing Summary

No.	Intersection	Movement	Pocket Length[1]	Future Year 2040 Conditions				Future Year 2040 plus Project				Improvement Warranted
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	
15	Mountain House Parkway/I-205 westbound ramps	WBLT	700	**925**	**Yes**	249	No	932	**Yes**	257	No	**Yes[4]**
		WBR1[3]	1515	2266	**Yes**	109	No	2386	**Yes**	109	No	**Yes**
		WBR2[3]	1515	2122	**Yes**	99	No	2306	**Yes**	105	No	**Yes**
16	Mountain House Parkway/I-205 eastbound ramps	EBL[3]	1555	67	No	111	No	85	No	127	No	No
		EBLT[3]	1555	63	No	119	No	84	No	132	No	No
		EBR	465	66	No	44	No	66	No	42	No	No

Source: Appendix H

Notes: Caltrans = California Department of Transportation; I = Interstate; EBL = eastbound left-turn lane; EBR = eastbound right-turn lane; EBLT = eastbound left-thru lane; WBLT = westbound left-thru lane; WBR = westbound right-turn lane (#1, 2, etc. indicates multiple right turn lanes)

Bold – Queue exceeds storage length; Highlight – Queue exceeds storage length and impacts the freeway mainline.

1 Measured in feet.

2 Based on 95th percentile (design) queue length in SimTraffic 10.

3 Primary off-ramp lane; approximate length measured from freeway mainline. Length measured from stop bar to gore line at mainline.

4 Although queue does not impact mainline lanes, queue would contribute to queueing in adjacent lanes.

Impact 3.13-4. The project would not result in inadequate emergency access. (Less Than Significant)

The project would not interfere with an adopted emergency response or evacuation plan. Internal airport roadways would be designed in accordance with Uniform Fire Code standards, and prior to the issuance of building permits, adequate emergency access would be ensured through the plan check process and fire review. Implementation of the project would increase the number of access points to Byron Airport (for example, from Holey Road). Construction activities may result in short-term lane closures. Any lane closures due to construction activity would be coordinated with emergency service providers to maintain access. Access to Byron Airport and surrounding properties would be maintained throughout construction. Therefore, the proposed project would have a **less-than-significant** impact associated with inadequate emergency access.

3.13.5 Mitigation Measures

As shown in Section 3.13.4, the project would have a significant VMT impact. The following section provides a summary of measures that can be implemented to mitigate the project's VMT impact. In addition, mitigation is identified to address the width of Armstrong Road, Byron Hot Springs Road, and Holey Road.

Transportation Demand Management (TDM) measures can be implemented as project design features and/or mitigation measures for reducing VMT. The California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures, 2010 report has identified actions and changes to project features that reduce VMT. Additionally, the County's Transportation Demand Management Ordinance Guide published in December 2009 by the Department of Conservation & Development has outlined effective ways to reduce vehicle trips (hence VMT) added by new development projects.

Table 3.13-9 describes strategies from the County's TDM Ordinance Guide and CAPCOA as sample options that would be most effective in areas like the community of Byron and are appropriate for the project to avoid or reduce the significant impact. VMT reductions for each of the strategy (using the applicable range of effectiveness) that can be applied to the project have been estimated per CAPCOA's mitigation measure calculation provided in Fact Sheets of the document. Only the strategies that would be applicable to suburban locations such as the project's location were used. Further, high-level assumptions regarding project's site design were made since the project's site plan was not available at the time of preparation of the TIS. A conservative estimate of employee participation was applied to the VMT reduction calculation.

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
Project Site Design Features (including Pedestrian Facilities) A comprehensive design that features pedestrian amenities, covered bus stops and adequate accessibility, benches, passenger loading zones, etc. To encourage walking, safe, and convenient pedestrian access and movement need to ensure as part of the project site design, the proposed project would include the following design elements: 1. Minimize walking distances along the internal street/path network to provide convenient connections between the different buildings, services, etc. 2. Design gathering areas where enhanced landscaping, adequate lighting, signage, and street furniture are provided so that walking can be naturally encouraged with the provision of such design elements. 3. Establish traffic calming devices where feasible on the internal street system. 4. Other design considerations that are safety related include the provision of adequate sight triangles at project driveways and internal intersections, as well as preventing parking encroachment within pedestrian sidewalks and walkways. 5. Give a priority to establishing and maintaining pedestrian facilities such as sidewalks, marked crosswalks and stop bars, in-pavement lighted crossing, bulb-outs, and other traffic calming devices, street, and pedestrian lighting, sheltered seating areas, and landscaping.	**LUT-9/3.1.9 Improve Design of Development** – Project design elements that enhance walkability and connectivity can be measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments. **SDT-1/3.2.1 Provide Pedestrian Network Improvements -** Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. A project should provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. A project should minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated. **SDT-2/3.2.2 Provide Traffic Calming Measures** - Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift results in a decrease in VMT. Project design should include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways should be designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.	3.0% - 21.3% VMT reduction % VMT Reduction = Intersections * B Where Intersections = Percentage increase in intersections versus a typical ITE suburban development; B = Elasticity of VMT with respect to % of intersections (0.12 from CAPCOA). Since the project's site plan was not available at time of the preparation of this document, it was conservatively assumed that a 3**% VMT reduction** would be achieved using this measure. 0 – 2% VMT reduction **1% VMT reduction** is allowed for pedestrian accommodations within project site in urban and sub-urban context. 0.25 – 1% VMT reduction The reduction is based on % of streets within project with traffic calming improvements and % of intersections within project with traffic calming improvements. Since the project's site plan was not available at time of the preparation of this document, it was conservatively assumed 50% of project's on-site streets and 50% of project's on-site intersections would be designed with these considerations. This would allow **0.5% VMT reduction.**

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
Bicycling Facilities: The design measures listed below can be established by the project and approved as part of the development application review process: 1. Provide secure short- and long-term bicycle parking (i.e., bicycle racks and lockers, respectively) at prime locations of the development sites. 2. Provide showers, change facilities, and clothes lockers at convenient locations within business buildings in order to encourage cycling for longer distances. 3. Ensure safe and convenient access and movements of cyclists within development sites.	**SDT-5/3.2.5 Incorporate Bike Lane Street Design (on-site)** - A project should incorporate bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations can provide a continuous network of routes, facilitated with markings and signage. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people.	Grouped Strategy (LUT-9)
	SDT-6/ 3.2.6 Provide Bike Parking in Non-Residential Projects- A non-residential project should provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Bike Parking in Non-Residential Projects has minimal impacts as a standalone strategy and should be grouped with the Improve Design of Development strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities.	0.625% reduction in VMT (from literature per CAPCOA)
	SDT-9/3.2.9 Dedicate Land for Bike Trails - Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. The benefits of Land Dedication for Bike Trails have not been quantified and should be grouped with the Improve Design of Development strategy to strengthen street network characteristics and improve connectivity to off-site bicycle networks.	Grouped Strategy (LUT-9)

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
Transit Facilities: 1. Provide safe and direct site access to the public streets where transit services are provided. 2. Provide necessary transit facilities in the vicinity of project site (such as bus shelter, bus turnout, concrete pad, seating, lighting, etc.), in order to support transit use. 3. Establish an on-site information kiosk where information on transit routes, schedules, and fares can be provided. 4. Intersection geometry and road structure should be capable of supporting the length and weight of buses, including internal project circulation roads if bus or shuttle service is anticipated to enter the project site. 5. Communicate with the local transit agency (Tri Delta Transit) to seek changes/addition to bus route to support transit ridership for the project. 6. Provide shuttle service to main transit station during the commute periods.	**TST-2/3.5.2 Implement Transit Access Improvements** This project should improve access to transit facilities through sidewalk/ crosswalk safety enhancements and bus shelter improvements. The benefits of Transit Access Improvements alone have not been quantified and need to be grouped with Transit Network Expansion (TST-3) and Transit Service Frequency and Speed (TST-4). **TST-3/3.5.3 Expand Transit Network –**A project should expand the local transit network by adding or modifying existing transit service to enhance the service near the project site. This will encourage the use of transit and therefore reduce VMT.	Grouped Strategy (TST-3 and TST-4) 0– 8.2% VMT reduction % VMT Reduction = Coverage * B * Mode * D Where Coverage = % increase in transit network coverage; B = elasticity of transit ridership with respect to service coverage (value from CAPCOA); Mode = existing transit mode share; D = adjustments from transit ridership increase to VMT (0.67, from Appendix D of CAPCOA) Since the project is located in a sub-urban area with no existing transit service, a low range % VMT reduction (10% expansion, sub-urban) was assumed. Therefore, **0.1% VMT reduction** would be achieved using this measure.
Commute Trip Reduction Strategies: 1. Rideshare/Carshare Initiatives a. Designate a number of on-site parking spaces at prime locations (i.e., close to buildings access, well lit, etc.) for carpools and vanpools privately operated by tenants. Short-term parking spaces or passenger loading areas are also needed for taxi and outside shuttle services. Establishing carpool/vanpool initiatives can reduce the overall demand for on-site parking.	**TRT-3/3.4.2 Provide Ride-sharing Programs -** Increasing the vehicle occupancy by ride sharing will result in fewer cars driving the same trip, and thus a decrease in VMT. Ride-sharing program and a permanent transportation management association membership and funding requirement. Funding may be provided by Community Facilities, District, or County Service Area, or other non-revocable funding mechanism. Ride-sharing programs can be promoted through a multi-faceted approach such as: Designating a certain percentage of parking spaces for ride sharing vehicles	0– 15% commute VMT reduction % VMT Reduction = Commute *Employee Where Commute = % reduction in commute VMT (from CAPCOA); Employee = % employees eligible; For the project, commute = 5% (low density suburb annual reduction); 50% of the employees were assumed to be eligible for participation in the

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
	Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles Providing a web site or message board for coordinating rides	program as 10% of the employees are estimated to be County Airport staff. **% VMT Reduction = 5%*50% = 2.5%**
2. Establish on-site car rental or carshare services so that tenants do not need to rely on personal cars for work-related purposes.	**TRT-9/3.4.9 Implement Car-Sharing Program-** A car-sharing project allows people to have on-demand access to a shared fleet of vehicles on an as-needed basis. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees. The car-sharing program could be created through a local partnership or through one of many existing car-share companies. Employer-based car-sharing programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option.	0.4 – 0.7% commute VMT reduction % VMT Reduction = A * B / C; Where A = % reduction in car-share member annual VMT (from the literature); B = number of car share members per shared car (from the literature); C = deployment level based on urban or suburban context; For the project,per CAPCOA, A= 37% (per 1); B=20 (per 2); C = 1 shared car per 2,000 population for sub urban project setting **% VMT Reduction = 37%*20/2000 = 0.4%**
3. Employer Sponsored Vanpool/Shuttle	**TRT-11/3.4.11 Provide Employer-Sponsored Vanpool/Shuttle**- Implementing an employer-sponsored vanpool or shuttle will usually service employees' commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. Employer-sponsored vanpool programs entail an employer purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration, if not more. The driver usually receives personal use of the van, often for a mileage fee.	0.3%-13.4% commute VMT reduction % VMT Reduction = A * B * C; Where A = % shift in vanpool mode share of commute trips (from CAPCOA); B = % employees eligible;

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
	Scheduling is within the employer's purview, and rider charges are normally set on the basis of vehicle and operating cost.	C = adjustments from vanpool mode share to commute VMT; For the project, A =20% for larger employer; B = 50%; C = 0.676 (See CAPCOA Appendix C) **% VMT Reduction = 20%*50%*0.67= 6.7%**
4. Flexible Work Schedules and Telecommuting a. Flexible Work Schedule programs established by employers govern the time period in which employees travel to and from work. Such programs influence employees' propensity to consider using transit, carpooling, and other alternatives to driving alone to work. b. Telecommuting exists in several forms, such as working at home, working at a satellite center with shorter commuting distance, and working at neighboring work centers that can be leased to several employees and where office equipment is provided.	**TRT-6/ 3.4.6 Encourage Telecommuting and Alternative Work Schedules-** Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.	0.07%-5.5% commute VMT % Commute VMT Reduction = Commute; Where Commute = % reduction in commute (from Table) For the project, assuming 4-day/40 hour week for 25% of employees **% VMT Reduction = 3.75%**
5. TDM Coordinator and/or Marketing Strategies. a. A TDM Coordinator is typically responsible for developing, marketing strategies, implementing and evaluating the TDM programs. The TDM Coordinator can be a designated on-site staff person (half- to full-time) with specific TDM responsibilities and authority. The Coordinator's responsibilities can also be contracted out with a commute company. Since educational and	**TRT-7/ 3.4.8 Implement Commute Trip (CTR) Reduction Marketing/ Launch Targeted Behavioral Interventions** Implementing marketing strategies to reduce commute trips and information sharing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies without a complementary marketing strategy will result in lower VMT reductions. Marketing strategies may include:	0.8%-4.0% commute VMT % VMT Reduction = A*B*C; Where A = % reduction in commute vehicle trips; B = % employees eligible (50%);

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
promotional activities are needed to launch TDM program, the TDM coordinator plays a key role in coordinating with transportation service providers (such as 511 Contra Costa), hosting various event and providing pertinent information to all tenets and employees regarding the facilities, programs, and services available at the project site.	• New employee orientation of trip reduction and alternative mode options • Event promotions • Publications	C=Adjustment from commute VT to commute VMT; For the project, A = 4% (from CAPCOA); C = 1.0 (Appendix C of CAPCOA) **% VMT Reduction = 4%*50%*1 = 2.0%**
6. Transit Incentive a. Employees can be provided with incentives to take transit to commute to work by providing subsidized transit passes/fares, participating in the regional transportation programs.	**TRT-4/3.4.4 Implement Subsidized or Discounted Transit Program** - Providing subsidized/discounted daily or monthly public transit passes may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer or development.	0.3%-20% commute VMT reduction % VMT Reduction = A*B*C; where A = % reduction in commute VMT (from CAPCOA); B = % employees eligible (50%); C=Adjustment from commute VT to commute VMT using preferred literature table. **% VMT Reduction = 1.9%*50%*1= 1.0%**

Table 3.13-9
Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
Parking Supply and Demand Management Strategies - Establishing fees for on-site parking combined with a strong TDM program can help shift driver's behavior to the use of alternative modes of transportation and higher occupancy vehicles. However, there are no existing transit or alternative transportation facilities near the project that employees can use to access the project. Therefore, only selective parking management strategies that have been included previously such as preferential parking for ridesharing/carpooling programs and design of development to limit on-site conflict locations between vehicular parking and pedestrian/cyclists movements would be applicable to the project.	—	—

Source: County TDM Ordinance Guide 2009 and CAPCOA 2010
Notes: VMT = Vehicle Miles Traveled; VT = Vehicle Trips; LUT/PDT/SDT/TRT/TST are CAPCOA factsheets that summarize the quantification methodology for a specific mitigation measure.

Based on Table 3.13-9, following mitigation measures and VMT reduction percentage has been summarized for the proposed project.

MM-TRAF-1 Project Site Design: The project shall provide site design features that facilitate pedestrian amenities and promote accessibility for on-site pedestrian movement and connectivity to various buildings or project components.. As shown Table 3.13-10, this measure would result in a range of reduction in VMT.

MM-TRAF-2 Bicycling Facilities: The project shall provide adequate bike parking, change, and shower facilities on-site and improve accessibility for on-site bicycle movement as well as connections to immediate proposed off-site bike lanes along Byron Hot Springs Road and Holey Road. As shown in Table 3.13-10, this measure would result in a 0.63% reduction in VMT. Low stress bikeway proposed along Byron Highway can be made accessible to bicyclists from the project if bike routes can be planned along Holey Road and Byron Hot Springs Road.

MM-TRAF-3 Access to Transit and Expansion of Transit Network: The project shall provide access to transit and expand transit network. The project should work with Tri Delta Transit to add transit service in the project vicinity and provide connections with the cities of Antioch, Brentwood, Pittsburg and Oakley and other unincorporated areas. As shown Table 3.13-10, this measure was assumed to result in a conservative 0.1% reduction in VMT since there are no known transit service improvement or expansion projects near the project site. However, once transit coverage is increased, this VMT reduction could increase, however it would not reduce the Project's VMT to a less than significant level.

MM-TRAF-4 Ridesharing and Car-Sharing Programs for Employees: The project shall provide/promote/subsidize ride-sharing programs to the employees by utilizing approaches such as designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading/unloading and waiting areas for ride-sharing vehicles, and providing a website or message boards for coordinating rides. Increasing the vehicle occupancy by utilizing ride sharing will result in fewer cars driving the same trip, thereby decreasing the VMT. As shown in Table 3.13-10, providing ridesharing and car-sharing programs to approximately 50% of the employees would result in a 2.5% and 0.4% reduction in VMT.

MM-TRAF-5 Employer-Sponsored Vanpool/Shuttle: The project shall provide an employer-sponsored vanpool and shuttle for use by employees for commutes to work, and bus/transit station. The vanpool and shuttle will be available to all employees; however, the calculations conservatively assume the program would be offered to/utilized by 50 percent of employees. As shown in Table 3.13-10, providing employer-sponsored vanpool/shuttle to approximately 50% of the employees, would result in a 6.7% reduction in VMT.

MM-TRAF-6 Encourage Telecommuting and Alternative Work Schedules for Employees: According to CAPCOA, encouraging telecommuting and alternative work schedules would reduce the number of commute trips, thereby reducing the project's VMT. Staggered start times, flexible schedules, or compressed work weeks are examples of alternative work schedules. Because retail and industrial/warehouse operations may require most of the employees to be on-site 24-hours per day, alternative work schedules may be feasible for a majority of the employees. The project shall implement a 4-day/40-hour work schedule for approximately 25% of the employees. As shown in Table 3.13-10, with 25% employee participation in an alternate work schedule consisting of a 4-day/40- hour work week, a VMT reduction of 3.75% would result.

MM-TRA-7 Implement Commute Trip Reduction Marketing: The project shall implement marketing strategies to reduce commute trips. The marketing strategies would include new employee orientation of trip reduction and alternative mode options, event promotions and publications. Although the marketing would target all employees, a conservative assumption of marketing to only 50 percent of the employees was utilized in the calculation. As shown in Table 3.13-10, implementing/promoting commute trip reduction marketing to approximately 50% of the employees, would result in a 2.0% reduction in VMT.

MM-TRAF-8 Implement Subsidized or Discounted Transit Program for Employees: The project shall provide subsidized or discounted daily or monthly public transit passes to the employees. Although subsidized or discounted transit program would be available to all employees, the VMT reduction calculation conservatively assumes that the program would be available to and utilized by a maximum of 50% of employees. As shown in Table 3.13-10, implementing subsidized or discounted transit program to approximately 50% of the employees, would result in a 1.0% reduction in VMT.

Table 3.13-10
VMT Reduction Summary

Mitigation Measure	CAPCOA Category	Project VMT Reduction (%)
MM-TRAF-1 The Project shall provide site design features that facilitate pedestrian amenities and promote accessibility for pedestrians.	LUT-9 SDT-1 SDT-2	3.0% 1.0% 0.5%
MM-TRAF-2 The project shall provide adequate bike parking, change, and shower facilities on-site and improve accessibility for on-site bicycle movement as well connections to immediate off-site locations.	SDT-6	0.63%
MM-TRAF-3 The Project shall facilitate access to transit and expand transit network.	TST-3	0.10%
MM-TRAF-4 The Project shall provide ridesharing and car-sharing programs for approximately 50% of the employees.	TRT-3 TRT-9	2.5% 0.40%
MM-TRAF-5 The Project shall provide employer sponsored vanpool/shuttle service for approximately 50% of the employees.	TRT-11	6.7%

Table 3.13-10
VMT Reduction Summary

Mitigation Measure	CAPCOA Category	Project VMT Reduction (%)
MM-TRAF-6 The Project shall encourage alternative work schedules for approximately 25% of the employees (no telecommuting assumed).	TRT-6	3.75%
MM-TRAF-7 The Project shall Implement CTR Marketing/ Launch Targeted Behavioral Interventions for approximately 50% of the employees.	TRT-7	2.0%
MM-TRAF-8 The Project shall implement subsidized or discounted transit programs for approximately 50% of the employees.	TRT-4	1.0%
	Total	**19.7%1**

1. The calculated reductions do not sum to a total since the effect of individual strategy reductions are multiplicative not additive. Total % VMT Reduction = 1-(1-A)*(1-B)*(1-C) where A, B, C equals reductions for individual strategies.

The proposed project's VMT with mitigation is summarized in Table 3.13-11. The VMT reductions associated with the above mitigation measures are applied incrementally, resulting in a lower net reduction in comparison to the sum of the numbers. The 19.7 % reduction in VMT is applied to the Project's HBW VMT per employee and results in 17.0 HBW VMT per employee, which is still above the 15% below the Bay Area average threshold of 12.7 HBW VMT per employee. Even with the implementation of the mitigation measures, the proposed project's significant impact cannot be fully mitigated. Therefore, the proposed project would result in a significant and unavoidable impact.

Per preliminary estimates based on building square footage proposed for each use, the buildout of the project comprises of approximately 800 employees. Therefore, the County may require that as a condition of approval, the individual project tenants prepare TDM or CTR Program that establish performance standards (i.e., trip reduction requirements) which can be monitored on a regular basis. Or the County may require the TDM program to be developed comprehensively for the entire project with flexibility to adjust to changing conditions (i.e. lower or higher VMT generating tenants), innovation and technological advancements.

The project applicant/tenants should also work with 511 Contra Costa and use their county-wide program to reduce commuter trips by providing information, resources, and tools that promote mobility options such as biking, using transit, walk, micro mobility, carpool, van pool, working from home and guaranteed ride home.

Table 3.13-11
Project VMT with Mitigation Measures

Criteria	Year 2018 (with Project)
Bay Area Commute Average VMT ***(Existing Baseline)***	14.9
Contra Costa County VMT	14.0
Byron Airport Zone VMT (Project)	21.2
15% below Bay Area Average VMT (Threshold)	***12.7***
Mitigation Reduction	19.7%
Project VMT with Mitigation Measures	***17.0***
Is the Project above or below Threshold with Mitigation	Above the Threshold

Source: Contra Costa Countywide Travel Demand Model and Table X

MM-TRA-9 Prior to the completion of the first non-aviation development project that would serve heavy trucks, the project proponent shall construct street improvements related to the project site, as follows:

- Widen Byron Hot Springs Road to provide two 12-foot travel lanes and 5 to 8-foot-wide shoulders (based on design ADT approved by Public Works Department per County Standard Plan document and to include bike lanes and sidewalk) from Byron Highway to Holey Road.
- Widen Holey Road to provide two 12-foot travel lanes and 5 to 8-foot-wide shoulders (based on design ADT approved by Public Works Department per County Standard Plan document and to include bike lanes and sidewalk) from the Airport property line to Byron Highway.
- Ensure an adequate paved turn-radius at the intersection of Byron Hot Springs Road and Armstrong Road to facilitate appropriate truck movement.
- Ensure an adequate paved turn-radius at the intersection of Byron Hot Springs Road and Holey Road to facilitate appropriate truck movement.

3.13.6 Level of Significance After Mitigation

As shown 3.13.5 Mitigation Measures, even with the implementation of measures MM-TRAF-1 through MM-TRAF-8, the project's VMT impacts (Threshold 2) would remain significant and unavoidable.

Implementation of MM-TRAF-9 would reduce access impacts related to heavy truck traffic to a less-than-significant level. However, as discussed in 3.13.4, under analysis of Threshold 3, no feasible improvements have been identified at the Mountain House Parkway/ I-205 westbound ramps that would have a queuing-related impact, therefore hazards related to queuing would remain significant and unavoidable.

3.13.7 Indirect Impacts

The proposed project is located within a high VMT TAZ and as shown in the analysis of Threshold 2, the HBW VMT per employee of the proposed project is significantly above the regional average. It should be noted that the project area is served primarily by vehicular modes and does not have transit, pedestrian, and bike accessibility under existing or buildout conditions. Additionally, even though level of service and delay is not considered a CEQA impact, the improvements identified to improve traffic operations in the project's TIA which would require construction of additional on-site and off-site roadway improvements, can have indirect effects such as induced travel to the environment. Implementation of the on-site improvements such as internal roadways would be required and this EIR assumes full buildout of the aviation and airport -related development areas. Off-site improvements identified in the project's TIA would require funding from additional sources such as CRIPP and County's Development Mitigation Program. At the time of this writing, some of the improvement measures identified in the TIA are not funded. However, the project's fair-share contribution towards these improvement measures has been identified in the TIA.

Improving road infrastructure (i.e., adding lanes, signalization at intersections) may induce travel demand, resulting in an increase in VMT. However, until final improvements are identified and added to the CCTA model, quantifying the effects of induced travel would lack accuracy. Qualitatively, the construction of additional roadway capacity may increase the effects of Impact 3.13-2. The improvements have been identified based on regional traffic projections and are required to maintain an acceptable level of traffic operations per County's LOS standards.

3.13.8 Cumulative Analysis

Cumulative impacts are incorporated into Impact 3.13-4. Impacts Analysis for each of the threshold.

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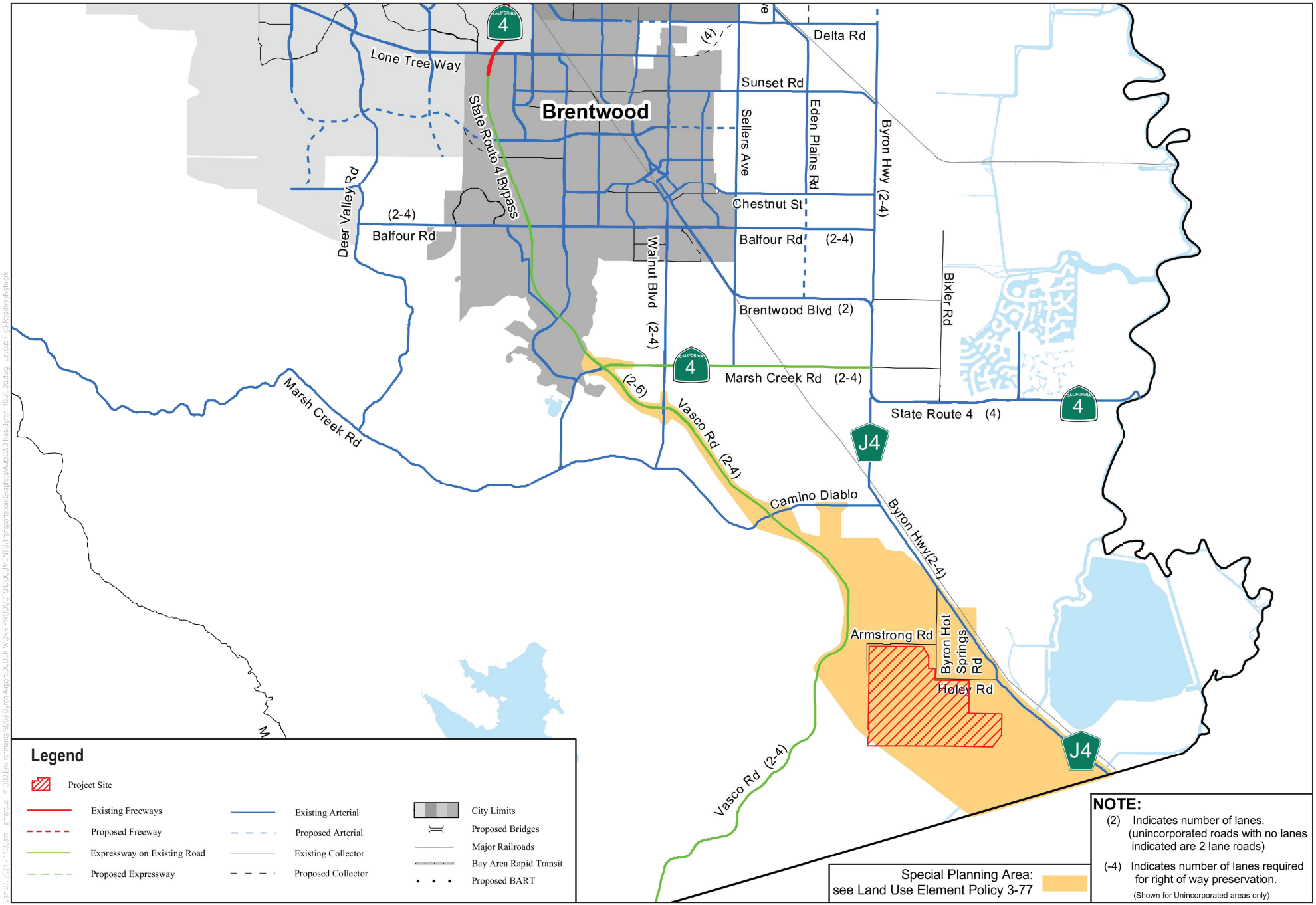

SOURCE: Contra Costa County 2017

NOT TO SCALE

FIGURE 3.13-1

Contra Costa County Roadway Network Plan

Byron Airport Development Program EIR

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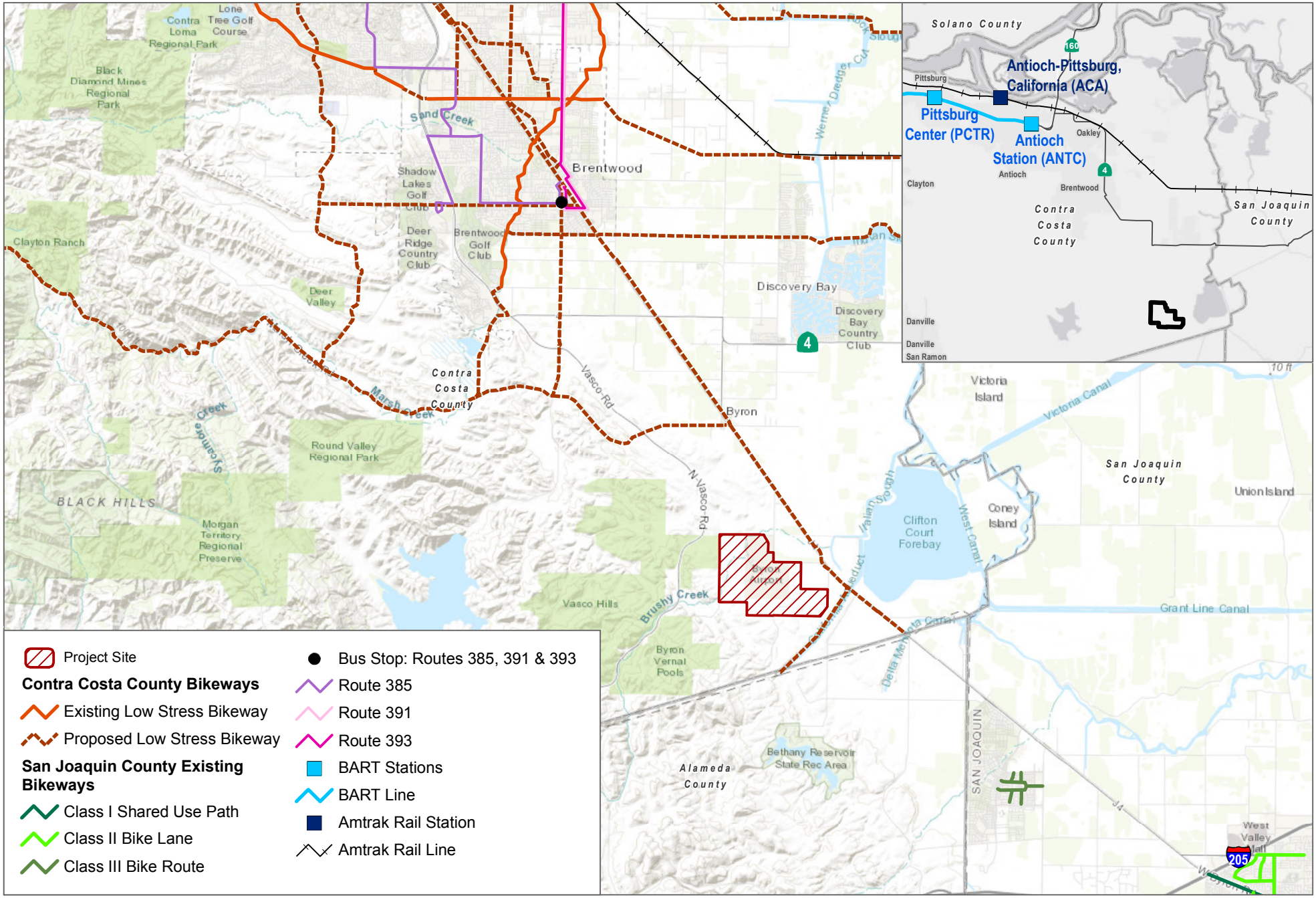

SOURCE: ESRI 2020, County of Contra Costa 2020, County of San Joaquin 2019, BART 2018, USDOT 2016

DUDEK

0 6,250 12,500 Feet

FIGURE 3.13-2

Transit, Bike and Pedestrian Facilities (Existing and Proposed)

Byron Airport Development Program EIR

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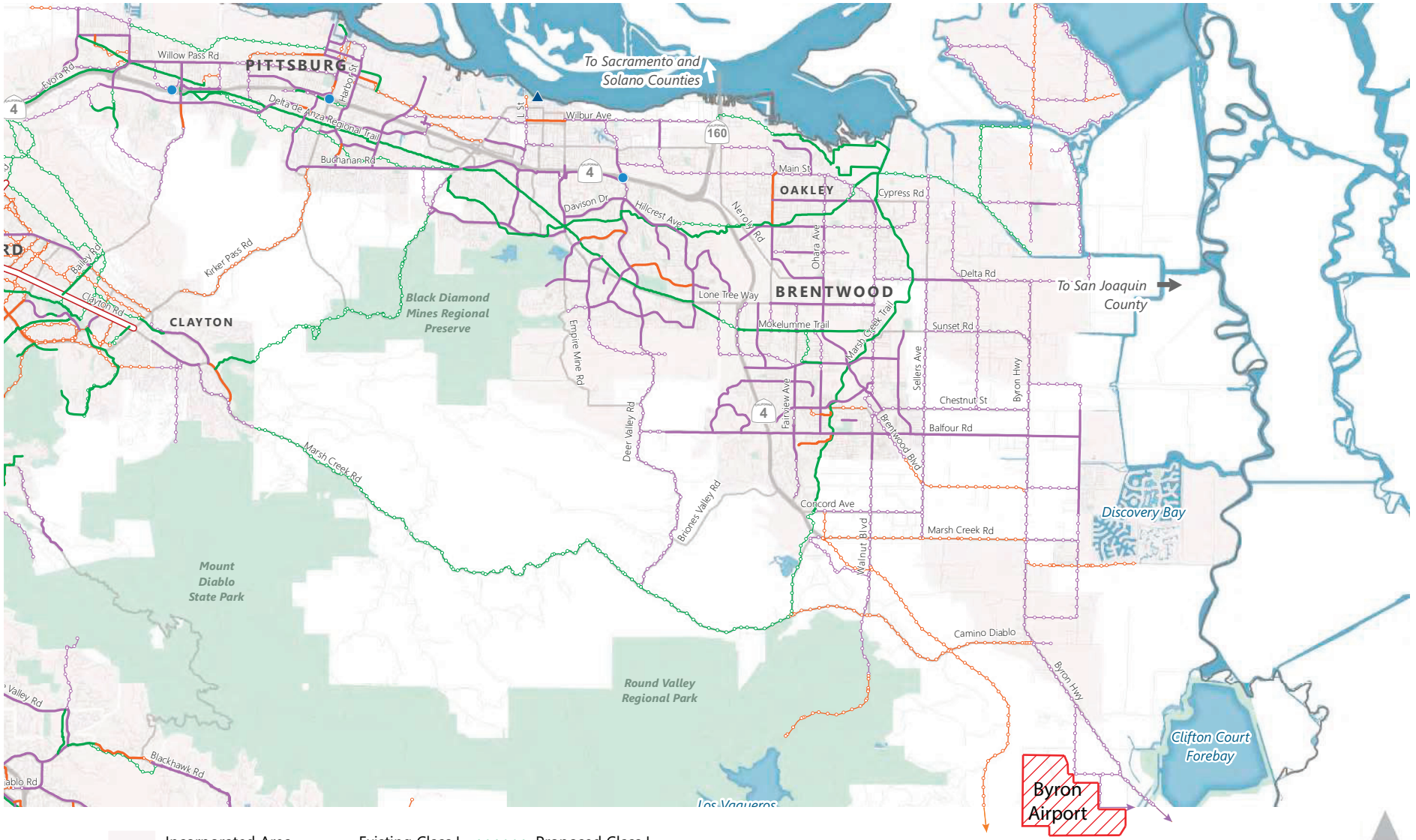

SOURCE: CBPP 2020

FIGURE 3.13-3

Local Bicycle Networks (Existing and Proposed)

Byron Airport Development Program EIR

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3.14 UTILITIES

This section describes the existing utilities setting of the Byron Airport Development Program (project) site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures related to implementation of the proposed project.

3.14.1 Existing Conditions

3.14.1.1 Water Supply

The project site is not currently served by a public water system (PWS). The water system on site consists of a domestic well with a 4,000-gallon holding tank, booster pump, and chlorinator. The water supply is for domestic purposes and not drinking water. Water is currently supplied to serve the site's fire protection system, on-site bathrooms, and aircraft wash rack. Bottled water is used to provide drinking water at the project site.

The existing fire suppression system consists of 11,000 feet of pipeline and 20 hydrants connected to a 100-horsepower pump located in a pump house on the northeast side of Runway 12-30. The pump has a design capacity of 3,000 gallons per minute and would draw from a 750,000-gallon on-site pond dedicated for fire protection, if necessary. Water for this pond is supplied by the Byron Bethany Irrigation District (BBID) through a pump located above the underground portion of Canal 45 (LFA 2005; Mead & Hunt 2013).

The site's water system is permitted as a transient non-community water system (Water System No. CA0706110), which means that the water system regularly serves at least 25 non-residential individuals (transient) during 60 or more days per year (CA Drinking Water Watch 2016). However, this classification is no longer accurate, because the water supplied is non-potable and thus does not serve individuals (and thus not a public water system). Drinking water available on site is purchased from commercial suppliers, and the water system is used for non-potable purposes (e.g., aircraft wash rack).

The site's non-potable water system consists of a 200-foot-deep groundwater well connected to a 4,000-gallon holding tank. The yield of the well is estimated to be between 40 and 60 gallons per hour, or up to 1 gallon per minute. The water is distributed through a 2-inch-diameter pipeline extending from the groundwater well to the northwest, parallel to the taxiway and past the hangars to the Byron Jet Center. The main water uses at the site are seven sinks, five toilets, three urinals, and the aircraft wash rack. Based on California Waterworks Standards, the existing domestic water system is estimated to be at 48% capacity, and can provide an additional 2,080 gallons of water over a 4-hour period of peak hourly demand, or approximately 560 gallons per hour (Mead & Hunt 2013).

3.14.1.2 Wastewater

Although there are several municipalities and service districts that provide sewer service in Contra Costa County (County), rural areas typically use and maintain privately owned septic tanks and leachfields where no public sewer service is available.

Byron Airport's sewer service is currently provided by approximately 2,500 linear feet of sanitary sewer collection lines and an underground septic tank with a lift station to a leach field that is located southwest of the main aircraft camp (Mead & Hunt 2013). The lift station contains two 2-horsepower pumps that each have a 46-gallons-per-minute maximum capacity. The leach field has a current capacity of 1,720 gallons per day (gpd). Current septic system demand is low due to low usage at Byron Airport, which include seven sinks, five toilets, three urinals, and the aircraft wash rack (Mead & Hunt 2013). There are no restrooms located within the Byron Jet Center, but restrooms are "stubbed" for future connection to water and sewer service. The peak daily sewage flow was estimated by Mead & Hunt (2013) as being 672 gallons, or approximately 39% of system capacity, which is 1,720 gpd. A more recent inspection indicates that the system is operating properly, but the septic tank is only 2,000 gallons, and the system is operating at close to capacity (Williams 2019).

3.14.1.3 Stormwater Drainage

The County Flood Control and Water Conservation District is responsible for the construction and maintenance of regional drainage and flood control facilities. Typically, the County Public Works Department maintains public drainage facilities in the unincorporated County, such as roadway culverts and ditches, and storm drains within a public right-of-way.

Stormwater drainage at the project site primarily runs through natural drainage swales, ditches, and watercourses. Please refer to Section 3.8, Hydrology and Water Quality, for more detail regarding the on-site drainage.

The primary receiving water for the existing and proposed development footprint of the proposed project is an approximately 15-acre detention basin located southeast of Runway 12-30 and east of Runway 5-23 (Google Earth 2018; LFA 2005). This basin, along with a system of drainage ditches and stormwater pipes designed for a 10-year storm, collects runoff from the majority of the developed portions of the project site (Mead & Hunt 2013). The existing aviation uses (administration building, aircraft and vehicle parking, hangar spaces, maintenance warehouses, pump house, wash rack, and other ancillary structures) are graded to drain northeast toward Runway 12-30 and its taxiway, which, through pipes and ditches, directs storm flows to the southeast and eventually to the detention basin (LFA 2005). Runway 5-23 and its taxiway direct storm flows to the east–northeast, also to the detention basin (LFA 2005). Under normal circumstances, storm flow that is collected by the detention basin is either lost to evaporation,

and/or percolates into the underlying groundwater table. During extreme storm events (i.e., greater than a 10-year storm), when the detention basin reaches its holding capacity, it is designed to overflow into a ditch that flows north under Holey Road and then northeast to the lower-most reach of Brushy Creek near Highway 14, approximately 0.5 miles upstream of its confluence with Indian Slough (Mead & Hunt 2013).

3.14.1.4 Dry Utilities

Information on energy and telecommunications is based on the Byron Airport Infrastructure Study (Mead & Hunt 2013). Energy is further discussed in Section 3.15, Energy Consumption.

Electricity

Electric service is provided by Pacific Gas & Electric Company (PG&E). Electrical power is supplied to the project site by PG&E by a 12-kilovolt line from Holey Road. PG&E's services are provided in accordance with California Public Utilities Commission rules and regulations.

Natural Gas

Byron Airport is not serviced by natural gas. However, a PG&E high-pressure transmission line is located on the project site (crossing under Runway 5-23).

Telecommunications

Communications service to Byron Airport is currently provided by AT&T via underground lines. There is an existing AT&T fiber-optic line on the Byron Highway corridor that could be extended to Byron Airport.

3.14.1.5 Solid Waste

Solid waste collection services in the County are generally provided by private haulers through either a contract or franchise. The County Health Services Department, Environmental Health Division, certified by the California Department of Resources Recycling and Recovery (CalRecycle), currently monitors and maintains residential solid waste collection and recycling services in the County. The Airports Division contracts with Mount Diablo Resource Recovery (MDRR) to handle solid waste generated by the County operations at the airport. Individual tenants are responsible for making their own arrangements with a solid waste collection service.

Throughout the County, there are seven solid waste and recycling facilities and transfer centers: West Contra Costa Sanitary Landfill, West County Integrated Resource Recovery Facility – Central Processing Facility, Contra Costa Transfer and Recovery Station (CCTRS), ACME Landfill, Keller Canyon Landfill, Brentwood Transfer Station, and Pittsburg Recycling Center and

Transfer Station (Contra Costa County 2005a). Keller Canyon Landfill is a large-volume landfill, which serves the County, as well as the surrounding Bay Area counties. Keller Canyon Landfill is 28 miles from the project site. CalRecycle currently estimates the capacity will last another 49 years (CalReycle 2019a). Potrero Hills Landfill is located approximately 50 miles from the project site and could also possibly be used to dispose of wastes generated by the proposed project.

Altamont Landfill, in Alameda County, is 15 miles away from the project site. The Altamont Landfill has sufficient capacity through 2045 (Waste Management 2019). Altamont Landfill and CCTRS accept construction debris in addition to commercial waste. Three additional construction and demolition waste management facilities have capacity to serve the project. These facilities include Byron Crushing & Grinding Services and Woodmill Recycling Company, both of which are located in Byron, and the MDRR Transfer Station facility in Pittsburg. MDRR provides commercial waste collection services for Byron that will be utilized by the project.

3.14.2 Relevant Plans, Policies, and Ordinances

This section includes applicable federal, state, and local laws, regulatory guidance, and general plan goals and policies that govern public utilities in the County.

3.14.2.1 Water

Federal Regulations

The Safe Drinking Water Act (SDWA) is the main federal law that regulates the quality of potable water for the public. The SDWA authorizes the U.S. Environmental Protection Agency (EPA) to establish national health-based standards for drinking water quality. These standards may apply to naturally occurring and human-caused constituents in drinking water. The national standards are established using scientific methods to evaluate health risks and consider available technology and costs to achieve the standards. The National Primary Drinking Water Regulations establish maximum contaminant levels (MCLs) or mandated methods for water treatment to remove contaminants, and requirements for regular water quality testing to make sure standards are achieved. In addition to setting these standards, the EPA provides guidance, assistance, and public information about drinking water; collects drinking water data; and oversees state drinking water programs. States can apply to the EPA for authority to implement the SDWA within their jurisdiction by showing that they will adopt standards at least as stringent as the national standards and adequately enforce these standards. California has been granted this authority, and the California Department of Public Health establishes and enforces statewide drinking water standards.

State Regulations

California Safe Drinking Water Act

The California Department of Public Health administers the state's SDWA through the Drinking Water Program. This program implements the regulatory authority of the Department of Public Health over PWSs in the state. PWS operators are required to regularly monitor their drinking water sources and supplies for microbiological, chemical, and radiological contaminants to demonstrate that the water meets the regulatory requirements regarding primary MCLs listed in Title 22 of the California Code of Regulations (CCR). MCLs have been established for ±80 inorganic and organic contaminants and six radiological contaminants. Monitoring is also required for a number of other contaminants and characteristics that deal with the aesthetic properties of drinking water, such as taste, odor, and appearance. These are known as secondary MCLs.

The Drinking Water Program is implemented by the Department of Public Health in cooperation with the EPA, the State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards (RWQCBs), and other state and local agencies, including county health departments, planning departments, and boards of supervisors.

San Joaquin Basin Plan

The Water Quality Control Plan (Basin Plan) for the project region was adopted by the Central Valley RWQCB in 1998 and amended in 2015 (Central Valley RWQCB 2015). The Basin Plan establishes water quality objectives for the Sacramento River Basin to protect the beneficial uses of these waters, which include providing drinking water supplies.

Beneficial uses of the surface waters include municipal and domestic supply; agricultural supply; industrial service, process, and power supply; contact and non-contact recreation; freshwater, migration, spawning, and wildlife habitat; and navigation. Beneficial uses for groundwater include municipal and domestic supply, agricultural supply, and industrial service and process supply (Central Valley RWQCB 2015).

To protect the beneficial uses, the Basin Plan establishes objectives for surface water and groundwater. Surface water objectives cover the following characteristics and qualities: bacteria, bio-stimulatory substances, chemical constituents, color, dissolved oxygen, pesticides, radioactivity, salinity, sediment, settleable material, suspended material, tastes and odors, temperature, toxicity, and turbidity. Groundwater quality objectives cover the topics of bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity (Central Valley RWQCB 2015).

Drinking Water Quality Regulations and Standards

The principal state regulatory agency involved in drinking water quality and potable reuse in California is the SWRCB Division of Drinking Water (DDW). The SWRCB receives the majority of its statutory authority related to public health and potable water from the California SDWA, as defined in the California Health and Safety Code and in Titles 17 and 22 of the CCR. In addition, the SWRCB DDW has the primary enforcement authority (primacy) to enforce the federal SDWA, and is responsible for the regulatory oversight of approximately 8,000 PWSs[1] throughout the state. The SWRCB also administers and enforces regulations pertaining to protection of water quality and beneficial uses of water (including surface water and groundwater) under the Porter-Cologne Water Quality Control Act, aspects of the federal Clean Water Act, and other statutes.

The California SDWA prescribes enforceable primary standards for five major categories of drinking water contaminants: microorganisms, disinfectants and disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides. Primary drinking water standards established by the SWRCB under the California SDWA are equivalent or more stringent than those set by the EPA under the aforementioned federal SDWA. The SWRCB DDW has adopted new or more stringent drinking water standards for at least 16 inorganic and 33 organic contaminants, two groups of disinfection byproducts, two individual disinfection byproducts, and two treatment technique requirements. Domestic Water Quality and Monitoring Regulations (22 CCR Section 64400 et seq.) include MCLs for chemicals, monitoring requirements, compliance determination procedures, and requirements for public notification in case of failure. Monitoring requirements were also established in 2001 for nine unregulated organic and inorganic chemical contaminants, which allowed collection of information on their presence in drinking water supplies. In addition, secondary MCLs have been established for non-health concerns based on aesthetic issues, such as taste, odor, or color in the water. The SWRCB and EPA have established secondary MCLs for at least 15 contaminants.

The Surface Water Treatment Rule (22 CCR Section 64650 et seq.) is a set of regulations intended to control the pathogenic microorganisms found in surface sources by setting treatment requirements in lieu of MCLs. The regulations establish source sanitary survey, multibarrier treatment, treatment design, operation, reliability, monitoring, reporting, and failure notification requirements. The regulation requires that the source be an approved surface water (i.e., a surface water or groundwater under the direct influence of surface water) that has received permit approval from the SWRCB in accordance with Sections 116525 through 116550 of the California Health and Safety Code.

[1] Public water systems are systems that either have 15 or more service connections or serve at least 25 individuals daily at least 60 days out of the year.

Public Water System Permitting

PWS permits are issued to each producer or purveyor of drinking water serving a specified minimum number of connections as required by the California Health and Safety Code. The permit covers each source of water used by the system. These permits and their accompanying engineering reports identify the source site, construction, and contaminant threats, and establish the treatment, operational, and monitoring requirements for each source. Almost all permits include special provisions established specifically for the individual water system, setting forth operating requirements that, if not met, could result in a formal enforcement action. Permits do not have expiration dates, but whenever a water system adds a new water source, adds or changes treatment, has a change in ownership, or makes changes that are not in compliance with SWRCB DDW drinking water regulations, then an amendment to the water permit is required. The proposed project will likely need to expand or modify the current water system, and newly provide for potable drinking water service. As such, the project proponent will be required to undergo the permitting process with SWRCB DDW to obtain a PWS permit prior to leasing new facilities.

A Consumer Confidence Report is required annually for each PWS (22 CCR 64481). Each report must contain information on the source of the water delivered, including the following:

- The type of water delivered by the water system (e.g., surface water, groundwater, and the commonly used name [if any] and location of the body of water).
- If a source water assessment has been completed, notification that the assessment is available, how to obtain it, the date it was completed or last updated, and a brief summary of the system's vulnerability to potential sources of contamination.

The Consumer Confidence Report is intended to clearly communicate to the public the source of the water, threats to the source, and any water quality problems. Should Byron Airport develop a water system to provide drinking water, the project proponent may be required to obtain a PWS permit and publicize its annual drinking water quality reports (Consumer Confidence Report) online.

Local Regulations

Contra Costa County General Plan

The Growth Management Element of the County General Plan identifies policies related to water and sanitary sewers. Policies related to stormwater drainage facilities are discussed in Section 3.8, Hydrology and Water Quality, of this Environmental Impact Report (EIR).

The Growth Management Element, under the subheading "Water," states the following (Contra Costa County 2005b):

> The County, pursuant to its police power and as the proper governmental entity responsible for directly regulating land use density or intensity, property development, and the subdivision of property within the unincorporated areas of the County, shall require new development to demonstrate that adequate water quantity and quality can be provided. At the project approval stage (subdivision map, land use permit, etc.), the County may consult with the appropriate water agency. The County, based on information furnished or available from consultations with the appropriate water agency, the proponent, or other sources, should determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. Project approvals conditioned on (1) or (2) above, will lapse according to their terms if not satisfied by verification that capacity exists to serve the specific project ("will serve letters"), actual hook-ups or comparable evidence of adequate water quantity and quality availability.

The County's General Plan also establishes goals and policies for public services. The General Plan contains the following policies in Chapter 7, Public Facilities/Services Element, that apply to water supply (Contra Costa County 2005a):

Policy 7-16 Water service systems shall be required to meet regulatory standards for water delivery, water storage and emergency water supplies.

Policy 7-21 At the project approval stage, the County shall require new development to demonstrate that adequate water quantity and quality can be provided. The County shall determine whether (1) capacity exists within the water system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.

Policy 7-24 Opportunities shall be identified and developed in cooperation with water service agencies for use of non-potable water, including ground water, reclaimed water, and untreated surface water, for other than domestic use.

Policy 7-25 Land uses and activities that could result in contamination of groundwater supplies shall be identified, monitored and regulated to minimize the risk of such contamination.

Policy 7-26 The need for water system improvements shall be reduced by encouraging new development to incorporate water conservation measures to decrease peak water use.

Policy 7-27 The reclamation of water shall be encouraged as a supplement to existing water supplies.

Policy 7-28 The County shall encourage its water serving agencies to prepare written drought contingency plans and hold public hearings on these plans. These plans should identify the size of needed drought capacity reserves. In requests for capacity verification for new development, the County shall require that the serving agency exclude these reserves from its operating capacities for the purpose of the verification.

Water Well and Small Water System Permitting

Contra Costa Environmental Health works with 125 small water systems to make sure that the cleanest, safest, and most reliable drinking water possible is delivered to approximately 12,000 users (Contra Costa County 2018a). A small water system has less than 200 service connections (Contra Costa County 2018a). Those operating small water systems in the County must possess a valid water supply permit from Contra Costa Environmental Health, provide an emergency notification plan in case of a health emergency, and perform required monitoring and reporting of water quality as specified by state regulations (County Municipal Code 414-4.401–417, Small Water Systems).

The Contra Costa Environmental Health Land Use Program protects the groundwater of the County by reviewing the plans for well designs, issuing permits for the construction and destruction of wells and soil borings, and conducting inspections during drilling to make sure wells and soil borings will be installed or destroyed in a way that does not contaminate the County's groundwater (Contra Costa County 2018b). Wells and soil borings that require permits from Contra Costa Environmental Health include water wells, dewatering wells, monitoring wells, cathodic protection wells, geothermal wells, piezometers, inclinometers, soil vapor probes, CPTs, and soil borings (including geotechnical borings) (Contra Costa County 2018b). Any work on wells (e.g., installation, modification, destruction) must be performed by California-licensed well contractor (C-57 license) approved by the department (County Municipal Code 414-4.801–809, Wells).

Septic System Permitting

Septic systems, also known as on-site wastewater treatment systems (OWTSs), are regulated by the County Municipal Code, Chapter 420-6, Sewage Collection and Disposal. Improperly designed or poorly constructed or maintained OWTSs can contaminate groundwater. The Land Use Program reviews OWTS design plans and inspects the construction of OWTSs to prevent threats to groundwater and public health. The permits are intended to enforce applicable septic system siting, sizing, and design guidelines to protect water quality and comply with Basin Plan provisions. Land Use Program staff investigate complaints of improperly functioning OWTSs, and review applications for building permits on lots served by OWTSs.

3.14.2.2 Wastewater

Federal and State Regulations

The discharge of treated effluent from wastewater treatment plants is regulated by the federal Clean Water Act and California's Porter-Cologne Water Quality Act through the National Pollutant Discharge Elimination System program. This authority is administered through the Central Valley RWQCB. Please refer to Section 3.8 of this EIR for additional discussion of the Clean Water Act and the Porter-Cologne Water Quality Act.

Local Regulations

Contra Costa County General Plan

The County General Plan Growth Management Element, under the subheading "Sanitary Sewer," states the following (Contra Costa County 2005b):

> The County, pursuant to its police power and as the proper governmental entity responsible for directly regulating land use density or intensity, property development and the subdivision of property within the unincorporated areas of the County, shall require new development to demonstrate that adequate sanitary sewer quantity and quality can be provided. At the project approval stage, (subdivision map, land use permit, etc.), the County may consult with the appropriate sewer agency. The County, based on information furnished or available from consultations with the appropriate sewer agency, the proponent, or other sources, should determine whether (1) capacity exists within the sewer system if the development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. Project approvals conditioned on (1) or (2) above, will lapse according to their terms if not satisfied by verification that capacity exists to serve the specific project ("will serve letters"), actual hook-

ups or comparable evidence of adequate sewage collection and wastewater treatment capacity availability.

The County's General Plan also establishes goals and policies for public services. The General Plan contains the following policies in Chapter 7, Public Facilities/Services Element that apply to wastewater (Contra Costa County 2005a):

Policy 7-29 Sewer treatment facilities shall be required to operate in compliance with waste discharge requirements established by the California Regional Water Quality Control Board. Development that would result in the violation of waste discharge requirements shall not be approved.

Policy 7-30 Sewer service agencies shall be encouraged to establish service boundaries and develop treatment facilities to meet future service needs based on the growth policies contained in the County and cities' General Plans.

Policy 7-31 Urban development shall be encouraged within the sewer Spheres of Influence adopted by the Local Agency Formation Commission. Expansion into new areas within the Urban Limit Line but beyond the Spheres of Influence should be restricted to those areas where urban development can meet growth management standards included in this General Plan.

Policy 7-32 Development of rural residences, or other uses, that will be served by septic tank and leachfields, shall be discouraged in areas with high groundwater levels or soils with poor percolation characteristics.

Policy 7-33 At the project approval stage, the County shall require new development to demonstrate that wastewater treatment capacity can be provided. The County shall determine whether (1) capacity exists within the wastewater treatment system if a development project is built within a set period of time, or (2) capacity will be provided by a funded program or other mechanism. This finding will be based on information furnished or made available to the County from consultations with the appropriate water agency, the applicant, or other sources.

Policy 7-37 The need for sewer system improvements shall be reduced by requiring new development to incorporate water conservation measures which reduce flows into the sanitary sewer system.

County Sewage Ordinance

Title 4, Division 420, of the County Municipal Code addresses sewage and collection. The Municipal Code identifies requirements for the installation of sewer lines and the construction of sewage processing plants. Construction of wastewater facilities is subject to review and approval of the Director of Public Works and the County Health Officer.

3.14.2.3 Stormwater

Stormwater runoff is regulated at the federal, state, and local levels. Please refer to Section 3.8 of this EIR for applicable regulations.

3.14.2.4 Energy Supply

Federal Regulations

There are no federal regulations relevant to energy supply.

State Regulations

Title 24 of the CCR requires the use of energy-efficient appliances in all new residential, commercial, and educational facilities. No special permits for electrical hook-up, gas hook-up, or other energy sources are required; however, building permits and compliance with adopted building codes are required for these services. PG&E's electric and gas services are provided in accordance with California Public Utilities Commission rules and regulations.

Cable and telephone services are required to be provided in accordance with California Public Utilities Commission rules and regulations.

Local Regulations

There are no local regulations relevant to energy supply.

3.14.2.5 Solid Waste

Federal Regulations

There are no federal regulations relevant to solid waste.

State Regulations

California Integrated Solid Waste Management Act – Assembly Bill 939

Assembly Bill 939, passed in 1989, mandated a focus on the conservation of natural resources. Cities and counties were required to create comprehensive source reduction, recycling, and composting programs (Public Resources Code Section 40000 et seq.). The goal of these programs is to reduce the amount of waste sent to landfills by 50%. The focus of this bill was a major change, shifting the emphasis from landfill disposal toward waste reduction, recycling, and composting whenever possible. This approach aims to conserve natural resources, save energy, decrease pollution, and provide new jobs in the waste industry.

Assembly Bill 939 established the following priorities for waste management:

- Waste reduction
- Recycling and composting
- Controlled combustion of waste to generate electricity
- Landfilling

Mandatory Commercial Recycling— AB 341

AB 341 was adopted as part of the AB 32 Scoping Plan by the Air Resources Board pursuant to the California Global Warming Solutions Act on January 17, 2012. The legislation declares as a policy goal of the state that not less than 75% of solid waste generated be source reduced, recycled, or composted by the year 2020. The regulation requires businesses that generate 4 cubic yards or more of commercial solid waste per week and multifamily residential dwellings of five units or more to arrange for recycling services. The measure focuses on increasing commercial waste diversion to reduce greenhouse gas emissions.

Mandatory Commercial Organics Recycling—AB 1826

AB 1826 was enacted in October 2014 in order to divert commercial organic waste from landfills. The measure requires businesses and multifamily residential dwellings of five or more units to recycle organic waste on and after April 1, 2016 depending on how much solid waste they generate per week. The law includes phasing of requirements over time to ensure that the minimum threshold of organic waste generation by businesses decreases gradually.

Mandatory Organics Recycling—SB 1383

Senate Bill 1383 was passed in September 2016, which established methane emissions reduction targets to reduce emissions from short-lived climate pollutants. SB 1383 aims to achieve a 50

percent reduction in the 2014 level of statewide organic waste disposal by 2020 and a 75 percent reduction by 2025. Cities and Counties are required to implement comprehensive organic waste diversion programs that focus on recovering edible food for human consumption and diverting organic material from the landfill. The goal is to reduce greenhouse gas emissions, increase organic waste diversion from landfills, feed people, and maximize use of existing resources. SB 1383 established the following requirements for Jurisdictions:

- Mandatory organics collection program
- Container contamination minimization
- Container color requirement
- Container labeling requirement
- Edible Food Recovery Program
- Organic waste recycling capacity planning
- Procurement of recovered organic waste products

Enforcement Program Local Regulations

Contra Costa County General Plan

The County's General Plan establishes goals and policies for public services. The General Plan contains the following policies in Chapter 7, Public Facilities/Services Element, that apply to solid waste (Contra Costa County 2005a):

Policy 7-88 Solid waste disposal capacity shall be considered in County and city land use planning and permitting activities, along with other utility requirements, such as water and sewer service.

Policy 7-91 Solid waste resource recovery (including recycling, composting, and waste to energy) shall be encouraged so as to extend the life of sanitary landfills, reduce the environmental impact of solid waste disposal, and to make use of valuable resources, provided that specific resource recovery programs are economically and environmentally desirable.

Policy 7-92 Waste diversion from landfills due to resource recovery activities shall be subject to goals included in the County Integrated Waste Management Plan. Public agencies and the private sector should strive to meet these aggressive goals.

County Refuse Ordinance

Title 4, Division 418, of the County Municipal Code addresses solid waste, including collection, disposal sites, and recycling requirements for landfills. Solid waste collection and disposal is regulated by the County Health Services Department, Environmental Health Division. Division 418 of the Municipal Code also provides for local implementation of the goals and purposes of the Integrated Waste Management Act of 1989.

3.14.3 Thresholds of Significance

The significance criteria used to evaluate the project's impacts to utilities and service systems are based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. A significant impact related to utilities and service systems would occur if a project would:

1. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
2. Not have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.
3. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
4. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.
5. Not comply with federal, State, and local management and reduction statutes and regulations related to solid waste.

3.14.4 Impacts Analysis

Impact 3.14-1. The project would result in the construction of new or expanded water, wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. (Potentially Significant)

Water

The project site is not connected to public water services; instead, the project site relies on existing on-site water wells and a 4,000-gallon on-site water tank for its domestic, non-potable water. Bottled water is used for drinking water. Development of the proposed project would exceed the capacity of the existing system, resulting in a **potentially significant** impact.

Development of the proposed project would require additional water sources. The discussion of water supply is found in Impact 3.14-2, below. This analysis is based on the Water Supply Assessment prepared for the project (included as Appendix I of this EIR). The water supply for development of the proposed project would be from one of three potentially feasible sources:

- On-site development and treatment of additional groundwater
- Importation of treated water from Discovery Bay
- Importation and on-site treatment of additional water from BBID

The project could use groundwater, but additional well development would be required, and on-site treatment would be needed for potable water. Potential impacts to groundwater are discussed in Section 3.8 of this EIR.

Importation of treated water from Discovery Bay would require the construction of a water main and would likely require a booster pump and water storage tank on the airport property (Mead & Hunt 2013).

Importation of BBID water would require construction of a transmission line. A BBID canal carrying untreated water, Canal 45, crosses the project site along the northeastern edge of Runway 12-30. However, it is not clear that a direct connection to Canal 45 would be allowed, in which case a transmission line would be constructed to Byron Airport (Mead & Hunt 2013). In addition, BBID water is untreated, and a treatment facility would need to be constructed on the project site.

Mitigation Measure (MM) UTIL-1 describes the process to identify and develop the preferred water source prior to project implementation. MM-UTIL-1 requires that the applicant secure appropriate agreements and entitlements with off-site providers prior to allowing development with new human occupancies to occur.

Construction of on-site water facilities would have impacts similar to the development of the proposed aviation and non-aviation land uses described in this EIR. Off-site impacts would be similar to the proposed project, including impacts to air quality, biological resources, cultural resources, geology, greenhouse gas emissions, hazardous materials, hydrology, noise, and transportation. The indirect impacts and applicable mitigation are discussed in Section 3.14.6, Level of Significance After Mitigation.

Wastewater

The increase in wastewater production associated with the proposed project would exceed the capacity of the existing septic system and leach field. The Byron Airport Infrastructure Study estimated that an additional 42,000 square feet could be developed at Byron Airport and be served

by existing infrastructure (Mead & Hunt 2013). At this time, however, the septic system is near capacity and would not support additional uses as currently configured (Williams 2019).

The Byron Airport Infrastructure Study considered two potential wastewater generation rates (Mead & Hunt 2013). The Infrastructure Study compared two generation rates for bulk warehousing and industrial development: the Central Contra Costa Sanitary District's Collection System Master Plan rate of 1,000 gpd per gross acre, and the City of Oakland rate of 25 gpd per 1,000 square feet of building square footage. The Infrastructure Study used the Oakland rate of 25 gpd per 1,000 square feet, resulting in an estimated 96,000 gpd build-out demand. The development assumptions in the Infrastructure Study are greater than for the proposed project (146.9 acres and 3,840,000 square feet of building space, compared to 70 acres and 941,000 square feet of building space for the proposed project). Applying the Oakland rate to the proposed project would result in an estimated wastewater flow of 23,525 gpd. However, the Town of Discovery Bay, which contains the nearest wastewater treatment plant, uses a wastewater generation rate of 2,000 gpd per acre of industrial development and 1,600 gpd per acre of commercial development (Discovery Bay Community Services District 2012). Using these flow rates, wastewater flow would be 89,920 gpd for non-aviation uses.[2] Development of the proposed project would, therefore, exceed septic system capacity, resulting in a **potentially significant** impact to water quality.

MM-UTIL-2 would require implementation of a wastewater system, per the recommendations of the Byron Airport Infrastructure Study (Mead & Hunt 2013), which studied several options for expansion of the on-site sewer system. The options include requiring each new use or development to provide for its own wastewater disposal, in effect distributing wastewater treatment to smaller leach fields throughout the site, or development of centralized treatment though use of an on-site package wastewater treatment plant and establishment of collection pipelines. For an on-site treatment plant, effluent disposal may be accomplished through landscape irrigation if the effluent is treated to a level to meet Title 22 CCR standards. A third option is connection to an existing sewer system: either the Discovery Bay Community Services District or the Byron Sanitary District. Connection to Discovery Bay would involve off-site construction of a force main and likely modifications to the existing sewage lift station (or a new lift station). Connection to Byron Sanitary District would likely require an expansion of Byron Sanitary District's wastewater treatment facility. Connection to either Discovery Bay or Byron Sanitary District may also conflict with the County's Urban Limit Line policy.

A potential scenario would be the expansion of the septic system to accommodate aviation development (which tends to have very low flows), and construction of a package wastewater treatment plant for the non-aviation uses. The location of the runway would likely make sewer connections between the aviation and non-aviation areas infeasible. Whichever option for on-site

[2] 35.6 acres of warehousing and light industrial development at 2,000 gpd per acre, plus 11.7 acres of commercial development at 1,600 gpd per acre would yield 89,920 gpd.

wastewater treatment is selected, it would be required to comply with applicable local, RWQCB, and SWRCB permitting requirements meant to protect the beneficial uses of receiving waters, and to comply with Basin Plan water quality objectives. Depending on the type, location, and destination of the wastewater discharge, future facilities may be required to conform with the County Sewage Collection and Disposal Ordinance (Chapter 420-6), the Water Quality Control Policy for Siting, Design, Operation and Maintenance of On-Site Wastewater Treatment Systems (OWTS Policy, Resolution No. 2012-0032), and/or waste discharge requirements.

Given the constraints on the existing wastewater disposal system and the engineering/permitting constraints of various options, the development of non-aviation uses would likely require construction of a package sewage treatment plant requiring a NPDES Permit and/or Waste Discharge Requirements from the Central Valley RWQCB. Wastewater system permitting would include effluent limitations, discharge specifications, and receiving water limitations designed specifically for the location and type of discharge, and waste discharge requirements would include monitoring and reporting program requirements meant to verify that the objectives of the waste discharge requirement permit are being met. Furthermore, because on-site wastewater treatment would occur within the development footprint of the project, its potentially significant environmental effects with regard to other issue areas have been addressed in this EIR. For these reasons, the proposed project would have a less-than-significant impact on water quality.

Construction of on-site facilities would occur in one of the areas identified for development, and would have impacts similar to the development of the proposed aviation and non-aviation land uses, including impacts to air quality, biological resources, cultural resources, geology, greenhouse gas emissions, hazardous materials, hydrology, noise, and transportation (see Section 3.14.6). Any proposed facility must comply with federal and state water quality requirements, as permitted through the Central Valley RWQCB, in addition to approvals by the County Public Works Director and Health Officer. Connection to existing off-site facilities would require construction of a sewer line. The impacts of off-site mitigation are discussed in Section 3.14.6.

Stormwater

The project would not require or result in the construction or expansion of off-site stormwater drainage facilities. However, construction of new stormwater drainage facilities would be required within the development footprint of the proposed project. Because all such facilities would be located on site, they are included in the environmental analysis for each issue area addressed by this EIR. Impacts related to the expansion of the existing on-site drainage system would be **less than significant**.

Please refer to Section 3.8 of this EIR for additional discussion of drainage and water quality. MM-HYD-1, through implementation of a Master/Conceptual Stormwater Control Plan, is designed to

avoid or substantially minimize water quality impacts and would require individual facilities to develop project-specific Stormwater Control Plans.

Dry Utilities

As discussed in Section 3.14.1, energy and communications infrastructure is available on or near Byron Airport. Electrical power is supplied to the project site by PG&E by a 12-kilovolt line from Holey Road. This connection is adequate to serve proposed development at the project site (Mead & Hunt 2013). Individual service connections would be constructed as part of the overall development of the proposed project. Natural gas is not currently used at Byron Airport, but is available. AT&T provides telecommunications service. A fiber-optic connection is available. Construction of service connections for dry utilities is assumed in the overall development of the proposed project and is considered within this impact analysis. The impact would be **less than significant**.

Conclusion

The proposed project's requirements would exceed existing water and wastewater infrastructure, which would have a **potentially significant** impact without mitigation. The construction impacts associated with expansion of water, wastewater and stormwater infrastructure are addressed elsewhere in this EIR and do not represent new significant impacts. Adequate energy and telecommunications capacity is available to the project site.

Impact 3.14-2. The project would not have sufficient water supplies available to serve the project from existing entitlements and resources. (Potentially Significant)

The expansion of Byron Airport would result in a substantial increase in on-site water use. The estimated construction water demand for the proposed project is 31 acre-feet spread out over a 10-year build-out period, equivalent to an average of 3.1 acre-feet per year (Appendix I). Operations and maintenance activities for the proposed project would require a water demand that would increase to approximately 36 acre-feet per year by the end of the 10-year build-out period. Because a definitive source of water for the proposed project has not yet been identified, three sources are examined as potential supplies: on-site groundwater, imported water from the Town of Discovery Bay (Discovery Bay), and additional imported water from the BBID. On-site groundwater was determined to be the supply with the least potential, as there is evidence of low yields and poor groundwater quality from existing wells. However, extraction of on-site groundwater may potentially be used to provide redundancy and backup for another supply. The Discovery Bay water supply is exclusively from groundwater, and the analysis indicates that Discovery Bay could reliably support the proposed project currently and through the 20-year planning period. The BBID service area includes part of the project site, and the BBID supplies to the area are mainly surface water diverted from State Water Project facilities. The BBID supply would likely support the proposed project's water demand through the planning period (Appendix I).

Currently, the well serving the airport property is insufficient to serve additional project development. This impact is **potentially significant**. According to the Water Supply Assessment completed for the proposed project, at the programmatic level of analysis, sufficient water supplies are available to serve its water demand under normal and dry conditions, including existing and planned land uses, over the 20-year projection period (Appendix I). This would be accomplished through the use of one or more of the aforementioned options. However, as development under the proposed project proceeds, each of the potential supplies considered would require additional feasibility analysis to determine the actual potential for project implementation, and would require appropriate agreements (e.g., will-serve letter) from the off-site suppliers before any development requiring potable water could be permitted. This process is incorporated into MM-UTIL-1.

Impact 3.14-3. The project would exceed the current wastewater treatment capacity to serve the project's projected demand in addition to the provider's existing commitments. (Potentially Significant)

The project site is not currently served by a wastewater treatment provider. The airport is currently served by a septic system which does not have capacity for the proposed project. As discussed for Impact 3.14-1, Byron Airport may seek to connect with the Discovery Bay Community Services District or the Byron Sanitary District or could require developers to incorporate on-site wastewater disposal systems into their development plans. Implementation of MM-UTIL-2 would ensure that, should an off-site wastewater treatment provider be used, the feasibility of using it would be evaluated, including a determination of adequate capacity for current and future users. Therefore, the impact would be **less than significant**.

Impact 3.14-4. The project would not generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. (Less than Significant)

Solid waste generation for the proposed project were estimated using rates provided by CalRecycle, and are shown in Table 3.14-1.

Table 3.14-1
Estimated Solid Waste Generation

Use	ksf	Persons	Rate	unit	lbs/day	tons/day
Non-Aviation Use						
Logistics/Warehouse/Distribution	274	274	13.82	employee	3787	
Light Industry/Business Park	213	298	41.64	employee	8869	
Office	81	325	6	lbs/ksf	486	
Commercial	91	522	6	lbs/ksf	546	
				Subtotal Non-Avaiation Use	*13688*	*6.844*

Table 3.14-1
Estimated Solid Waste Generation

Use	ksf	Persons	Rate	unit	lbs/day	tons/day
Aviation Use						
Aircraft Storage	128	32	7	lbs/emp	224	
Aviation	154	77	7	lbs/emp	539	
				Subtotal Aviation Use	*763*	*0.3815*
					Total	**7.2255**

Source: CalRecycle 2019b

The project site can be served by either the Altamont Landfill or the Keller Canyon Landfill, which are the two closest full-service landfills. As discussed in Section 3.14.1.5, the Keller Canyon Landfill has an estimated remaining lifespan of approximately 49 years, and the Altamont Landfill has capacity through 2045. Keller Canyon Landfill has a maximum permitted daily throughput of 3,500 tons, while Altamont has 11,150 tons. Assuming a total waste generation of 7.2 tons per day at project buildout (see Table 3.14-1), this would represent 0.2% and 0.06% of the maximum throughput, respectively. Construction waste cannot be disposed of at these facilities. However, facilities located in Byron (Byron Crushing & Grinding Services and Woodmill Recycling Company) and the Mt. Diablo Recycling Center & Transfer Station in Pittsburg can accept construction and demolition material for proper recycling.

State and local diversion requirements (further described in Impact 3.14-5) for construction materials and operational waste would apply to the proposed project, significantly reducing the amount of daily waste. Therefore, the proposed project can be adequately served by existing landfills and solid waste facilities with sufficient permitted capacity to accommodate its solid waste disposal needs, so impacts would be **less than significant**.

Impact 3.14-5. The Project would comply with federal, state, and local statutes and regulations related to solid waste. (Less than Significant)

The proposed project would be required to comply with the California Integrated Solid Waste Management Act (AB 939) as well as state goals for recycling (AB 341) and organics diversion (AB 1826 and SB 1383). The project is also subject to County General Plan Policy 7-91, which encourages solid waste resource recovery, and Policy 7-92, which encourages the diversion of waste from landfills to extend the life of existing landfills; and Division 418 of the County Municipal Code. The proposed project would dispose of all solid, non-recyclable waste at authorized sites, such as landfills (see Impact 3.14-4). All contractors hauling waste for construction of the proposed project would be required to comply with County Ordinance 2004-16, which requires the reduction of construction and demolition debris to landfills. Airport tenants are required to contract with qualified waste management services.

The proposed project would have a **less-than-significant impact** regarding compliance with all applicable solid waste regulations.

3.14.5 Mitigation Measures

MM-UTIL-1 Prior to (1) the development of non-aviation uses, or (2) the expansion of aviation uses that would increase water demand in excess of the current airport well system, Contra Costa County (County) shall take one of the following actions:

a. Construct additional on-airport wells and water treatment facilities to support the proposed development. The project Water Supply Assessment estimates that up to four wells may be required to support buildout of the development program. The County shall obtain a water supply permit from the State Water Resource Control Board Division of Drinking Water, a well drilling permit from Contra Costa County Environmental Health Division, and all other applicable permits and approvals prior to development.

b. Obtain an off-site potable water supply from the Byron-Bethany Irrigation District or the Town of Discovery Bay. The County shall not permit development to proceed until the appropriate agreements or will-serve letters have been obtained from the chosen supplier(s) and plans for construction of necessary transmission lines have been approved by the County.

MM-UTIL-2 Prior to (1) the development of non-aviation uses or (2) the expansion of aviation uses that involve additional human occupancy, Contra Costa County shall take one of the following actions:

a. Expand the on-site septic system to accommodate forecasted development wastewater flows. A permit from Contra Costa County Environmental Health Division (CCCEHD)shall be obtained prior to development.

b. Construct an on-site package wastewater plant. The plant design, which demonstrates adequate capacity for the development program, must be approved by the CCCEHD. Prior to approval of development, Water Discharge Requirements (WDR) must be approved by the Regional Water Quality Control Board.

c. Obtain service from the Town of Discovery Bay or Byron Sanitary District. The County must confirm with the provider that there is adequate service capacity, and obtain a will serve letter for airport development. Plans for construction of a sewer transmission line to the off-site provider must be approved by all responsible County agencies.

3.14.6 Level of Significance After Mitigation

With implementation of MM-UTIL-1, MM-UTIL-2, and MM-HYD-1 (see Section 3.8), Impact 3.14-1 would be reduced to **less than significant**. Impact 3.14-2 would be reduced to **less than significant** with implementation of MM-UTIL-1. Impact 3.14-3 would be reduced to **less than significant** with implementation of MM-UTIL-2.

Indirect Impacts

Implementation of MM-UTIL-1 and MM-UTIL-2 may result in secondary impacts to the environment. Implementation of these mitigation measures would require construction of additional on-site and/or off-site infrastructure. To the extent that additional on-site infrastructure, such as on-site water or wastewater treatment facilities, pump stations, and water storage facilities, would be required, this EIR assumes full build-out of the aviation and airport-related development areas, including supportive infrastructure. Off-site provision of water or wastewater service would require construction of transmission lines. The most likely pipeline route from Byron Airport to the community of Byron (Armstrong Road to Byron Highway) were considered, and no substantial environmental constraints were noted. The construction of water and sewer transmission lines were included in the air quality and greenhouse gas analyses assumptions (see Sections 3.2 and 3.6 of this EIR). Only unusual project or site circumstances, per CEQA Guidelines Sections 15152(d) and 15168(c), would require additional environmental review of this project-supportive infrastructure.

The following mitigation measures would apply to the construction of off-site infrastructure that may be built in compliance with MM-UTIL-1 and MM-UTIL-2:

- MM-BIO-1 and MM-BIO-6 (see Section 3.3)
- MM-CUL-1, MM-CUL-2, and MM-CUL-3 (see Section 3.4)
- MM-NOI-1 (see Section 3.10)

The impact of providing utilities to the proposed project would be **less than significant** with implementation of all applicable mitigation measures.

3.14.7 Cumulative

Cumulative impacts to utilities may occur when project demand, in addition to existing and future users, exceeds the capacity of utility systems, resulting in the need for new or expanded facilities, the construction of which may have a significant effect on the environment.

Construction of on-site utility systems, including water, wastewater, and stormwater, would serve only Byron Airport. No off-site users would contribute to demand for these utilities. Therefore, no cumulative impact would occur for on-site utilities. The proposed project may receive water and

wastewater service from off-site providers, including the BBID, Byron Sanitary District, and Town of Discovery Bay. These providers develop plans, including Urban Water Master Plans and Sewer Master Plans, consistent with growth assumptions used by the County to plan for future service demands. MM-UTIL-1 and MM-UTIL-2 provide that any water or wastewater system that provides service to the proposed project would only be used if feasibility studies demonstrate that adequate cumulative capacity exists. Therefore, no cumulative impact would occur for provision of off-site utilities.

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3.15 ENERGY CONSUMPTION

The California Environmental Quality Act (CEQA) provides that an Environmental Impact Report (EIR) must include a detailed statement identifying all significant effects on the environment of a proposed project, and mitigation measures proposed to minimize significant effects on the environment, including "measures to reduce the wasteful, inefficient, and unnecessary consumption of energy" (California Public Resources Code Section 21100[b][1],[3]).

Appendix F of the CEQA Guidelines, Energy Conservation, provides recommendations for information that should be included in an EIR to ensure that "energy implications are considered in project decisions" (14 California Code of Regulations [CCR] 15000 et seq.). Appendix F directs that EIRs should include "discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy (California Public Resources Code Section 21100[b][3]) (14 CCR 15000 et seq.)."

Appendix F of the CEQA Guidelines lists potential energy impacts that may be relevant to the energy conservation analysis in an EIR. Where a listed item is applicable or relevant to a project, the EIR should consider it. This analysis for the proposed Byron Airport Development Program (project) applied the following relevant listed items from Appendix F, subdivision (II)(F)(C), to the discussion of impacts: energy requirements and energy use efficiencies of the proposed project by fuel type and amount for each stage of the project, the effects of the project on local and regional energy supplies and on requirements for additional capacity, the effects of the project on peak and base period demands for electricity and other forms of energy, compliance with existing energy standards, the effects of the project on energy resources, and the project's projected transportation energy use requirements and overall use of efficient transportation alternatives.

The 2018 update to the CEQA Guidelines includes Section 15126.2(b), which considers impacts resulting from project energy use. The updated guidelines specify that an EIR must analyze project energy use and mitigate energy use if a project may result in significant impacts due to wasteful, inefficient, or unnecessary energy consumption, or wasteful use of energy resources. The analysis should include energy consumption for all project phases and components, and include transportation-related energy use. In addition to compliance with the California Building Code, other project features such as project size, location, orientation, equipment use, and renewable energy features should be considered in the analysis.

In accordance with Section 15126.2(b) of the updated CEQA Guidelines and with Appendix F of the CEQA Guidelines, this EIR provides relevant information and analyses that address the energy implications of the proposed project. This section presents a summary of the proposed project's anticipated energy needs, impacts, and conservation measures. The proposed project's energy needs were estimated using California Emissions Estimator Model (CalEEMod) outputs (see

Appendix C of this EIR). This emissions model contains typical electricity use and natural gas use for a range of land uses, and estimates for the number of vehicle trips that may be associated with construction and operation of the proposed project. This section summarizes the energy use estimates of the proposed project and compares them to those of the existing on-site land uses, to regional and local supply and demand under existing conditions, and to regional and local supply and demand that has been forecasted for the future.

3.15.1 Existing Conditions

The proposed project, including vehicular trips to and from the project site, would result in the consumption of energy in a variety of forms, namely electricity, natural gas, and petroleum. Appendix F of the CEQA Guidelines, Part II, Section B, states that the "Environmental Setting may include existing energy supplies and energy use patterns in the region and locality." Consistent with this recommendation, this subsection characterizes existing energy supplies and energy use patterns for electricity, natural gas, and petroleum.

3.15.1.1 Electricity

According to the California Energy Commission (CEC) *California Energy Demand Revised Forecast 2018–2030*, California used approximately 285,701 gigawatts per hour (GWh) of electricity in 2016 (CEC 2018a). CEC's Energy Consumption Database states that in 2017, electricity consumption in California totaled approximately 288,614 GWh (CEC 2018b). Electricity usage in California for different land uses varies substantially by the types of uses in a building, type of construction materials used in a building, and the efficiency of all electricity-consuming devices within a building. Due to the state's energy efficiency standards and efficiency and conservation programs, California's per-capita electricity use has remained stable for more than 40 years, while the national average has steadily increased (CEC 2018c).

Pacific Gas & Electric Company (PG&E) provides electricity to the community of Byron, including the project site. PG&E, a subsidiary of PG&E Corporation, provides natural gas and electric service to approximately 16 million customers across a 70,000-square-mile service area (PG&E 2017). According to the CEC, approximately 104,148 GWh of electricity was used in PG&E's service area in 2017 (CEC 2018d). Demand forecasts anticipate that approximately 124,805 GWh of electricity will be used in PG&E's service area in 2029, the estimated year of project operation (CEC 2018a).

PG&E receives electric power from a variety of sources. According to PG&E's 2017 Annual Report, 33.1% of PG&E's power came from eligible renewables in 2017, such as solar, wind, geothermal, biomass power, and Renewables Portfolio Standard (RPS)-eligible hydroelectric (PG&E 2017). This is an increase from the 28% that PG&E maintained for the 2014–2016

compliance period (CPUC 2016). The CEC estimates that approximately 29% of the state's electricity generation in 2017 came from renewable energy (CEC 2018e).

The RPS Program establishes a goal for California to increase the amount of electricity generated from renewable energy resources to 20% by 2010 and to 33% by 2020. Recent legislation revised the current RPS target for California to obtain 50% of total retail electricity sales from renewable sources by 2030, with interim targets of 40% by 2024 and 45% by 2027.

Within Contra Costa County (County), annual non-residential electricity use is approximately 6,809 GWh per year, as reported by the state's Energy Consumption Database for 2017 (CEC 2018f).

Electrical power is currently supplied to the project site by PG&E via a 12-kilovolt line in Holey Road. It is anticipated that the proposed project would obtain electrical service from this existing conduit and that this line is sufficient to supply power to the proposed project.

3.15.1.2 Natural Gas

According to the CEC, California used approximately 12,571 million therms[1] of natural gas in 2017 (CEC 2018g). By sector, industrial uses utilize 35.9% of the state's natural gas, followed by 35.5% for electric power, 16.9% for residential uses, 10.1% for commercial uses, and 1.6% for transportation uses (EIA 2019a). Although the supply of natural gas in the United States and production in the lower 48 states has increased greatly since 2008, California produces little, and imports 90% of its supply of natural gas (CEC 2019). Gas supplies are generally imported via pipelines from the Southwest, the Rocky Mountains, and Canada.

PG&E provides the community of Byron and the County with natural gas service. During the winter, most natural gas resources are imported from Canada on a supply-and-demand basis, and the balance is supplied from California production wells. During the summer, this ratio is reversed. During the summer, when gas prices are lower, gas is stored in underground holders for use during winter peak-use periods. In 2017, PG&E purchased approximately 291,000 million cubic feet[2] of natural gas, the majority of which was purchased under contracts with a term of 1 year or less (PG&E 2017).

In the California mid-energy demand scenario, natural gas demand is projected to have an annual growth rate of 0.43% in PG&E's service territory from 2016 to 2030. As of 2017, approximately 4,743 million therms was used in PG&E's service area per year (CEC 2018h). Around the time of project operation in 2029, natural gas demand is anticipated to be approximately 4,865 million therms per year in PG&E's service area (CEC 2018i).

[1] One therm is equal to 100,000 British thermal units (BTUs) or 100 kBTU.
[2] One cubic foot of natural gas has approximately 1,020 BTUs of natural gas or 1.02 kBTUs of natural gas.

The total capacity of natural gas available to PG&E in 2018 is estimated to be 5,200 million cubic feet per day. In 2020, the total capacity available is estimated to be 4,317 million cubic feet per day (California Gas and Electric Utilities 2018). This amount is approximately equivalent to 44 million therms per day, or 4,398,950 mBritish thermal units (mmBTU). Over a year, the available capacity would, therefore, be approximately 17 billion therms per year, which is well above the existing and future anticipated natural gas demand in PG&E's service area. Within the County, annual natural gas consumption is approximately 946 million therms for non-residential uses, and 1,118 million therms in total (CEC 2018j).

Currently, there is no natural gas service provided to the project site. However, there is a PG&E high-pressure natural gas transmission line that crosses Runway 5-23.

3.15.1.3 Petroleum

Transportation accounts for nearly 40% of California's energy consumption according to the CEC (2013). In California, petroleum fuels refined from crude oil are the dominant source of energy for transportation sources. According to the U.S. Energy Information Administration, California used approximately 672 million barrels of petroleum in 2016 (EIA 2019b). This equates to a daily use of approximately 1.8 million barrels of petroleum. There are 42 U.S. gallons in a barrel, so California consumes approximately 76 million gallons of petroleum per day, adding up to an annual consumption of 28 billion gallons of petroleum.

By sector, transportation accounts for 85.5% of California's petroleum consumption, followed by 11.1% for industrial uses, 2.5% for commercial, 1% for residential, and 0.01% for electric power uses (EIA 2019b). Petroleum usage in California includes petroleum products such as motor gasoline, distillate fuel, liquefied petroleum gases, and jet fuel. Production of petroleum in the United States was 20 million barrels per day in 2016, which equates to 840 million gallons per year (EIA 2019b). California has implemented policies to improve vehicle efficiency and to support use of alternative transportation, which are described in Section 3.15.2, Relevant Plan, Policies, and Ordinances. As such, the CEC anticipates an overall decrease of gasoline demand in the state over the next decade (CEC 2018a).

3.15.2 Relevant Plan, Policies, and Ordinances

3.15.2.1 Federal

Federal Energy Policy and Conservation Act

In 1975, Congress enacted the Federal Energy Policy and Conservation Act, which established the first fuel economy standards for on-road motor vehicles in the United States. Pursuant to the act, the National Highway Traffic Safety Administration is responsible for establishing additional

vehicle standards. In 2010, fuel economy standards were set at 27.5 miles per gallon for new passenger cars and 23.5 miles per gallon for new light trucks. Fuel economy is determined based on each manufacturer's average fuel economy for the fleet of vehicles available for sale in the United States.

Energy Independence and Security Act of 2007

On December 19, 2007, the Energy Independence and Security Act of 2007 (EISA) was signed into law. In addition to setting increased Corporate Average Fuel Economy (CAFE) standards for motor vehicles, the act includes other provisions related to energy efficiency:

- Renewable Fuel Standard (RFS) (Section 202)
- Appliance and Lighting Efficiency Standards (Sections 301–325)
- Building Energy Efficiency (Sections 411–441)

This federal legislation requires ever-increasing levels of renewable fuels to replace petroleum (Section 202, Renewable Fuel Standard). The U.S. Environmental Protection Agency (EPA) is responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. The RFS Program regulations were developed in collaboration with refiners, renewable fuel producers, and many other stakeholders.

The RFS Program was created under the Energy Policy Act of 2005 and established the first renewable fuel volume mandate in the United States. As required under the act, the original RFS Program (RFS1) required 7.5 billion gallons of renewable fuel to be blended into gasoline by 2012. Under the EISA, the RFS Program was expanded in several key ways that laid the foundation for achieving significant reductions of greenhouse gas (GHG) emissions through the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the renewable fuels sector in the United States. The updated program is referred to as RFS2 and includes the following:

- EISA expanded the RFS Program to include diesel, in addition to gasoline.
- EISA increased the volume of renewable fuel required to be blended into transportation fuel from 9 billion gallons in 2008 to 36 billion gallons by 2022.
- EISA established new categories of renewable fuel and set separate volume requirements for each one.
- EISA required the EPA to apply lifecycle GHG performance threshold standards to ensure that each category of renewable fuel emits fewer GHGs than the petroleum fuel it replaces (EPA 2015).

Additional provisions of the EISA address energy savings in government and public institutions, promoting research for alternative energy, additional research in carbon capture, international energy programs, and the creation of "green jobs."

Clean Power Plan and New Source Performance Standards for Electric Generating Units

On October 23, 2015, the EPA published a final rule (effective December 22, 2015) establishing Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units (80 Federal Register [FR] 64510–64660), also known as the Clean Power Plan. These guidelines prescribe how states must develop plans to reduce GHG emissions from existing fossil-fuel-fired electric generating units. The guidelines establish carbon dioxide (CO_2) emission performance rates representing the best system of emissions reduction for two subcategories of existing fossil-fuel-fired electric generating units: (1) fossil-fuel-fired electric utility steam-generating units and (2) stationary combustion turbines. The rule includes state-specific CO_2 goals reflecting the CO_2 emission performance rates and guidelines for the development, submittal, and implementation of state plans that establish emission standards or other measures to implement the CO_2 emission performance rates. Initial plan compliance with state emissions goals begins in 2022, with full compliance with final goals required by 2030. The goals are established by state in units of pounds of CO_2 per net megawatt-hour or total short tons of CO_2. For California, the goals for 2030 are 828 pounds of CO_2 per net megawatt-hour, or 96.8 million short tons of CO_2. The California Air Resources Board (CARB) anticipates that the state's plan will rely heavily on existing programs such as the Cap-and-Trade Program, RPS, energy efficiency standards, and the Mandatory GHG Reporting Regulation (for compliance determinations) (CARB 2015).

Concurrently, the EPA published a final rule (effective October 23, 2015) establishing Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units (80 FR 64661–65120). The rule prescribes CO_2 emissions standards for newly constructed, modified, and reconstructed affected fossil-fuel-fired electric utility generating units. Separate standards of performance were set for fossil-fuel-fired electric utility steam-generating units and fossil-fuel-fired stationary combustion turbines. The standards apply to new units commencing construction after January 8, 2014, or existing units commencing modification or reconstruction after June 18, 2014. The rule applies only to units with a base load rating greater than 250 million BTUs of fossil fuel per hour and serving a generator or generators capable of selling greater than 25 megawatts of electricity to a utility power distribution system. Implementation of the Clean Power Plan has been stayed by the U.S. Supreme Court pending resolution of several lawsuits.

EPA and NHTSA Joint Rule for Vehicle Standards

On April 1, 2010, the EPA and the National Highway Traffic Safety Administration (NHTSA) announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule is intended to reduce GHG emissions and improve fuel economy. The EPA promulgated the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA promulgated CAFE standards under the Energy Policy and Conservation Act. This final rule follows the EPA and Department of Transportation's joint proposal on September 15, 2009, and is the result of the President Obama's May 2009 announcement of a national program to reduce GHGs and improve fuel economy. The final rule became effective on July 6, 2010 (EPA and NHTSA 2010).

The EPA GHG standards required new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile by model year 2016, equivalent to 35.5 miles per gallon (mpg) if the automotive industry were to meet this CO_2 level through fuel economy improvements alone. The CAFE standards for passenger cars and light trucks were phased in from 2012 to 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. Together, these standards will cut GHG emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program. The rules will simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers (EPA and NHTSA 2010).

In August 2012, the EPA and NHTSA approved a second round of GHG and CAFE standards for model years 2017 and beyond (EPA and NHTSA 2012). These standards will reduce motor vehicle GHG emissions to 163 grams of CO_2 per mile, which is equivalent to 54.5 mpg if this level were achieved solely through improvements in fuel efficiency, for cars and light-duty trucks by model year 2025. A portion of these improvements, however, will likely be made through improvements in air-conditioning leakage and through use of alternative refrigerants, which would not contribute to fuel economy. The first phase of the CAFE standards (for model years 2017 to 2021) require, on an average industry fleet-wide basis, a range from 40.3 to 41.0 mpg by model year 2021. The second phase of the CAFE program (for model years 2022 to 2025) is projected to require, on an average industry fleet-wide basis, a range from 48.7 to 49.7 mpg by model year 2025. The second phase of standards has not been finalized due to the statutory requirement that NHTSA set average fuel economy standards not more than five model years at a time. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance, including the following:

- Incentives for electric vehicles, plug-in hybrid electric vehicles, and fuel cell vehicles

- Incentives for hybrid technologies for large pickups and for other technologies that achieve high fuel economy levels on large pickups
- Incentives for natural gas vehicles
- Credits for technologies with potential to achieve real-world GHG reductions and fuel economy improvements that are not captured by the standards' test procedures

3.15.2.2 State

Title 24 of the California Code of Regulations

Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. Energy consumption by new buildings in California is regulated by the state Building Energy Efficiency Standards, included in Title 24. The efficiency standards apply to new construction of residential and non-residential buildings, and regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit process. Local government agencies may adopt and enforce energy standards for new buildings, provided these standards meet or exceed those provided in Title 24 guidelines. The standards are updated periodically to allow consideration and possible incorporation of new energy-efficiency technologies and methods. The current Title 24 standards are the 2019 Title 24 Building Energy Efficiency Standards, which became effective January 1, 2020. Title 24 also includes Part 11, California's Green Building Standards (CALGreen). CALGreen establishes minimum mandatory standards as well as voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The 2019 CALGreen standards are the current applicable standards. For nonresidential projects, some of the key mandatory CALGreen 2019 standards involve requirements related to bicycle parking, designated parking for clean air vehicles, electric vehicle (EV) charging stations, shade trees, water conserving plumbing fixtures and fittings, outdoor potable water use in landscaped areas, recycled water supply systems, construction waste management, excavated soil and land clearing debris, and commissioning (24 CCR Part 11).

Senate Bill 1368

On September 29, 2006, Governor Arnold Schwarzenegger signed into law Senate Bill (SB) 1368 (Perata, Chapter 598, Statutes of 2006). The law limits long-term investments in baseload generation by the state's utilities to those power plants that meet an emissions performance standard jointly established by the CEC and the California Public Utilities Commission.

The CEC has designed regulations that do the following (Perata, Chapter 598, Statutes of 2006):

- Establish a standard for baseload generation owned by, or under long-term contract to, publicly owned utilities of 1,100 pounds CO_2 per megawatt-hour. This would encourage the development of power plants that meet California's growing energy needs while minimizing their emissions of GHGs.
- Require posting of notices of public deliberations by publicly owned utilities on long-term investments on the CEC website. This would facilitate public awareness of utility efforts to meet customer needs for energy over the long-term while meeting the state's standards for environmental impact.
- Establish a public process for determining the compliance of proposed investments with the emissions performance standard.

Assembly Bill 1493

Adopted in 2002 by the state legislature, AB 1493 ("Pavley" regulations) required that CARB develop and adopt, no later than January 1, 2005, regulations to achieve the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles.

The first California request to implement GHG standards for passenger vehicles, known as a waiver request, was made in December 2005 and was denied by the EPA in March 2008. That decision was based on a finding that California's request to reduce GHG emissions from passenger vehicles did not meet the Clean Air Act requirement of showing that the waiver was needed to meet "compelling and extraordinary conditions."

The EPA granted California the authority to implement GHG emissions reduction standards for new passenger cars, pickup trucks, and sport utility vehicles on June 30, 2009. On September 24, 2009, CARB adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016. These amendments are part of California's commitment to a nationwide program to reduce new passenger-vehicle GHGs from 2012 through 2016. CARB's September 2009 amendments will allow for California's enforcement of the Pavley rule while providing vehicle manufacturers with new compliance flexibility. The amendments also prepare California to harmonize its rules with the federal rules for passenger vehicles.

It is expected that the Pavley regulations will reduce GHG emissions from California passenger vehicles by approximately 22% in 2012 and 30% in 2016 while also improving fuel efficiency and reducing motorists' costs.

Executive Order S-1-07

Issued on January 18, 2007, Executive Order S-1-07 set a declining Low Carbon Fuel Standard for GHG emissions measured in CO_2 equivalent grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the Low Carbon Fuel Standard would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The Low Carbon Fuel Standard is anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020.

Senate Bill 375

In August 2008, the legislature passed, and on September 30, 2008, Governor Schwarzenegger signed, SB 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emissions reductions associated with vehicle emissions standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional Metropolitan Planning Organizations (MPOs) are responsible for preparing a Sustainable Communities Strategy (SCS) within their Regional Transportation Plan. The goal of the SCS is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If an SCS is unable to achieve the GHG reduction target, an MPO must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the SCS or alternative planning strategy.

In September 2010, CARB adopted the SB 375 targets for the regional MPOs. The Metropolitan Transportation Commission is the MPO for nine counties within the San Francisco Bay Area, including the County. The targets for the Metropolitan Transportation Commission are a per-capita reduction of GHG emissions by 7% by 2020 and by 15% by 2035. Achieving these goals through adoption of an SCS is the responsibility of the MPOs. The Metropolitan Transportation Commission prepared its original Regional Transportation Plan/SCS, titled *Plan Bay Area*, in July

2013. The region's current Regional Transportation Plan/SCS covers 2017–2030 and was adopted on July 26, 2017.

Truck and Bus Regulation, On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation

On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce particulate matter and nitrogen oxide emissions from existing diesel vehicles operating in California. Amendments to this regulation were approved by CARB on April 25, 2014.

The regulation applies to nearly all diesel-fueled, dual-fueled, or alternative diesel-fueled trucks and buses with a gross vehicle weight rating greater than 14,000 pounds that are privately or federally owned, and to privately and publicly owned school buses. The purpose of this regulation is to reduce emissions of diesel particulate matter, nitrogen oxides, and other criteria pollutants from in-use diesel-fueled vehicles.

Heavier trucks and buses with a gross vehicle weight rating greater than 26,000 pounds must comply with a schedule by engine model year, or owners can report to show compliance with more flexible options. Starting January 1, 2012, heavier trucks were required to meet the engine model year schedule shown in Table 3.15-1. Fleets that comply with the schedule must install the best available particulate matter filter on 1996 model year and newer engines, and replace the vehicle 8 years later. Trucks with 1995 model year and older engines must be replaced starting in 2015. Replacements with a 2010 model year or newer engines meet the final requirements, but owners can also replace with used trucks that have a future compliance date on the schedule. For example, a replacement with a 2007 model year engine complies until 2023. By 2023, all trucks and buses must have 2010 model year engines with few exceptions. No reporting is required if complying with this schedule (CARB 2014).

Table 3.15-1
Compliance Schedule by Engine Model Year for Vehicles with a Gross Vehicle Weight Rating 26,000 Pounds or Less

Engine Model Year	Requirements for Heavier Trucks from January 1
Pre-1994	Beginning in 2015, a 2010 engine or better
1994–1995	Beginning in 2016, a 2010 engine or better
1996–1999	PM filter from 2012 to 2020, then 2010 engine or better
2000–2004	PM filter from 2013 to 2021, then 2010 engine or better
2005–2006	PM filter from 2014 to 2022, then 2010 engine or better
2007–2009*	No requirements until 2023, then 2010 engine or better
2010*	Meets final requirement

Source: CARB 2014.
PM = particulate matter
* Required a PM filter by January 1, 2014, if not originally equipped.

Advanced Clean Cars Program

In January 2012, CARB approved the Advanced Clean Cars program, a new emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2011). To improve air quality, CARB created emissions standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that by 2025, cars will emit 75% less smog-forming pollution than the average new car sold in 2011 (CARB 2011). To reduce GHG emissions, CARB, in conjunction with the EPA and NHTSA, adopted GHG standards for model year 2017 to 2025 vehicles; these standards are estimated to reduce GHG emissions by 34% by 2025. The Zero-Emissions Vehicles Program will act as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles (ZEVs) and plug-in hybrid electric vehicles in the 2018 to 2025 model years. The Clean Fuels Outlet regulation will ensure that fuels such as electricity and hydrogen are available to meet the fueling needs of the advanced technology vehicles as they come to the market.

Executive Order B-16-12

Governor Brown issued Executive Order S-16-12 on March 23, 2012. The executive order requires that state entities under the governor's direction and control support and facilitate the rapid commercialization of ZEVs. It ordered CARB, the CEC, the California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve the following by 2015:

- The state's major metropolitan areas will be able to accommodate ZEVs, each with infrastructure plans and streamlined permitting
- The state's manufacturing sector will be expanding ZEV and component manufacturing
- The private sector's investment in ZEV infrastructure will be growing
- The state's academic and research institutions will be contributing to ZEV research, innovation and education

CARB, the CEC, and the California Public Utilities Commission, are also directed to establish benchmarks to help achieve the following goals by 2020:

- The state's ZEV infrastructure will be able to support up to 1 million vehicles
- The costs of ZEV will be competitive with conventional combustion vehicles
- ZEVs will be accessible to mainstream consumers

- There will be widespread use of ZEVs for public transportation and freight transport
- Transportation sector GHG emissions will be falling as a result of the switch to ZEVs
- Electric vehicle charging will be integrated into the electricity grid
- The private sector's role in the supply chain for ZEV component development and manufacturing will be expanding

Benchmarks are also to be established to help achieve the following goals by 2025:

- More than 1.5 million ZEVs will be on California roads and their market share will be expanding
- Californians will have easy access to ZEV infrastructure
- The ZEV industry will be a strong and sustainable part of California's economy
- California's clean, efficient vehicles will annually displace at least 1.5 billion gallons of petroleum fuels

On a statewide basis, Executive Order S-16-12 establishes a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050.

Cap-and-Trade Program

To achieve the goals of AB 32, the Climate Change Scoping Plan: A Framework for Change included an early action to develop a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system (CARB 2008). The cap-and-trade program, which is a key element of California's climate plan, took effect in January 2012, and compliance obligation began in January 2013. The cap-and-trade program sets a statewide limit on sources responsible for 85% of California's GHG emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The cap-and-trade program is designed to provide covered entities the flexibility to seek out and implement the lowest-cost options to reduce emissions. The first phase of the cap-and-trade regulation included electricity generated in and imported into California, large combustion sources (i.e., generally those emitting more than 25,000 metric tons of CO_2 equivalent per year), and certain industrial sectors. The second phase added providers of transportation fuels and other combustion fuels (e.g., natural gas, propane) to the cap-and-trade program. The regulation requires that emissions generated by these facilities and combustion of fuels be reduced over time under a declining "cap."

Renewable Energy Sources

Established in 2002 under SB 1078 and accelerated by SB 107 (2006) and SB 2 (2011), California's RPS obligates investor-owned utilities, energy service providers, and community

choice aggregators to procure 33% of their electricity from renewable energy sources by 2020. Eligible renewable resources are defined in the 2013 RPS to include biodiesel; biomass; hydroelectric and small hydro (30 megawatts or less); Los Angeles Aqueduct hydro power plants; digester gas; fuel cells; geothermal; landfill gas; municipal solid waste; ocean thermal, ocean wave, and tidal current technologies; renewable-derived biogas; multifuel facilities using renewable fuels; solar photovoltaic; solar thermal electric; wind; and other renewables that may be defined later. Governor Jerry Brown signed SB 350 on October 7, 2015, which expanded the RPS by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 includes the goal to double the energy efficiency savings in electricity and natural gas final end uses (such as heating, cooling, lighting, or class of energy uses upon which an energy efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the California Public Utilities Commission, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal. SB 350 also provides for the transformation of the California Independent System Operator into a regional organization to promote the development of regional electricity transmission markets in the western states, and to improve the access of consumers served by the California Independent System Operator to those markets, pursuant to a specified process.

SB 100 (2018) increased the standards set forth in SB 350 establishing that 44% of the total electricity sold to retail customers in California per year by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100% of the retail sales of electricity to California by 2045. This bill requires that the achievement of 100% zero-carbon electricity resources do not increase the carbon emissions elsewhere in the western grid, and that the achievement not be achieved through resource shuffling.

According to PG&E's 2017 Annual Report, 33.1% of PG&E's power came from eligible renewables in 2017 (PG&E 2017). This means that PG&E has already met the 33% renewable source requirement before 2020. This represents the off-site renewable sources available to the project through electricity provided by PG&E.

3.15.2.3 Local

Contra Costa County

Contra Costa County General Plan

The Conservation Element of the Contra Costa County General Plan (Contra Costa County 2005a) contains the following goals and policies that would apply to the proposed project:

Goal 8-K To encourage the use of renewable resources where they are compatible with the maintenance of environmental quality.

Goal 8-L To reduce energy use in the County to avoid risks of air pollution and energy shortages which could prevent orderly development.

Goal 8-R To achieve utilization of oil and gas resources in a manner beneficial to all County residents.

Policy 8-100 Vehicular emissions shall be reduced throughout the County.

Policy 8-101 A safe, convenient and effective bicycle and trail system shall be created and maintained to encourage increased bicycle use and walking as alternatives to driving.

Policy 8-101 A safe and convenient pedestrian system shall be created and maintained in order to encourage walking as an alternative to driving.

The Transportation and Circulation Element of the Contra Costa County General Plan (Contra Costa County 2005b) contains the following goals and policies that would apply to the proposed project:

Goal 5-I To encourage the use of transit.

Goal 5-J To reduce single-occupant auto commuting and encourage walking and bicycling.

Goal 5-L To reduce greenhouse gas emissions from transportation sources through provision of transit, bicycle, and pedestrian facilities.

Policy 5-3 Transportation facilities serving new urban development shall be linked to and compatible with existing and planned roads, bicycle facilities, pedestrian facilities and pathways of adjoining areas, and such facilities shall use presently available public and semi-public rights of way where feasible.

Policy 5-11 The use of freeways for community circulation shall be minimized by prioritizing transit circulation, safe, direct non-motorized routes, and secondarily by additional arterials and expressways.

Policy 5-13 The use of pedestrian and bicycle facilities shall be encouraged. Proper facilities shall be designed to accommodate bikes, pedestrians, and transit.

Policy 5-21 New development shall contribute funds and/or institute programs to provide adequate bicycle and pedestrian facilities where feasible.

Policy 5-23 All efforts to develop alternative transportation systems to reduce peak period traffic congestion shall be encouraged.

Policy 5-24 Use of alternative forms of transportation, such as transit, bike and pedestrian modes, shall be encouraged in order to provide basic accessibility to those without access to a personal automobile and to help minimize automobile congestion and air pollution.

Policy 5-25 Improvement of public transit shall be encouraged to provide for increased use of local, commuter and intercity public transportation.

Policy 5-al Ensure that pedestrian connectivity is preserved or enhanced in new developments by providing short, direct pedestrian connections between land uses and to building entrances.

Policy 5-be Incorporate sidewalks, bike paths, bike lanes, crosswalks, pedestrian cut throughs, or other bicycle pedestrian improvements into new projects.

Policy 5-bg Accommodate cyclists and pedestrians during construction of transportation improvements and other development projects.

On December 4, 2018, the County Board of Supervisors approved a General Plan Amendment addressing energy efficiency and air pollution related to commercial and industrial projects larger than 10,000 square feet, as follows (Contra Costa County 2018a):

Policy 8-113 New commercial and industrial projects exceeding 10,000 square feet of gross floor area shall incorporate measures to reduce or eliminate otherwise preventable air quality impacts and greenhouse gas (GHG) emissions. These measures may include, but are not limited to, requiring usage of zero-emission fleets and equipment, limiting unnecessary truck and equipment idling, reducing on-site

energy consumption, increasing on-site energy generation, reducing fugitive dust emissions, and contributing toward development of renewable energy projects in impacted communities.

Contra Costa County Climate Action Plan

In 2015, the County adopted the Contra Costa County Climate Action Plan (CAP), which provides a GHG emissions inventory, a GHG forecast, a GHG reduction target, and a set of strategies to respond to local contributions to climate change. Based on the state CEQA Guidelines and Bay Area Air Quality Management District criteria, the CAP is considered a qualified GHG reduction strategy (Contra Costa County 2015). The CAP establishes the County GHG reduction goal of reducing GHGs by 15% below 2005 levels by 2020, consistent with AB 32. In addition, the CAP forecasts the potential GHG emissions and potential GHG reductions from proposed measures through 2035. The CAP outlines the reduction efforts in six major GHG source areas: energy efficiency and conservation, renewable energy, land use and transportation, solid waste, water conservation, and government operations. In addition, Appendix E of the County's CAP provides a consistency checklist through which projects can demonstrate consistency and thereby conclude that their impacts related to GHG emissions would be less than significant under CEQA.

Contra Costa County Green Building

The County adopted the 2016 California Green Building Standards Code (CCR, Title 24, Part 11) as part of its building code, and set forth changes, additions, and deletions to the 2016 California Green Building Standards Code in Chapter 74-4, Division 72, of its Municipal Code. Amended elements include Section 5.106.5.3, which sets forth requirements for the number of fully operational electric vehicles for new non-residential construction, and Section 5.408.1.3, which sets forth construction waste stream reduction requirements. The proposed project would be required to comply with these provisions.

Contra Costa Countywide Bicycle and Pedestrian Plan

In 2003, the Contra Costa Transportation Authority adopted the Contra Costa Countywide Bicycle and Pedestrian Plan (CBPP). The CBPP was updated in 2009 to address changes since the adoption of the original CBPP, and again in 2018. The 2018 CBPP sets forth goals, objectives, and policy actions to improve and facilitate bicycle and pedestrian transportation. The CBPP assessed the needs of bicyclists and pedestrians in the County, and identified a set of Countywide improvements that would encourage more people to walk and bicycle. The CBPP lays out the policy framework for the implementation of an overall vision for the County that consists of the following overarching goals (Contra Costa County 2018b):

- Encourage more people to walk and bicycle
- Increase safety and security for pedestrians and bicyclists

- Create a safe, connected, and comfortable network of bikeways and walkways for all ages and abilities
- Increase the livability and attractiveness of Contra Costa's communities and districts
- Equitably serve all of Contra Costa's communities while ensuring that public investments are focused on projects with the greatest benefits

3.15.3 Thresholds of Significance

Section 15126.2(b) and Appendix F of the CEQA Guidelines provide guidance for evaluating whether a development project may result in significant impacts with regard to energy. Based on Section 15126.2(b) and Appendix F of the CEQA Guidelines, a project could have a significant impact on energy consumption if the project would:

a. Result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources.

b. Conflict with existing energy standards and regulations.

c. Place a significant demand on local and regional energy supplies or require a substantial amount of additional capacity.

Methodology

A brief overview of the methodology applied to assess the proposed project's potential impacts is provided below:

Electricity. Proposed project electricity usage data was determined using CalEEMod Version 2016.3.2. Electricity demand within PG&E's service area was obtained from CEC reports (specifically, the California Energy Demand 2018–2030 Revised Forecast and 2017 Integrated Energy Policy Report [CEC 2018a, 2018c]) and the CEC Energy Consumption Database. Electricity demand within the County was obtained from the CEC Energy Consumption Database.

Natural Gas. Proposed project on-site natural gas usage data was estimated using CalEEMod. Regional natural gas demand data was obtained from the California Energy Demand Forecast and CEC Energy Consumption Database. Natural gas demand within the County was obtained from the CEC Energy Consumption Database. Information on natural gas supply was obtained from the 2018 California Gas Report.

Petroleum. Potential impacts were assessed through projected traffic trip generation during construction and operation, as provided by the CalEEMod outputs (Appendix C of this EIR) and the Traffic Impact Analysis Report that was prepared for the project (Appendix H). Fuel

consumption factors were obtained using CalEEMod assumptions. Detailed model outputs and assumptions are included in Appendix C of this EIR.

3.15.4 Impacts Analysis

Impact 3.15-1. The project would not result in wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources. (Less than Significant)

Implementation of the project would increase the demand for electricity and natural gas at the project site and petroleum consumption in the project area during construction and operation relative to existing uses.

Electricity

Construction Use

Temporary electric power for as-necessary lighting and electronic equipment such as computers would be provided by PG&E. The electricity used for such activities would be temporary, would be substantially less than that required for project operation, and would have a negligible contribution to the project's overall energy consumption.

Operational Use

The project would involve construction and operation of airport-related and aviation uses at Byron Airport. The potential development may include up to 274,000 square feet of logistics/warehouse/distribution buildings, 213,000 square feet of light industry/business park, 81,000 square feet of office uses, 91,000 square feet of commercial uses, 128,000 square feet of airport storage, 154,000 square feet of aviation-related buildings, and associated parking. Existing aviation facilities within Byron Airport include 10 acres of aircraft storage area, 4 acres of apron, 125,000 square feet of hangars, and 2,400 square feet of office space. The majority of these existing facilities were constructed when the airport was built in the early 1990s.

The operational phase of the proposed project would require electricity for multiple purposes, including building heating and cooling, lighting, appliances, and electronics. Additionally, the supply, conveyance, treatment, and distribution of water, and the conveyance and/or disposal of wastewater would indirectly result in electricity usage. CalEEMod was used to estimate project emissions from electricity uses (see Appendix C for calculations). Default electricity generation rates in CalEEMod were used (based on the proposed land use and climate zone) and adjusted based on compliance with Title 24 standards for 2019. According to these estimations, the project

would consume approximately 8,741,078 kilowatt hours of electricity per year. This would be a considerable increase in electricity use on the project site.

The electricity demand calculation for the proposed project assumes compliance with Title 24 standards for 2019, which aim to improve the energy efficiency of non-residential buildings.

The project's impacts in the category of GHG emissions was determined to be potentially significant because the proposed project would increase GHG emissions and would not meet the following County CAP requirements (see Section 3.6, Greenhouse Gas Emissions, of this EIR) (Contra Costa County 2015):

- **EE 1:** New nonresidential development will install high efficiency appliances and insulation.
- **RE 1:** New residential and nonresidential development will meet the standards to be solar ready as defined by the California Building Standards Code.
- **LUT 2:** New multifamily (greater than five units) and nonresidential (greater than 10,000 square feet) developments will provide EV charging stations in designated parking spots.
- **LUT 4:** New residential and nonresidential development will be located within one half-mile of a Bay Area Rapid Transit or Amtrak station, or within one quarter-mile of a bus station.

For the proposed project to meet the applicable CAP consistency checklist criteria, Mitigation Measures (MM) GHG-1, MM-GHG-2, and MM-GHG-3 are proposed. MM-GHG-2 requires implementation of design features that would reduce demand for energy use. This includes obtaining Leadership in Energy and Environmental Design (LEED) Certification for building construction where feasible, providing skylights to reduce electricity use, using energy-efficient appliances, and designing proposed buildings to be solar-ready. Furthermore, MM-GHG-3 requires water conservation design features to be incorporated into the proposed project. These measures address and reduce operational electricity usage from the proposed project (see Section 3.6 of this EIR for details).

Additionally, the proposed project would comply with County General Plan Policy 8-113, which requires new commercial and industrial projects exceeding 10,000 square feet of gross floor area to incorporate measures to reduce GHG emissions (Contra Costa County 2018a). County policy also requires County-owned buildings to meet LEED Silver standards or higher. The aviation buildings other than the hangars, which do not have heating or cooling, would meet County requirements. The proposed project's compliance with Title 24 standards, the County's General Plan policies, and MM-GHG-1 and MM-GHG-2 would reduce operational electricity usage resulting from the proposed project. Therefore, the electricity consumption of the proposed project would not be considered inefficient or wasteful, and impacts would be **less than significant.**

Natural Gas

Construction Use

Natural gas is not anticipated to be required during construction of the proposed project. Fuels used for construction would primarily consist of diesel and gasoline, which are discussed below under the "Petroleum" subheading. Any minor amounts of natural gas that may be consumed as a result of project construction would be substantially less than that required for project operation and would have a negligible contribution to the project's overall energy consumption.

Operational Use

Operation of the proposed project would require natural gas for various purposes, including building heating and cooling and service water heating. Default natural gas usage rates in CalEEMod for the proposed land use and climate zone were used and adjusted based on compliance with 2019 Title 24 standards (see Appendix C for calculations). According to these estimations, the project would consume approximately 10,568,394 kBTU per year. The project site does not currently use natural gas. Therefore, natural gas consumption at the project site would substantially increase with the proposed project.

For the proposed project to meet the applicable CAP consistency checklist criteria, MM-GHG-1, MM-GHG-2, and MM-GHG-3 are proposed (see Section 3.6 of this EIR). MM-GHG-2 requires implementation of design features that would reduce demand for energy use. MM-GHG-3 requires water conservation design features to be incorporated into the proposed project that would reduce energy required for water heating. These measures would address and reduce operational natural gas usage from the proposed project (see Section 3.6 of this EIR for details).

Additionally, the proposed project would comply with County General Plan Policy 8-113, which requires new commercial and industrial projects exceeding 10,000 square feet of gross floor area to incorporate measures to reduce GHG emissions (Contra Costa County 2018a). The proposed project's compliance with Title 24 standards, the County's General Plan policies, and MM-GHG-2 and MM-GHG-3 would reduce operational natural gas usage related to the proposed project. Therefore, the natural gas consumption of the proposed project would not be considered inefficient or wasteful, and impacts would be **less than significant.**

Petroleum

Construction Use

Heavy-duty construction equipment associated with construction activities for the proposed project would rely on diesel fuel, as would haul trucks involved in removing the materials from

excavation. Construction workers would travel to and from the project site throughout construction. It is assumed in this analysis that construction workers would travel to and from the site in gasoline-powered passenger vehicles.

Heavy-duty construction equipment of various types would be used during each phase of project construction. The CalEEMod analysis discussed in Section 3.2, Air Quality, and included in Appendix C of this EIR lists the assumed equipment usage for each phase of construction. Based on that analysis, over all phases of construction, diesel-fueled construction equipment would run for an estimated 173,178 hours, as summarized in Table 3.15-2.

Table 3.15-2
Hours of Operation for Construction Equipment

Construction Phase	Hours of Equipment Use
Airport Uses	
Site Preparation	2,240
Grading	7,344
Building Construction	69,156
Paving	3,456
Architectural Coating	438
Aviation Uses	
Site Preparation	1,624
Grading	7,200
Building Construction	72,148
Paving	2,736
Architectural Coating	348
Roadway Construction	
Grubbing/Land Clearing	80
Grading/Excavation	952
Drainage/Utilities/Sub-Grade	480
Paving	144
Roadway Construction	
Grubbing/Land Clearing	288
Grading/Excavation	1,848
Drainage/Utilities/Sub-Grade	2,176
Paving	520
Total	**173,178**

Source: Appendix C.

Fuel consumption from construction equipment was estimated by converting the total CO_2 emissions from each construction phase to gallons using the conversion factors for CO_2 to gallons of gasoline or diesel. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The

Climate Registry 2019). The total estimated diesel fuel consumption from construction equipment for development of the project would be 332,870 gallons.

The estimated GHGs from on-road vehicles were back-calculated based on carbon content (i.e., kilograms of CO_2 per gallon) in order to estimate fuel usage during project construction. The conversion factor for gasoline is 8.78 kilograms per metric ton CO_2 per gallon, and the conversion factor for diesel is 10.21 kilograms per metric ton CO_2 per gallon (The Climate Registry 2019).

Based on CalEEMod estimates, approximately 1,160 one-way haul trips would be required over the course of the construction period. The vehicle miles traveled (VMT) per trip is assumed to be approximately 20 miles, equating to 23,200 VMT. Based on the carbon content of diesel, hauling would consume approximately 3,998 gallons of petroleum.

In addition to haul trucks, vendor trucks would travel to and from the project site to deliver materials. Based on CalEEMod estimates, approximately 336,672 one-way vendor truck trips would occur over the construction period. VMT per trip is assumed to be approximately 13 miles, equating to 4,376,736 VMT total (Appendix C). Based on the carbon content of diesel, vendor trucks would consume approximately 674,392 gallons of petroleum during project construction.

Fuel would also be consumed by construction workers traveling to and from the project site throughout the construction period. The number of construction workers required would vary based on the construction phase and activity. Using CalEEMod estimates, construction would result in 865,088 one-way worker trips, and each trip would be 13 miles in length. As such, construction worker commute trips would result in 11,246,144 VMT. Based on the carbon content of gasoline, workers would consume approximately 362,308 gallons of petroleum during project construction. This estimate is conservative given that it does not account for carpooling or use of public transit by construction workers.

In summary, the proposed project is conservatively anticipated to consume approximately 1,373,567 gallons of petroleum during the construction phase, which would last approximately 10 years (extending approximately from January 2019 through December 2028). By comparison, California's consumption of petroleum is approximately 76 million gallons per day and approximately 28 billion gallons of petroleum per year (EIA 2019b). Based on these assumptions, approximately 280 billion gallons of petroleum would be consumed in California over the course of the construction period. Construction of the proposed project would, therefore, equate to 0.0005% of the total amount of petroleum that would be used statewide during the course of the construction period. Although construction activities would consume petroleum-based fuels, consumption of such resources would be temporary and would cease upon completion of construction. Further, the petroleum consumed related to project construction would be typical of

construction projects of similar types and sizes, and would not necessitate new petroleum resources beyond what is typically required for California.

Operational Use

During operations, the majority of fuel consumption resulting from the proposed project would involve the use of vehicles traveling to and from the project site. Traffic trips were estimated based on the land uses specified in Chapter 2, Project Description, of this EIR, and by adjusting default weekday trip rates in CalEEMod to match those included in the Transportation Impact Analysis Report (Appendix H) for the land use types. The same adjustment factors used for the weekday trip generation were applied to the default Saturday and Sunday trip rates in CalEEMod. Increased trip lengths for potential customers based on the rural location of the project, as well as the project specific vehicle-miles-traveled (VMT) for employees, are described in Chapter 3.13, Transportation, of this EIR. Non-work trip lengths were increased to account for potentially greater travel distance for deliveries. Project-related traffic was assumed to include a mixture of vehicles in accordance with the model outputs for traffic. Annual operational gasoline demand and diesel demand were quantified.

Gas fuel consumption associated with motor vehicles traveling to and from the project site is a function of VMT as a result of project operation. As shown in Appendix C (CalEEMod outputs), the annual VMT attributable to the proposed project is expected to be 39,193,242 (Appendix C). Total estimated gasoline demand during project operation is approximately 1,131,713 gallons per year, and total estimated diesel demand is approximately 297,758 gallons per year. By comparison, California as a whole consumes approximately 28 billion gallons of petroleum per year (EIA 2019b). The anticipated increase in consumption associated with 1 year of project operation is 0.005% of the statewide use.

Over the lifetime of the project, the fuel efficiency of the vehicles visiting the project site is expected to increase. As such, the amount of petroleum consumed as a result of vehicular trips to and from the project site during operation would decrease over time. As discussed under Section 3.15.2, Relevant Plan, Policies, and Ordinances, numerous regulations are in place that require and encourage increased fuel efficiency. For example, CARB has adopted an approach to passenger vehicles by combining the control of smog-causing pollutants and GHG emissions into a single package of standards. This approach also includes efforts to support and accelerate the number of plug-in hybrids and ZEVs in California (CARB 2013). Additionally, in response to SB 375, CARB adopted the goal of reducing per-capita GHG emissions from 2005 levels by 107% by 2020, and 18% by 2035 for light-duty passenger vehicles in the Association of Bay Area Governments planning area, which includes the County (CARB 2018). As such, operation of the project is expected to use decreasing amounts of petroleum over time due to advances in fuel economy. In addition, for the proposed project to meet the applicable CAP consistency checklist criteria, MM-

GHG-1, MM-GHG-2, and MM-GHG-3 are proposed. MM-GHG-1 requires implementation of transit-oriented and alternative transportation development design features into the project to reduce the use of single-occupancy fossil-fueled vehicles and VMT. This measure addresses and reduces operational GHG emissions resulting from the proposed project (see Section 3.6 of this EIR for details).

The project site is located and the proposed project was designed to take advantage of the airport and several nearby highways. By efficiently using County-owned land with access to multiple transportation modes, the project, despite lacking transit access, is locationally efficient. In addition, creating employment opportunities for the largely residential communities in the eastern part of the County would be beneficial in terms of transportation energy by shortening commute times (instead of going to job-rich areas such as the Bay Area). Given the restraints on residential development related to airport operations, industrial, commercial, and aviation uses at this location would not be a wasteful or inefficient use of energy resources.

In summary, although the proposed project would cause an increase in petroleum use during construction and operation, vehicles would use less petroleum due to advances in fuel economy over time. Furthermore, MM-GHG-1 would require implementation of design features that would encourage electric vehicle and zero/low-emission vehicle use and promote ridesharing and commute trip-reduction strategies. Given these considerations, the petroleum consumption associated with the proposed project would not be considered inefficient or wasteful, and impacts would be **less than significant**.

Impact 3.15-2. The project would not conflict with existing energy standards and regulations. (Less than Significant Impact)

The proposed project would be subject to and would comply with the California Building Energy Efficiency Standards (24 CCR, Part 6). Part 6 of Title 24 establishes energy efficiency standards for residential and non-residential buildings constructed in California to reduce energy demand and consumption. Part 11 of Title 24 sets forth voluntary and mandatory energy measures that are applicable to the proposed project under the CALGreen. As discussed for Impact 3.15-1, the project would result in an increased demand for electricity, natural gas, and petroleum. In accordance with Title 24 Part 11 mandatory compliance, the proposed project would have (a) at least 50% of its construction and demolition waste diverted from landfills; (b) mandatory inspections of energy systems to ensure optimal working efficiency; (c) low-pollutant emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring and particle boards; and (d) a 20% reduction in indoor water use. Furthermore, the proposed project would comply with the County General Plan, including General Plan Policy 8-113, which requires new commercial and industrial projects exceeding 10,000 square feet of gross floor area to incorporate measures to reduce GHG emissions (Contra Costa County 2018a). County-owned buildings are

designed to meet a standard of LEED Silver or greater. Because the project would comply with and exceed the existing energy standards and regulations, a **less than significant impact** would result due to conflicts with energy standards and regulations.

Impact 3.15-3. The project would not place a significant demand on local and regional energy supplies or require a substantial amount of additional capacity. (Less than Significant)

Electricity

As described in Section 3.15.1, Existing Conditions, electricity is supplied to the project site by PG&E. As of 2017, approximately 104,148 GWh of electricity was used in PG&E's service area annually (CEC 2018d). Annual retail sales of electricity in PG&E's service area are forecasted to be approximately 124,805 GWh in 2029 (CEC 2018a). Upon implementation of the proposed project, the amount of electricity used at the project site is anticipated to increase by 8,741,078 kilowatt hours per year (Appendix C). This increase represents 0.008% of PG&E's existing demand and approximately 0.007% of PG&E's total forecasted electricity sales in 2029 (near the time of project buildout). As such, under both existing and future conditions, the increase in electricity demand at the project site would be negligible relative to the electricity use in PG&E's service area. Furthermore, the increase in electricity demand at the project site would be accommodated within the amount of electricity that PG&E is anticipated to provide in its service area in 2029. Within the County, annual non-residential electricity use is approximately 6,809 GWh per year, as reported by the state's Energy Consumption Database for 2017 (CEC 2018f). The increase in electricity consumption associated with the proposed project represents approximately 0.1% of the County's total annual demand for non-residential uses. As such, the increase in electricity usage in the County attributable to the proposed project would not constitute a substantial amount that would place a significant demand on local and regional energy supplies, or require a substantial amount of additional capacity.

Natural Gas

As described in Section 3.15.1, natural gas would be supplied to the project site by PG&E. As of 2017, approximately 4,743 million therms of natural gas were used in PG&E's service area per year (CEC 2018h). Around the time of project buildout in 2029, natural gas demand is anticipated to be approximately 4,865 million therms per year in PG&E's service area (CEC 2018i). The total capacity available is anticipated to be 44 million therms per day. This equates to 17 billion therms per year, which is well above both existing and future anticipated demand.

Upon implementation of the proposed project, the amount of natural gas used at the project site per year is anticipated to increase by 10,463,756 kBTU relative to existing conditions. This amount

of natural gas is equivalent to 104,638 therms.[3] The expected increase in use represents approximately 0.002% of PG&E's existing 2017 demand and 0.002% of PG&E's future 2029 demand. The increase in natural gas consumption attributable to the proposed project is approximately 0.01% of the County's annual natural gas demand for non-residential uses. As such, the increase in natural gas usage in the County attributable to the proposed project would not constitute a substantial amount that would place a significant demand on local and regional energy supplies, or require a substantial amount of additional capacity.

Petroleum

The proposed project would increase the use of petroleum relative to existing conditions at the project site. During the construction phase, it is anticipated that approximately 1,373,567 gallons of petroleum would be used. This amount is approximately 0.0005% of the total amount of petroleum that would be used statewide during the course of the construction period. During operation, the increase in number of vehicles traveling to and from the project site would result in petroleum consumption of 1,429,471 gallons per year. This equates to 0.005% of yearly gasoline use throughout the state. As described in Section 3.15.1, the United States produces approximately 840 million gallons per year (EIA 2019b). The increase in petroleum use attributable to the proposed project would be negligible relative to petroleum production in the United States. Additionally, policies are in place at the state and federal levels to increase fuel efficiency over time. Increasing efficiency of vehicles over the lifetime of the project is also anticipated to result in incremental reductions in the project's operational fuel use.

For the reasons described above, the proposed project's energy use falls well within local and regional energy supplies. The proposed project's anticipated energy consumption would be minimal relative to both existing energy consumption and future consumption at both the local and regional scale. Further, as substantiated in the calculations above, the increase in electricity and natural gas usage attributable to the proposed project falls within anticipated increases in PG&E's electricity and natural gas demands, and the proposed project would not create a significant demand on supplies or require substantial additional capacity to provide electricity or natural gas services. Regarding petroleum, fuel economy is expected to increase over time, and even without such reductions in future petroleum use, petroleum use associated with the proposed project would be negligible relative to current use and production. Therefore the proposed project would not create a significant demand on petroleum supplies or require substantial additional petroleum services capacity. Impacts would be **less than significant**.

[3] One therm is equal to 100,000 BTU or 100 kBTU. 10,738,663 kBTU ÷ 100 = 107,387 therms

3.15.5 Mitigation Measures

As discussed above, energy impacts related to the proposed project would be less than significant. The project would comply with federal, state, and local policies and standards for conservation of energy. County GHG reduction policies, which also serve to reduce energy demand, would be ensured through implementation of MM-GHG-1, MM-GHG-2, and MM-GHG-3. No additional mitigation measures are required.

3.15.6 Level of Significance After Mitigation

Impacts would be less than significant without implementation of additional mitigation measures.

3.15.7 Cumulative Impacts

Impact 3.15-3 considers future demand by energy uses. Impacts 3.15-1 and 3.15-2 would not be affected by other projects, since the interaction with future development identified in the General Plan would not affect the efficiency of the project or consistency with applicable plans.

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CHAPTER 4
ALTERNATIVES

4.1 INTRODUCTION

The purpose of the alternatives evaluation in an Environmental Impact Report (EIR), as stated in Section 15126.6(c) of the California Environmental Quality Act (CEQA) Guidelines, is to ensure that the range of potential alternatives to the proposed Byron Airport Development Program (project) includes those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects identified by the proposed project. Pursuant to CEQA Guidelines Section 15126.6, an analysis of alternatives to the proposed project is presented in this Draft EIR to provide the public and decision makers with a range of possible alternatives. The CEQA Guidelines state that an EIR must describe a reasonable range of alternatives that would avoid or substantially lessen any significant effects of the project, but need not consider every conceivable alternative. The CEQA Guidelines further state that "the discussion of alternatives shall focus on alternatives to the project or its location [that] are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Guidelines, Section 15126.6[b]). Therefore, an EIR must describe a range of reasonable alternatives to a proposed project (or to its location) that could feasibly attain most of the basic objectives of the project. The feasibility of an alternative may be determined based on a variety of factors, including, but not limited to, site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and site accessibility and control (CEQA Guidelines, Section 15126.6[f][1]).

Alternatives in an EIR must be potentially feasible (CEQA Guidelines, Section 15126.6([a]). Agency decision makers ultimately decide what is "actually feasible" (*California Native Plant Society [CNPS] v. City of Santa Cruz [2009] 177 Cal. App. 4th 957, 981*). Under CEQA, "feasible" is defined as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines Section 15364). The concept of "feasibility" also encompasses the question of whether a particular alternative or mitigation measure promotes the underlying goals and objectives of a project (*Sierra Club v. County of Napa [2004] 121 Cal.App.4th 1490, 1506-1509; CNPS, supra, 177 Cal. App. 4th at p. 1001; In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings [2008] 43 Cal.4th 1143, 1165, 1166*). Moreover, "'feasibility' under CEQA encompasses 'desirability' to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors" (*City of Del Mar v. City of San Diego [1982] 133 Cal.App.3d 410, 417*).

An EIR need not evaluate the environmental effects of alternatives in the same level of detail as the proposed project, but must include enough information to allow meaningful evaluation, analysis, and comparison with the proposed project. The alternatives discussion is intended to focus on alternatives to the proposed project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede, to some degree, the attainment of the project objectives (see Section 4.1.1, Project Objectives).

The lead agency's decision-making body, in this case the Contra Costa County Board of Supervisors, has the discretion to select a project alternative in lieu of the proposed project. If this were to occur, the County Board of Supervisors would need to ensure that the level of detail included in the alternatives analysis is adequate and that there would not be any new or significant impacts as a result of selecting the alternative. The required Findings of Fact and Mitigation Monitoring and Reporting Plan would need to be prepared that identifies the alternative as the project selected for approval. It is anticipated that if one of the project alternatives is selected, the mitigation measures identified for the proposed project would not change and would still be required; depending on the alternative selected, that alternative may require additional mitigation measures where impacts are more severe than the proposed project.

This chapter identifies the project objectives, describes the project alternatives, and evaluates the comparative effects of the alternatives relative to the proposed project. As required under Section 15126.6(e) of the CEQA Guidelines, the environmentally superior alternative is identified and included at the end of this chapter.

4.1.1 Project Objectives

Pursuant to CEQA Guidelines, Section 15126.6(a), an alternative should feasibly attain most of the basic objectives of the project. The project objectives are stated in Section 2.3, Project Objectives, and repeated below:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts.
- Achieve economic self-sufficiency of the airport through the development of airport-related land uses.
- Protect current and future airport operations from incompatible land uses.
- Provide a streamlined planning framework for development consistent with the General Plan and the Airport Land Use Compatibility Plan (ALUCP).

4.1.2 Alternatives Considered but Dismissed from Further Consideration

CEQA Guidelines Section 15126.6(c) requires an EIR to identify and briefly discuss any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process. Alternatives that would have the same or greater impacts as the proposed project, that would not meet most of the project objectives, or that were otherwise infeasible were dismissed from further consideration. This alternative considered but rejected is described below.

Off-Site Alternative

CEQA Guidelines Section 15126.6(f)(2) states than an EIR should consider whether any of the significant effects of a proposed project would be avoided or substantially reduced by putting the project in another location. In addition, the lead agency must determine the feasibility of an off-site alternative.

Where a project is consistent with an approved General Plan, consideration of an off-site alternative is not required, per *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 (*Goleta II*). The EIR "is not ordinarily an occasion for the reconsideration or overhaul of fundamental land-use policy" (*Goleta II, supra, 52 Cal.3d at p. 573*). In approving a General Plan, the local agency has already identified and analyzed suitable alternative sites for particular types of development and has selected a feasible land use plan. "Informed and enlightened regional planning does not demand a project EIR dedicated to defining alternative sites without regard to feasibility. Such ad hoc reconsideration of basic planning policy is not only unnecessary, but would be in contravention of the legislative goal of long-term, comprehensive planning" (*Goleta II, supra, 52 Cal.3d at pp. 572–573*).

There are two airport locations identified in the Contra Costa General Plan: Buchanan Field Airport and Byron Airport. No other airport locations are considered. It is a basic objective of the proposed project to locate development on airport property that would economically benefit the airport and create economic self-sufficiency. The types of development envisioned at the project site would benefit from the proximity of the airport. Furthermore, the Contra Costa County General Plan prohibits industrial and commercial development adjacent to airports to prevent future land conflicts from restricting the operations of the airport (Contra Costa County 2005a). Therefore, off-site development would not meet a basic project objective. Furthermore, additional development at Buchanan Field Airport would not meet the project objectives. Buchanan Field Airport is located adjacent to an urban area, the City of Concord, and has a higher level of development on and around the airport. This development supports Buchanan Field Airport economically. Additional development there would only widen the disparity between the two airports in terms of supportive development.

4.2 ALTERNATIVES CONSIDERED

This section provides a description of the alternatives to the proposed project analyzed in this Draft EIR, and evaluates how specific impacts differ in severity from those associated with the proposed project.

The alternatives to the proposed project analyzed in this Draft EIR are as follows:

Alternative 1: No Project/Aviation Only

Alternative 2: Aviation Expansion

Alternative 3: Reduced Intensity

4.2.1 Alternative 1: No Project/Aviation Only

Basis for Consideration

An EIR alternatives analysis must include the "no project" alternative to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (CEQA Guidelines Section 15126.6[e][1]). The no project discussion follows one of two lines of analysis: (1) where the project includes a change to a land use plan or policy (including zoning), what kind of development would reasonably be expected to occur under existing plans and considering available infrastructure and services, or (2) if no development would occur (the "no build" alternative), what would the effects be of the project site remaining in its existing state compared to the circumstances if the proposed project were approved.

The approved Byron Airport Master Plan and Airport Layout Plan (Appendix D to the Airport Master Plan) identify additional aviation development to support the anticipated growth in airport operations. These include aircraft storage, cargo facilities, maintenance and repair, corporate hangars and fixed-base operators, and expanded pilot and passenger facilities (Contra Costa County 2005b, 2016). Aviation uses are consistent with the existing P-1 zoning and the ALUCP for Byron Airport, and were evaluated in the 1985 EIR prepared for the siting and development of Byron Airport. Therefore, some level of development should be considered in the "no project" scenario, consistent with the CEQA Guidelines. However, existing infrastructure is inadequate to serve even the build-out of the current master planned aviation uses. It is, therefore, assumed that aircraft storage could accommodate the additional 62 based aircraft. Supporting facilities would be limited to 20,000 to 40,000 square feet—the estimated amount of development that could be supported by the septic system based on existing use and capacity (Mead & Hunt 2013).

Description

It is assumed that based aircraft and operations would increase, consistent with the Airport Master Plan. This alternative assumes that 167 aircraft would be based at the airport within 10 years (compared to the current estimate of 105). Airport storage, including hangars and tie-downs, would be constructed to accommodate additional aircraft. New structures would be limited to 20,000 to 40,000 square feet due to limitations in water, sewer, and stormwater infrastructure. Development would occur in the aviation area, adjacent to existing airport facilities, as identified in Chapter 2, Project Description. No development would occur in the non-aviation area east of the main runway. Acquisition of the residence in the northeast corner of the project site would not occur.

Comparative Analysis of Environmental Effects

The No Project/Aviation Only Alternative would avoid all significant and unavoidable impacts associated with the proposed project (see Table 4-1). This alternative would include some construction activities and additional facilities, so certain construction-related impacts would be potentially significant, but these would be mitigated through implementation of feasible mitigation measures identified for that project. These measures would be for impacts to biology, cultural resources, geology, hazards, and hydrology.

Relationship to Proposed Project Objectives

The No Project/Aviation Only Alternative would, for the most part, achieve the aviation-related objectives of the project, as follows:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts.
- Protect current and future airport operations from incompatible land uses.

This alternative would not achieve the objectives related to economic development or financial self-sufficiency.

4.2.2 Alternative 2: Aviation Expansion

Basis for Consideration

The Aviation Expansion Alternative is similar to the No Project/Aviation Only Alternative (see above), but assumes that additional infrastructure would be constructed for full build-out of the aviation area. This alternative would reduce significant impacts related to transportation and related health risks, greenhouse gas emissions, and noise. Since traffic generation from new development east of the main runway (including vendors, employees, and visitors) would not occur, this alternative is expected to substantially reduce those impacts.

Description

It is assumed that based aircraft and operations would increase consistent with the Airport Master Plan. A total of 11.8 acres would be dedicated to future airport storage (including hangars and tie-downs). Up to 154,000 square feet of aviation-related buildings would be constructed within an area of 11.8 acres. No development would occur in the airport-related area east of the main runway. Acquisition of the residence in the northeast corner of the project site would not occur.

Comparative Analysis of Environmental Effects

Since no development would occur east of the main runway, the three houses near the airport would not be affected, avoiding impacts related to health risk and noise (due to increased traffic). Transportation impacts would be substantially reduced (because of reduced number of truck traffic, vendors, employees, and visitors). The potentially significant (but mitigatable) aesthetics impact of large structures east of the airport would also be avoided. Associated greenhouse gas emissions would also be substantially reduced. Construction impacts related to expansion of the aviation uses, including impacts to biology, cultural resources, geology, hazards, hydrology, and public utilities, would still occur, but would be mitigated by feasible mitigation measures, as described throughout this EIR.

Relationship to Proposed Project Objectives

The Aviation Expansion Alternative would achieve the aviation-related objectives of the project, as follows:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts.
- Protect current and future airport operations from incompatible land uses.

This alternative would not achieve the objectives related to economic development or financial self-sufficiency.

4.2.3 Alternative 2: Reduced Intensity

Basis for Consideration

The Reduced Intensity Alternative is based on the initial development scenario for the proposed project. This scenario did not include an update of the ALUCP, so the intensity of proposed development was constrained. Since several of the significant project impacts are related to the intensity of development, particularly in proximity to residential uses east of the airport, this reduced-intensity alternative provides a useful comparison. This alternative would use the same development footprint as the proposed project, but would not include acquisition of the 11.7-acre parcel. Due to the

reduced amount of acreage, potential office and commercial uses would be eliminated from the development scenario, and that acreage would be added to the warehousing uses.

Description

Based aircraft and operations would increase consistent with the Airport Master Plan because aviation expansion would still occur on the 23.5 acres designated for aviation uses. The development footprint would be similar to the proposed project, but the intensity would be reduced. The floor-to-area ratio of logistics/warehouse/distribution would be reduced to 0.25 (from 0.30 for the proposed project). Office and commercial development would be eliminated, and the potential acreage for those uses would be used for logistics/warehouse/distribution. The 11.7-acre parcel adjacent to the airport-related development would not be acquired. The development scenario is shown in Table 4-1, Reduced Intensity Alternative.

Table 4-1
Reduced Intensity Alternative

	Available Acres	FAR	Building Area (KSF)	Employees and Visitors (per KSF)	Employees and Visitors	Persons per Acre
Non-Aviation Uses	*46.6*	—	—	—	—	—
Logistics/Warehouse/Distribution	21.0	0.25	229	1.0	229	11
Light Industry/Business Park	14.0	0.35	213	1.4	298	21
Total Non-Aviation Use	*35.6*	—	*484*	—	*1,213*	—
Aviation Uses	*23.5*	—	—	—	—	—
Aircraft Storage	11.8	0.25	128	0.3	32	3
Aviation	11.8	0.3	154	0.5	77	7
Total Aviation Use	*23.5*	—	*282*	—	*109*	—
TOTAL	**58**	**—**	**723**	**—**	**636**	**—**

FAR = floor-to-area ratio; KSF = thousand square feet

Total building area would be reduced to 723,000 square feet, as opposed to the proposed project amount of 941,000 square feet. Total employees and visitors would not exceed 636 at any given time, as opposed to 1,528 for the proposed project.

Comparative Analysis of Environmental Effects

Transportation impacts would be reduced by eliminating commercial and office uses. However, truck traffic would be similar to the proposed project, since this alternative could result in 484,000 square feet of warehouse/light industrial uses compared to 487,000 for the proposed project. Traffic impacts would still likely be significant but reduced, with a corresponding decrease in the amount of mitigation required. Associated greenhouse gas emissions would also be reduced, but likely not to a

less-than-significant level. Since warehousing and light industrial uses would still be constructed east of the airport, impacts related to health risk would still potentially occur, but could be mitigated. The potentially significant (but mitigatable) aesthetics impact of large structures east of the airport would also be avoided, since warehousing would be less dense and farther from existing homes. Construction impacts related to expansion of the aviation uses, including impacts to biology, cultural resources, geology, hazards, hydrology, and public utilities, would still occur, but would be mitigated by feasible mitigation measures described throughout this EIR.

Relationship to Proposed Project Objectives

The Reduced Intensity Alternative would achieve the aviation-related objectives of the project, as follows:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts.
- Protect current and future airport operations from incompatible land uses.

This alternative would not fully achieve the economic objectives:

- Achieve economic self-sufficiency of the airport through the development of airport-related land uses.
- Provide a streamlined planning framework for development consistent with the General Plan and the ALUCP.

4.3 COMPARISON OF ALTERNATIVES

Table 4-2, Environmental Comparison of Alternatives, shows the potentially significant environmental impacts of the proposed project prior to implementation of mitigation measures compared to the potential effects of the project alternatives. If a project alternative would have new or substantially greater impacts than the proposed project, this is also noted in the table.

Table 4-2
Environmental Comparison of Alternatives

Impact	Proposed Project	Alt 1: No Project/ Aviation Only	Alt 2: Aviation Expansion	Alt 3: Reduced Intensity
Aesthetics				
Impact 3.1-2. The project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings.	LSM	LS	LS	LS

Table 4-2
Environmental Comparison of Alternatives

Impact	Proposed Project	Alt 1: No Project/ Aviation Only	Alt 2: Aviation Expansion	Alt 3: Reduced Intensity
Air Quality				
Impact 3.2-4. The project could expose sensitive receptors to substantial pollutant concentrations.	LSM	LS	LS	LSM
Biological Resources				
Impact 3.3-1. The project would not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	LSM	LSM	LSM	LSM
Impact 3.3-2. The project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	LSM	LSM	LSM	LSM
Impact 3.3-3. The project would not have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrologic interruption, or other means.	LSM	LS	LS	LSM
Cultural Resources				
Impact 3.4-1. The project may cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.	LSM	LS	LS	LSM
Impact 3.4-2. The project may cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5.	LSM	LSM	LSM	LSM
Impact 3.4-3. The project may disturb human remains, including those interred outside of dedicated cemeteries.	LSM	LSM	LSM	LSM
Impact 3.4-4. The project may cause a substantial adverse change in the significance of a tribal cultural resource.	LSM	LSM	LSM	LSM
Geology and Soils				
Impact 3.5-4. The project would be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	LSM	LSM	LSM	LSM

Table 4-2
Environmental Comparison of Alternatives

Impact	Proposed Project	Alt 1: No Project/ Aviation Only	Alt 2: Aviation Expansion	Alt 3: Reduced Intensity
Impact 3.5-5. The project may have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	LSM	LSM	LSM	LSM
Impact 3.4-6. The project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LSM	LSM	LSM	LSM
Greenhouse Gas Emissions				
Impact 3.6-1. The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	S	LS	LS	S–
Impact 3.6-2. The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	S	LS	LS	S–
Hazards and Hazardous Materials				
Impact 3.7-1. The project has the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LSM	LSM	LSM	LSM
Impact 3.7-2. The project has the potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LSM	LSM–	LSM–	LSM
Hydrology and Water Quality				
Impact 3.8-3. The project would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (a) result in substantial erosion or siltation on or off site; (b) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site; (c)create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or (d) impede or redirect flood flows.	LSM	LSM	LSM	LSM

Table 4-2
Environmental Comparison of Alternatives

Impact	Proposed Project	Alt 1: No Project/ Aviation Only	Alt 2: Aviation Expansion	Alt 3: Reduced Intensity
Land Use and Planning				
3.9-2. The project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LS[1]	LS	S	S
Noise				
Impact 3.10-1. The project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	S	LS	LS	S–
Traffic and Circulation				
Impact 3.13-1. The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance or the circulation system.	S	LS	LS	S–
Impact 3.13-4. The project would potentially increase hazards due to an incompatible on the roadway system.	LSM	LS	LS	LSM
Public Utilities				
Impact 3.14-1. The project would result in the construction of new or expanded water, wastewater treatment, storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.	LSM	LS	LSM–	LSM

LS = less than significant; LSM = less than significant with mitigation; S = significant
– indicates less impact relative to the proposed project.

[1] The proposed project includes a General Plan Amendment and ALUCP update to allow higher levels of development. With the proposed amendments/update, the project would not conflict with applicable plans. However, a project alternative that does not include these plan updates may be found to conflict with existing plans and policies for protection of the environment, and could, therefore, result in a significant impact.

4.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines require that an EIR identify the environmentally superior alternative (Section 15126.6 [e][2]). If the environmentally superior alternative is the No Project Alternative, the EIR must identify an environmentally superior alternative from among the other alternatives. As shown in Table 4-2, the No Project Alternative is the environmentally superior alternative, so the Aviation Expansion Alternative is considered the environmentally superior alternative per CEQA. The lead agency must still consider the ability of the environmentally superior alternative to achieve the project objectives.

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CHAPTER 5
OTHER CEQA CONSIDERATIONS

5.1 EFFECTS FOUND NOT TO BE SIGNIFICANT

Section 15128 of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) briefly describe potential environmental effects that were determined not to be significant and therefore were not discussed in detail in the EIR. The following environmental issues are not considered potentially significant for the reasons discussed.

5.1.1 Agriculture and Forestry Resources

The following environmental issues to agricultural and forestry resources, per Appendix G of the CEQA Guidelines, were considered but were determined to have no potential for significant effects related to the proposed Byron Airport Development Program (project) for the reasons stated below.

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Per the California Department of Conservation Farmland Mapping and Monitoring Program, the project site, including the airport property and the acquisition parcel, are classified as grazing land, farmland of local importance, and urban (FMMP 2016). Therefore, there is are no lands that would be affected by the project that meet the definition of important farmland under CEQA.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

The airport property is zoned P-1, Planned Development (Contra Costa County 2005). The P-1 zone does allow for agricultural uses, but is not an exclusive agricultural zoning under the Contra Costa County Zoning Ordinance. In addition, no active farming operations are present on the airport property.

The acquisition parcel is zoned A-3, Heavy Agriculture. However, land use of the parcel is a single-family home and is not actively used for agriculture.

There are no Williamson Act contracts on the project site. There are two contracts, No. 21-73 and No. 4-78, east of Byron Airport. These contracted lands would not be affected by project construction or operation.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

There are no timberland zoning districts on or adjacent to the project site, and there are no forest land resources on the project site.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The project site and project vicinity do not contain forest lands.

e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The proposed project is the expansion of aviation uses and the development of airport-related commercial and industrial land uses. The project would not introduce residences or other sensitive land uses that could create conflicts with agricultural operations. Agriculture is generally considered a compatible use with a public-use airport.

5.2 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with implementation of feasible mitigation measures. The environmental impacts of the proposed project, including significant and unavoidable impacts, are discussed in the technical sections contained in Chapter 3, Environmental Setting and Impacts, of this EIR. Significant and unavoidable impacts are also listed below:

Impact 3.2-1. The project would conflict with or obstruct implementation of the applicable air quality plan.

Impact 3.2-2. The project would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable Federal or State ambient air quality standard.

Impact 3.6-1. The project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Impact 3.6-2. The project would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Impact 3.10-1. The project would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Impact 3.13-1. The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance or the circulation system.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL IMPACTS

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental change that would be caused by a proposed project. Generally, a project would result in significant irreversible changes if:

- The primary and secondary impacts would generally commit future generations to similar uses (such as highway improvement that provides access to a previously inaccessible area);
- The project would involve a large commitment of nonrenewable resources (CEQA Guidelines Section 15126.2[c]);
- The primary and secondary impacts would generally commit future generations to similar uses;
- The project would involve uses in which irreversible damage could result from any potential environmental accidents associated with the project;
- The project would involve a large commitment of nonrenewable resources; or
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy).

Implementation of the proposed project would result in the long-term commitment of resources of the project site to the operation of Byron Airport and supportive development. The location of Byron Airport was selected to minimize land use impacts and to provide on-site mitigation for biological resources affected by development of the airport.

Ongoing resource use by the project would include water, electricity, natural gas, and fossil fuels. With respect to operational activities, compliance with all applicable state and local building codes, as well as mitigation measures described in the EIR, would ensure that resources are conserved to the maximum extent possible. Energy usage and conservation related to the project are discussed in Section 3.15, Energy Consumption.

The CEQA Guidelines also require a discussion of the potential for irreversible environmental damage caused by environmental accidents associated with a project. Although the project would result in the use, transport, storage, and disposal of minor amounts of hazardous materials during

project construction and operation, as described Section 3.7, Hazards and Hazardous Materials, all such activities would comply with applicable local, state, and federal laws related to the use, storage, and transport hazardous materials, which would significantly reduce the likelihood and severity of accidents that could result in irreversible environmental damage. The project itself does not propose any uniquely hazardous uses that would require any special handling or storage.

5.4 GROWTH-INDUCING IMPACTS

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must discuss ways in which a proposed project could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment.

The proposed project would involve activities at Byron Airport consistent with the Airport Master Plan, which would foster planned economic growth. Aviation uses would be expanded to accommodate the growth in airport operations and planned growth consistent with Federal Aviation Administration forecasts. Development of airport-related commercial and industrial uses would support economic self-sufficiency at the airport while promoting a jobs/housing balance in eastern Contra Costa County. The environmental effects of economic growth (project activities) are discussed within this EIR.

The potential for population growth or housing construction is discussed in Section 3.11, Population, Housing, and Growth, which concludes that the proposed project would not result in unplanned population or housing growth.

5.5 REFERENCES CITED

Contra Costa County. 2005. Contra Costa County Zoning Map. Accessed September 2019. https://gis.cccounty.us/Html5//index.html?viewer=CCMAP.

FMMP (Farmland Mapping and Monitoring Program). 2016. Contra Costa County Important Farmland. California Department of Conservation. August 2016.

CHAPTER 6
LIST OF PREPARERS

6.1 CONTRA COSTA COUNTY

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6.2 DUDEK

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Corinne Price, Technical Editor
Sabita Tewani, AICP, Transportation

6.3 SUBCONSULTANTS

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APPENDIX A

Notice of Preparation

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Kara Douglas
Assistant Deputy Director

FILED
SEP 20 2017
J.E. CANCIAMILLA COUNTY CLERK
CONTRA COSTA COUNTY
BY _____ DEPUTY

September 20, 2017

NOTICE OF PREPARATION and NOTICE OF PUBLIC SCOPING MEETING
for a
DRAFT ENVIRONMENTAL IMPACT REPORT
on the
BYRON AIRPORT DEVELOPMENT PROGRAM

TO: RESPONSIBLE AND TRUSTEE AGENCIES, AND OTHERWISE INTERESTED AGENCIES, ORGANIZATIONS, AND INDIVIDUALS

The Contra Costa County Department of Conservation and Development (DCD), at the request of the Contra Costa County Public Works Department – Airports Division, is preparing a draft environmental impact report (DEIR) for the Byron Airport Development Program (General Plan Amendment and Final Development Plan applications, County File Numbers GP12-0003 and DP14-3008, respectively). DCD is the lead agency for preparation of the DEIR and is issuing this Notice of Preparation pursuant to Section 15082 of the California Environmental Quality Act (CEQA) Guidelines.

PROJECT DESCRIPTION

Existing General Plan policies and zoning regulations for Byron Airport prohibit most of the uses necessary for the airport to reach its aviation potential and achieve economic self-sufficiency. To promote economic development, the County intends to amend its Airport Land Use Compatibility Plan, General Plan, and Planned Unit District zoning to substantially broaden the range of uses allowed by-right on airport property. This will include a variety of aviation uses (terminal, hangers, fixed-base operators, aircraft sales, aviation-supporting businesses, etc.) and airport-compatible uses (light industry, warehousing and distribution, general commercial and retail, offices, etc.) Approximately 835,000 square feet of new development is planned. See Exhibit 1, *Byron Airport Development Program Project Description* and its attachments, for a more complete project description.

PROJECT LOCATION

Byron Airport is located in unincorporated eastern Contra Costa County. The airport is within the County's Urban Limit Line, between Vasco Road and Byron Highway, approximately 2.5 miles south of the community of Byron and 2.5 miles north of the Alameda County line. The airport property is approximately 1,427 acres, though the proposed project involves only about 73 acres. The airport's address is 550 Eagle Court, Byron. The center of the main runway is located at latitude 37°49'52" N and longitude 121°37'34" W.

Assessor's Parcel Numbers: 001-011-013, 001-011-033, 001-011-037, 001-031-023.

ANTICIPATED IMPACTS

Pursuant to CEQA Guidelines Section 15060(d), DCD did not prepare an Initial Study prior to commencing work on the EIR. DCD anticipates the project may result in potentially significant impacts in the following CEQA topic areas: Aesthetics; Air Quality; Biological Resources; Cultural Resources; Geology and Soils; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Hydrology and Water Quality; Land Use and Planning; Noise; Public Services; Transportation/Traffic; Tribal Cultural Resources; Utilities and Service Systems; Cumulative Impacts; and Growth Inducing Impacts. DCD anticipates no significant impacts in the areas of Agricultural and Forestry Resources; Mineral Resources; Population and Housing; and Recreation. However, all resource areas and relevant CEQA issues will be evaluated in the DEIR.

PUBLIC COMMENTS

All responsible and trustee agencies, and otherwise interested agencies, organizations, and individuals, are invited to submit comments regarding the scope and content of the DEIR.

Written responses to this Notice of Preparation must be received at the following address by 4:00 p.m. on Friday, October 20, 2017:

Department of Conservation and Development
30 Muir Road
Martinez, CA 94553
Attention: William Nelson

The County File Numbers indicated above should be included in all correspondence.

PUBLIC SCOPING MEETING

The County Zoning Administrator will conduct a scoping meeting on **Monday, October 16, 2017, at 3:30 p.m.** in the offices of the Department of Conservation and Development located at 30 Muir Road, Martinez, California. At this meeting anyone may submit oral or written comments pertaining to the scope and content of the DEIR.

BACKGROUND DOCUMENTS

The background documents for this project are available for review at the offices of the Department of Conservation and Development. Many of the documents are also available at www.contracosta.ca.gov/5632/Byron-Airport-Land-Use-Modifications.

If you wish to obtain copies of any documents related to this project, please contact me at (925) 674-7791 or william.nelson@dcd.cccounty.us.

Sincerely,

William R. Nelson
Principal Planner
Contra Costa County
Department of Conservation and Development

Exhibit

1. Byron Airport Development Program Project Description with Attachments A-E

BYRON AIRPORT DEVELOPMENT PROGRAM
PROJECT DESCRIPTION

PROJECT LOCATION

Byron Airport is located in southeastern Contra Costa County, approximately 2.5 miles south of the community of Byron (see Attachment A). The airport property consists of 1,427 acres, of which 934 are reserved for habitat management. The center of the main runway is located at latitude 37°49'52" N and longitude 121°37'34" W.

PROJECT SETTING

The airport is located on the western edge of the flat San Joaquin Valley agricultural lands, which give way to rolling hills and grasslands west of the airport. Byron Hot Springs, a now abandoned resort and former World War II POW camp, is located just north of the airport property. Several rural residential uses are on the east and west sides of the airport. To the south is protected open space. Nearby unincorporated communities include Byron to the north, Discovery Bay 4 miles to the northeast, and Mountain House (San Joaquin County) approximately 4 miles southeast. Clifton Court Forebay, the point of origination for the California Aqueduct, is located less than 2 miles due east, Bethany Reservoir is approximately 3 miles to the south, and Los Vaqueros Reservoir is 6 miles to the west. The elevation of the airport property is 30 to 100 feet above mean sea level. See Attachment B.

PROJECT BACKGROUND

Studies carried out in the late 1970s/early 1980s identified the need for one or more additional airports in Contra Costa County to relieve the aircraft parking and operational pressures on Buchanan Field Airport in Concord. Continued urbanization in the western and central sections of the county made it impossible to develop a new airport in those areas.

The County focused its attention on finding a site for a new airport in the less-populated eastern part of the county. An environmental impact report (EIR) was prepared, and the County Board of Supervisors selected Byron Airpark to provide aviation facilities for the residents of the East County area. The County purchased Byron Airpark in 1986, prepared and adopted an Airport Master Plan, and a new airfield was constructed in the early 1990s. Byron Airport opened to the public in 1994.

In 2005, the County adopted a revised Airport Master Plan. In keeping with FAA guidelines, the Plan involves a 20-year planning period with 2003 as the base year. Individual airport improvement recommendations are oriented to 5- (2008), 10- (2013) and 20-year (2023) planning horizons. The intent of the Master Plan is to provide the County with guidance concerning how the airport should develop over the 20-year planning period. In 2016, the

County updated the Airport Layout Plan (ALP) component of the Master Plan. The updated ALP is the graphic representation of the long-term development plan for the airport and depicts the amount of space dedicated to meeting the projected aviation demand over the next 20 years.

The Master Plan/updated ALP identifies two development areas within the airport boundary. A 34.7-acre area identified for aviation uses, generally located west of the intersection of the two runways, is reserved for uses directly associated with the function of the airport, such as a terminal, hangars, fixed base operator, aircraft maintenance, fueling facilities, airport administrative offices, etc. Approximately 86 acres are designated for airport-related uses and are generally located east of the runways. The majority of this acreage could be developed with certain aviation uses and airport-compatible uses, such as light industry and general commercial. This area could be leased to private entities, thereby providing a revenue stream for the airport. The County is reserving the remaining area, approximately 30 acres, for infrastructure and/or protection of the airfield.

The airport is currently served by limited utility infrastructure. A well is located in the reserved area and a septic field is located immediately west of the runway intersection. There are no connections to public water or sewer systems. PG&E provides electrical service, but not natural gas. The Master Plan and subsequent Infrastructure Study for Byron Airport identified the need to upgrade much of the utility infrastructure if full build-out of the airport is to be realized.

PROJECT OBJECTIVES

The County has identified the following project objectives:

- Develop airport facilities to support the types of development envisioned in the Airport Master Plan and subsequent airport planning efforts;
- Achieve economic self-sufficiency of the airport through development of airport-related land uses;
- Protect current and future airport operations from incompatible land uses; and
- Provide a unified planning framework for development consistent with the Contra Costa County General Plan and Contra Costa County Airport Land Use Compatibility Plan (ALUCP), as amended.

PROJECT OVERVIEW

The County's long-term goal is for Byron Airport to reach its aviation potential and achieve economic self-sufficiency. However, the current General Plan policies and zoning regulations for the airport do not allow for establishment of most of the uses necessary to attain this goal. In addition, the proposed land uses are not consistent with the current ALUCP for Byron Airport.

The County ALUCP, which covers Buchanan Field and Byron Airport, was adopted in 2000, prior to the 2011 revision of the *California Airport Land Use Planning Handbook* (Handbook) prepared by the California Department of Transportation, Aeronautics Division (Caltrans). The Byron Airport portion of the 2000 County ALUCP is more restrictive in terms of allowable use intensities compared to the policies in place at Buchanan Airport and the current *Handbook*. Therefore, the County intends to amend its General Plan, zoning, and ALUCP to enable airport development as envisioned in the 2005 Master Plan/updated ALP.

The General Plan Land Use and Transportation and Circulation Elements would be amended to include policies that update and clarify the range of aviation, aviation-related, and non-aviation uses and activities intended for the airport property, similar to those already adopted for Buchanan Field.

The current Planned Unit District (P-1) zoning for the airport would be amended, through a modification to the airport's Final Development Plan, to permit all of the aviation and aviation-related uses listed in Attachment E either by-right or with approval of a land use (conditional) permit. The County intends to establish an approval process that would allow most uses to be permitted without further CEQA review. Thus, the impacts associated with these uses must be analyzed as part of this General Plan Amendment and zoning modification.

The ALUCP would be amended to provide new policies specific to Byron Airport and new safety/compatibility zones. The amended policies would reflect airport data presented in the 2017 ALP for Byron Airport, the 2005 Master Plan, and guidance set forth in the most recent version of the Caltrans *Handbook*.

PROPOSED LAND USES

Within the airport property are four sub-areas: Aviation Reserve, Aviation-Related, Low-Intensity Use, and Habitat Management Land. These areas are further described below and are shown on Attachments C and D (which includes an overlay of the proposed ALUCP safety/compatibility zones).

Aviation Reserve Area

The 34.7-acre area designated Aviation Reserve consists of areas directly adjacent to the taxiways and runways that support operation of the airport. The Aviation Reserve area is adjacent to a developed 10.4-acre aircraft storage area and 9.7-acre aircraft parking area. Proposed land uses in the Aviation Reserve area include airport infrastructure (such as a control tower, a terminal, etc.), hangars, fixed-base operators, businesses and uses that directly support aviation and travel (such as aircraft service and fuel, rental car facilities, pilots lounge, meeting facilities, etc.), and businesses that are aviation based (agricultural aviation, aerial surveys and

photography, air charter businesses, air cargo, etc.). A limited amount of aviation-related uses would be allowed in this area under certain conditions.

Aviation-Related Area

Approximately 86 acres of the airport are designated for Aviation-Related uses. Approximately 30 of these acres are reserved for infrastructure and protection of the airfield and are not available for development. The remaining 56 acres would support commercial and light-industrial uses that are compatible with airport operations and would benefit from being located proximate to State Route 4, Interstate 205, and Interstate 580. A variety of retail, service, warehouse and distribution, and light manufacturing uses will be permitted in this area.

Low-Intensity Use Area

Approximately 31 acres adjacent to the ends of the runways and within the "no build" area adjacent to the primary runway are designated as Low-Intensity Use. Only meteorological infrastructure, navigational equipment, and golf courses would be permitted by-right within this area.

Habitat Management Land

The majority of the Byron Airport property, approximately 934 acres, is owned and managed by the County as habitat, consistent with the East Contra Costa County Habitat Conservation Plan. No development is proposed on these lands.

REQUIRED AGENCY ACTIONS

Table 1 lists the actions that will be required to implement the proposed project.

Table 1 Agency Actions

Agency	Potential Action	Reliance on Program/Project EIR
Contra Costa County	Approval of General Plan Amendment	Certify as Lead Agency
	Approval of Planned Unit Zoning (Development Plan) Modification	
Contra Costa County Airport Land Use Commission	Approval of Airport Land Use Compatibility Plan Amendment	Rely upon EIR as a Responsible Agency
East Contra Costa County Habitat Conservancy	Review and approve individual development programs/projects	Rely upon EIR as a Responsible Agency

In addition, the California Department of Fish and Wildlife (CDFW) may review the EIR in their role as a Trustee Agency under CEQA. No discretionary action is being requested of CDFW at this time, but future projects may require CDFW actions that would rely upon this EIR.

Caltrans Division of Aeronautics will review and may comment on the ALUCP Amendment, but does not have approval authority over the project.

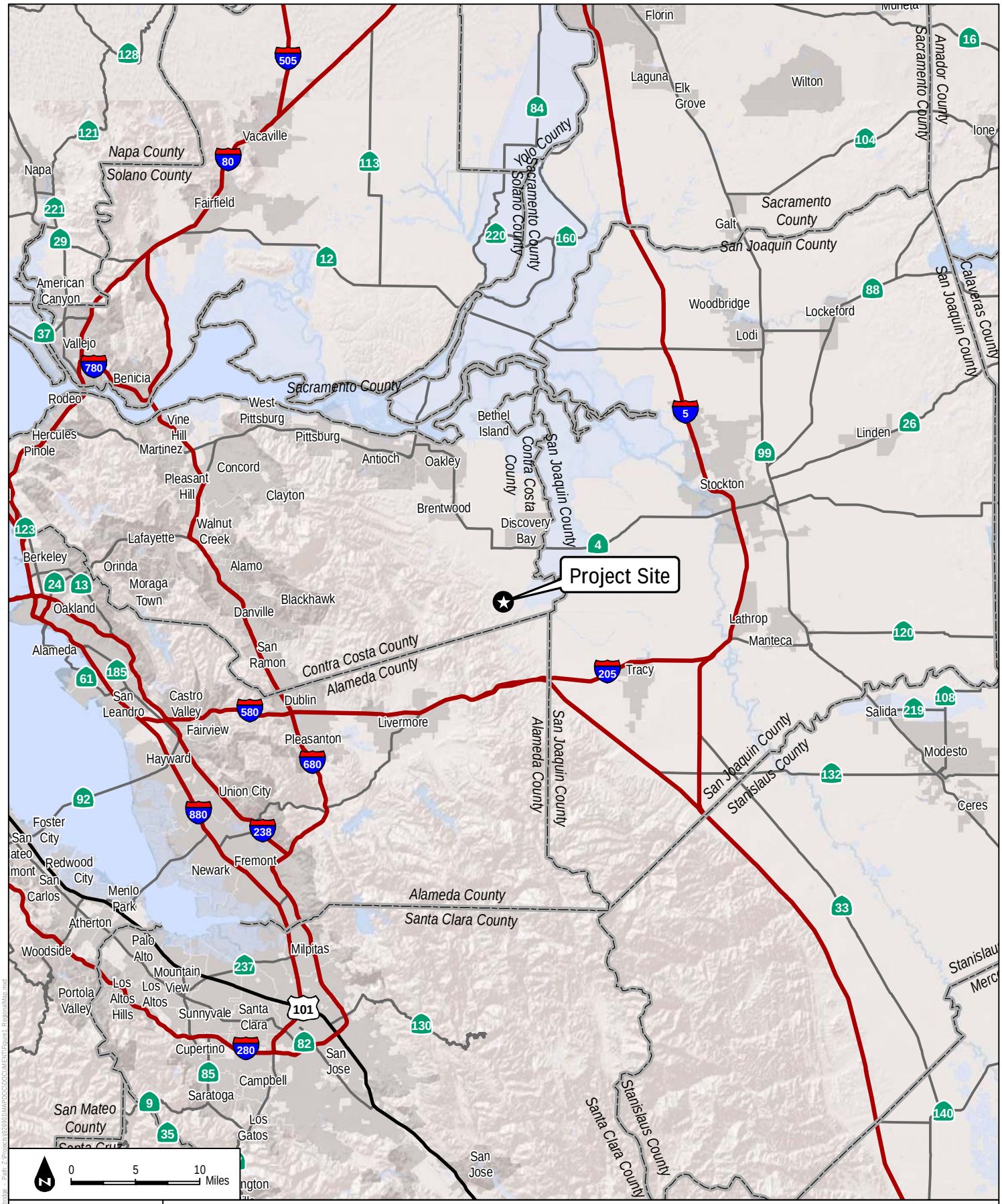
FUTURE DEVELOPMENT AND ENVIRONMENTAL REVIEW

The Program/Project EIR prepared for the General Plan Amendment, zoning modification, and ALUCP Amendment is intended to streamline future development at the airport. Approval of land uses that are permitted "by-right" within the P-1 zoning district would be ministerial actions. Uses identified as "Conditional" (i.e., requiring a land use permit) would be subject to discretionary review, and it is intended that this Program/Project EIR would provide the basis of any future review under CEQA. If a subsequent discretionary project would, due to the nature of the specific use or its location, result in potential impacts that were not identified in the Program/Project EIR as significant, or would be substantially greater than those identified in the EIR, a tiered CEQA document could be prepared to address only those project- or site-specific issues that resulted in the need for additional analysis.

Attachments

A. Regional Map
B. Vicinity Map
C. Site Map
D. Proposed Safety Zones/Compatibility Map
E. Proposed Permitted and Conditional Land Uses

ATTACHMENT A

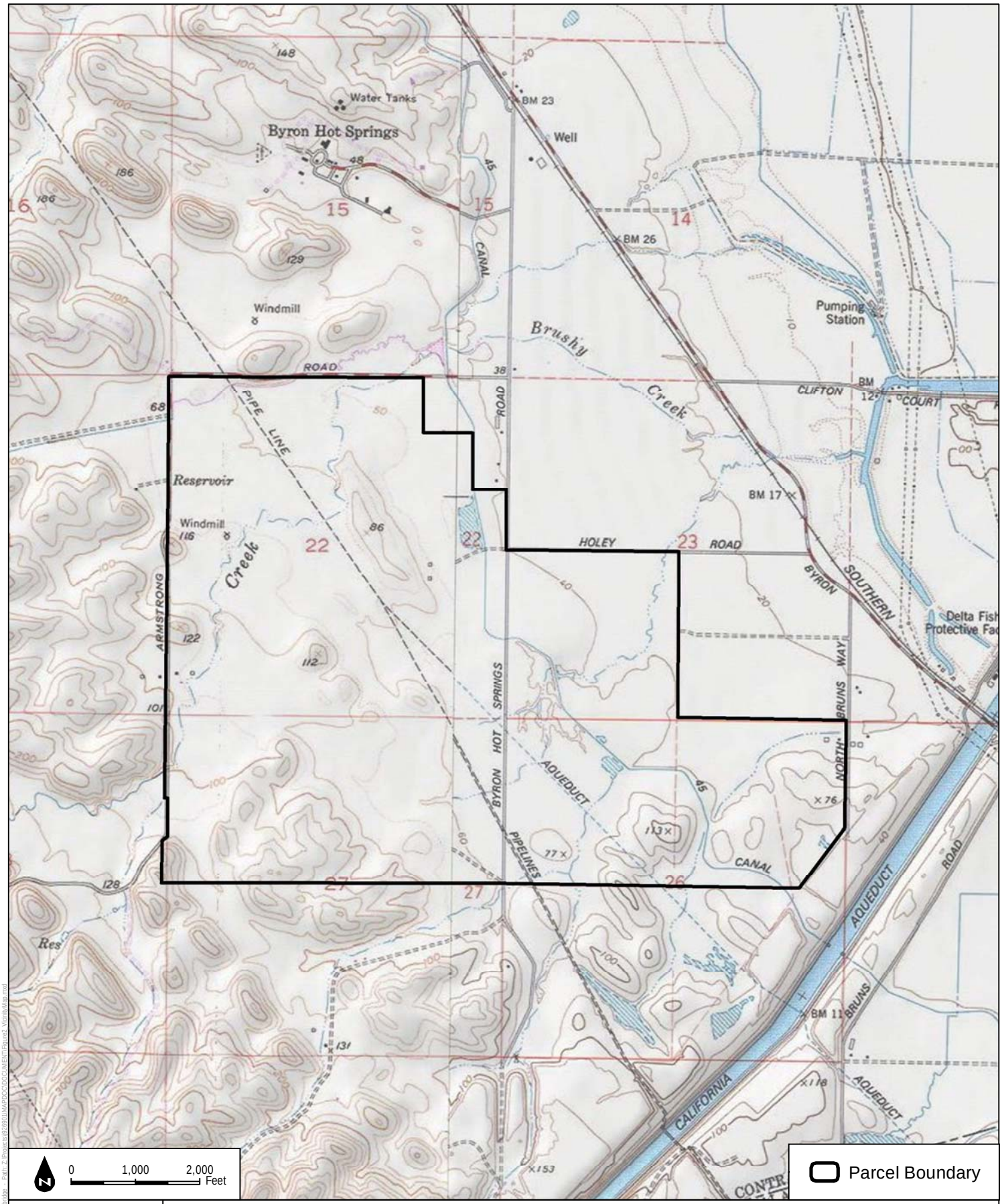


DUDEK

Regional Map

Byron Airport Biological Resources Assessment

ATTACHMENT B



DUDEK

SOURCE: USGS 7.5-Minute Series Byron Hot Springs & Clifton Court Forebay Quadrangles

Vicinity Map

Byron Airport Biological Resources Assessment

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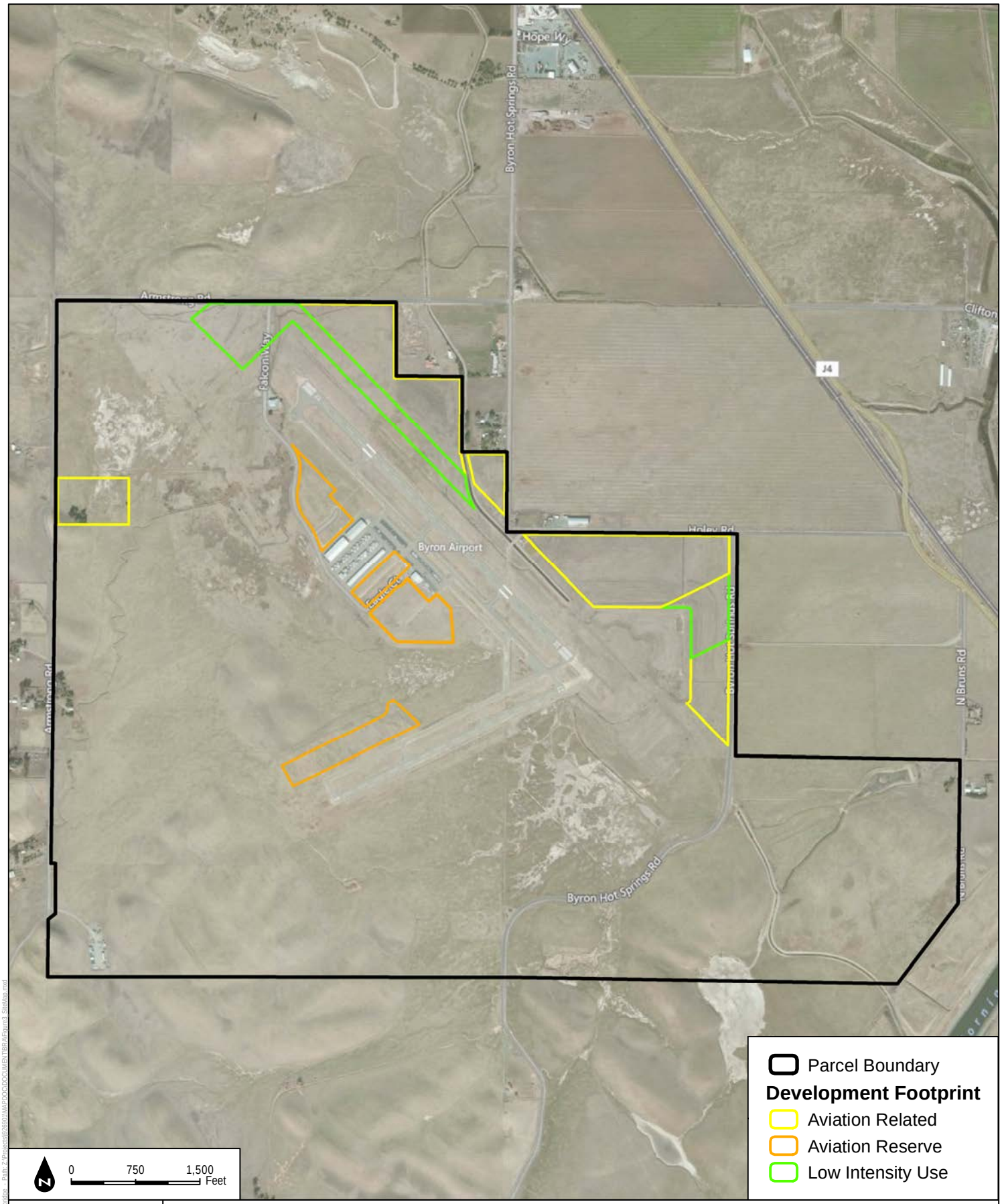
ATTACHMENT C

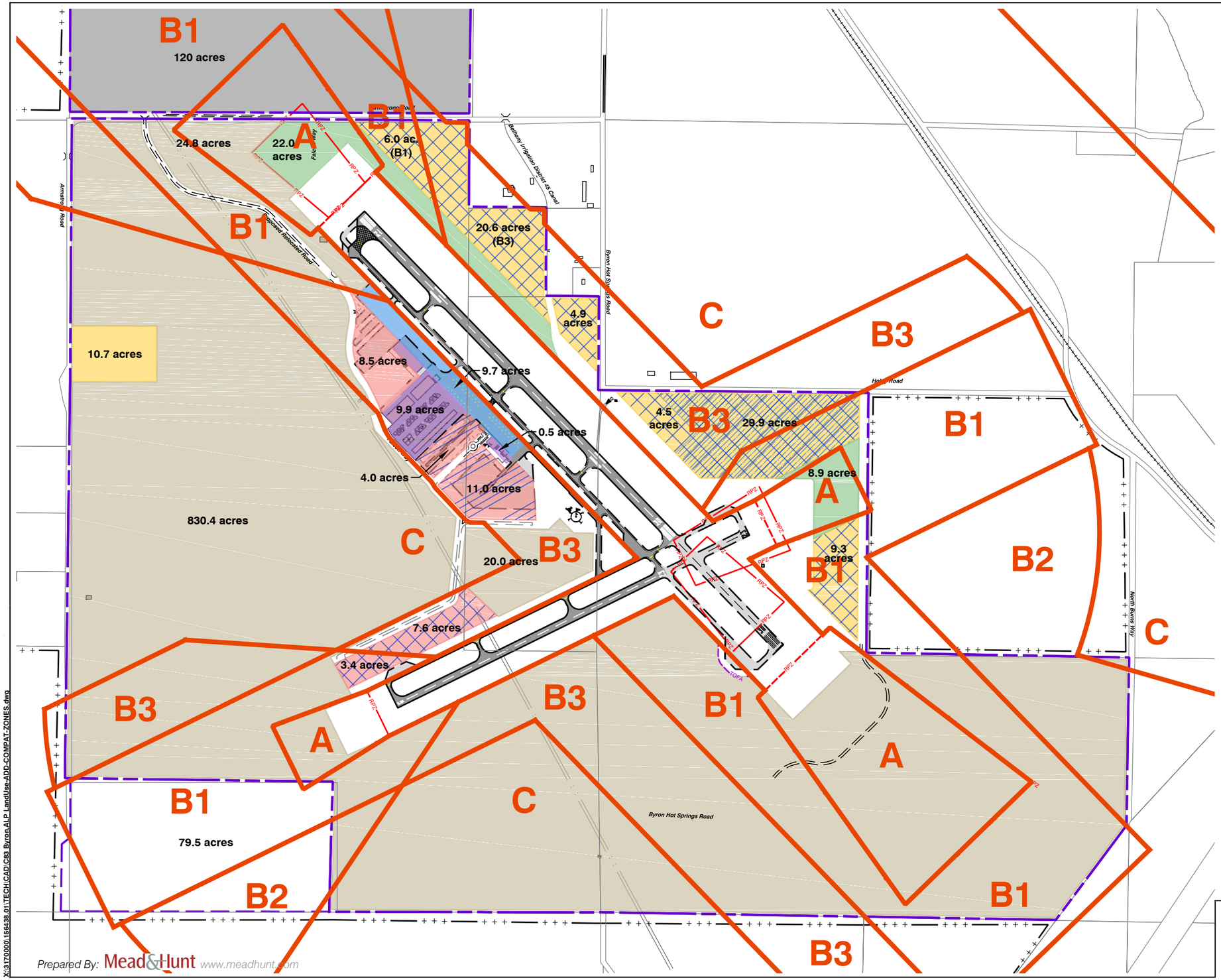


DUDEK

SOURCE: Bing Maps (Accessed 2016), Mead & Hunt (2015)

Site Map

Byron Airport Biological Resources Assessment



Legend

Compatibility Zones

Proposed Safety Zones

Boundary Lines

Airport Property Line

LAND USE LEGEND		
	LAND USE	TOTAL ACRES
	AIRPORT RELATED	86.8
	AVIATION RESERVE	34.5
	AIRCRAFT STORAGE	10.4
	AIRCRAFT PARKING	9.7
	LOW INTENSITY USE	30.9
	HABITAT MANAGEMENT LAND	875.2
	NEAR-TERM DEVELOPMENT	23.5
	LONG-TERM DEVELOPMENT	86.5

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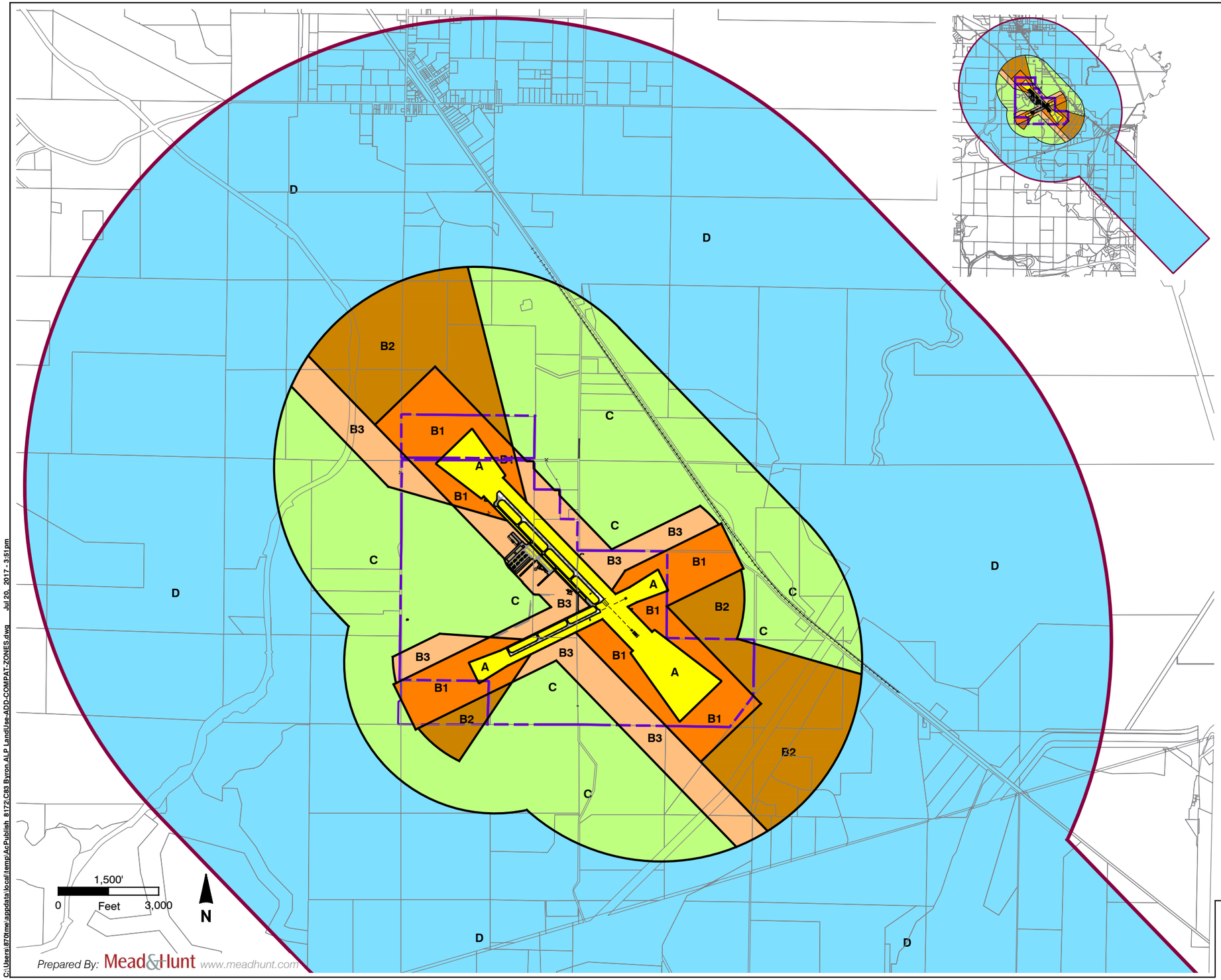
Proposed Safety Zones

Byron Airport



Legend

Compatibility Zones

- Airport Influence Area Boundary
- Zone A
- Zone B1
- Zone B2
- Zone B3
- Zone C
- Zone D
- Height Review Overlay Zone

Boundary Lines

- Airport Property Line

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Compatibility Map

Byron Airport

Attachment E
Proposed Permitted and Conditional Land Uses

P		**Permitted Use (By-Right) [1]**			
L		**Land Use Permit Required (Conditional)**			
-		**Use Not Allowed**			
Land Use Category		**Land Use Area**			
	Aviation Reserve [2]	**Aviation Related**	**Low Intensity Use**	**Habitat Management Land**
AGRICULTURE AND OPEN SPACE USES					
Open space	-	-	P	P
AVIATION USES					
Aerial advertising	P	P	-	-
Aerial photography and surveying services	P	P	-	-
Aerial power line and pipeline patrol	P	P	-	-
Agricultural aviation and crop dusting	P	P	-	-
Air cargo and related services/activities	P	P	-	-
Air charter and air taxi services	P	P	-	-
Aircraft maintenance, repair, and servicing, including line maintenance and specialized maintenance (avionics, upholstery, propeller, helicopters, aircraft components, aircraft accessories, specific aircraft engines, aircraft detailing, specific pilot supplies, and the like)	P	P	-	-
Aircraft management and flight support	P	P	-	-
Aircraft rental and leasing	P	P	-	-
Aircraft and aircraft parts sales	P	P	-	-
Aircraft tie-downs and parking	P	P	-	-

P	Permitted Use (By-Right) [1]
L	Land Use Permit Required (Conditional)
-	Use Not Allowed

Land Use Category	Land Use Area			
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
Aircraft washing and washing facilities	P	P	-	-
Airport administrative offices	P	P	-	-
Airport infrastructure (including aviation fueling facilities)	P	P	-	-
Any other type of aeronautical activity or service not listed but is recognized and permissible by the FAA	P	P	-	-
Automobile parking, short and long-term	P	P	L	-
Automobile rental	P	P	-	-
Aviation education programs (public, private or non-profit)	P	P	-	-
Aviation museum	P	P	-	-
Aviation-based recreation such as flying clubs, sightseeing, and skydiving	P	P	-	-
Concessions/catering/vending facilities: FBO, publicly owned or operated, or third party facilities	P	P	-	-
Civil Air Patrol	P	P	-	-
Commercial aircraft operations and services	P	P	-	-
Control tower and equipment	P	P	-	-
Courtesy customer transportation to nearby destinations	P	P	-	-
Fixed base operator (FBO)	P	P	-	-
Flight schools, instruction, and training, including flight simulators	P	P	-	-

P	**Permitted Use (By-Right) [1]**
L	**Land Use Permit Required (Conditional)**
-	**Use Not Allowed**

Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
General aviation terminal	P	P	-	-
Ground services including, but not limited to, aircraft towing, baggage handling, power starts, air starts, lavatory services, potable water, aircraft cleaning, cabin supplies, and other related services not listed	P	P	-	-
Hangars (corporate/executive, commercial and individual (including T-hangars)	P	P	-	-
Meeting space and business center	P	P	-	-
Meteorological infrastructure and equipment	P	P	P	-
Navigational antennas and equipment	P	P	P	-
Office space for aviation and aviation-related businesses	P	P	-	-
Pilot lounge	P	P	-	-
Recycling facility (aviation-related materials)	P	P	-	-
Rental car offices and facilities	P	P	-	-
Restrooms independent of other uses	P	P	-	-
Sales of aviation fuel, oil, and petroleum products	P	P	-	-
Trade schools/vocational training (aviation)	P	P	-	-
Travel agency, including hotel and automobile reservations	P	P	-	-

P	**Permitted Use (By-Right) [1]**
L	**Land Use Permit Required (Conditional)**
-	**Use Not Allowed**

Land Use Category		Land Use Area		
	Aviation Reserve [2]	**Aviation Related**	**Low Intensity Use**	**Habitat Management Land**
Unmanned aerial systems fleet monitoring activities and services	P	P	-	-
Weather and flight planning services	P	P	-	-
COMMERCIAL USES				
Automobile/vehicle and equipment sales, repair/service, storage, and facilities	P	P	-	-
Banks and financial institutions [3]	P	P	-	-
Building materials sales, storage, and service	-	P	-	-
Business support services [3]	P	P	-	-
Conference, convention, and meeting facilities (public or private)	P	P/L	-	-
Cultural and entertainment facilities and services	-	L	-	-
Food and beverage establishments, sales, and services [4]	P	P	-	-
General commercial, wholesale, and retail businesses	-	P	-	-
Golf course (public or private)	-	P	P	-
Offices (business, professional, administrative/executive, medical/dental, multi-tenant) [3]	P	P	-	-
Parking facility	P	P	-	-
Sports/recreational facilities, including commercial facilities	-	L	L	-
Trade schools/vocational training (non-aviation) [3]	P	P	-	-

P	**Permitted Use (By-Right) [1]**
L	**Land Use Permit Required (Conditional)**
-	**Use Not Allowed**

Land Use Category	Land Use Area			
	Aviation Reserve [2]	**Aviation Related**	**Low Intensity Use**	**Habitat Management Land**
LIGHT INDUSTRY, MANUFACTURING & PROCESSING USES [5]				
Agricultural-industrial: limited processing, storage, and sales [6]	-	P	-	-
Assembly of products [3]	P	P	-	-
Business equipment assembly, services, and sales [3]	P	P	-	-
Computer systems research and development [3]	P	P	-	-
Container/package shipping and storage	-	P	-	-
Corporate offices [3]	P	P	-	-
Distribution and storage	-	P	-	-
Equipment repair and maintenance (non-aviation) [3]	P	P	-	-
Furniture manufacturing	-	P	-	-
Electronic repair and assembly [3]	P	P	-	-
General food and beverage manufacturing and processing [6]	-	P	-	-
Machine shop	P	P	-	-
Packaging	P	P	-	-
Pharmaceutical manufacturing	-	P	-	-
Printing and publishing companies, book binding	-	P	-	-
Recycling facility (non-aviation materials) [7]	-	L	-	-
Research and development, including testing and laboratories [8]	-	P	-	-

P	**Permitted Use (By-Right) [1]**
L	**Land Use Permit Required (Conditional)**
-	**Use Not Allowed**

Land Use Category	Land Use Area			
	Aviation Reserve [2]	**Aviation Related**	**Low Intensity Use**	**Habitat Management Land**
Self-storage	-	P	-	-
Software development [3]	P	P	-	-
Technology manufacturing and support industries [3, 8]	P	P	-	-
Warehouses [3]	P	P	-	-
PUBLIC FACILITY USES				
Emergency services (i.e., law enforcement, fire protection)	P	P	-	-
Government services (non-aviation) [3]	P	P	-	-
Public transit and shuttle stops	P	P	-	-
Public utilities	P	P	-	-

P		Permitted Use (By-Right) [1]			
L		Land Use Permit Required (Conditional)			
-		Use Not Allowed			
Land Use Category		Land Use Area			
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land	

Notes:

[1] All permitted uses are subject to compliance with adopted design and development standards and must be consistent with the Airport Land Use Compatibility Plan (ALUCP). Any use not defined as permitted shall not be allowed unless determined by the Planning Director to be sufficiently similar in nature to a permitted use. Any use determined to be inconsistent with the ALUCP or that poses a hazard to aircraft operation shall be prohibited.

[2] All uses within the Aviation Reserve Area must be consistent with the approved Airport Layout Plan (ALP) and consistent with FAA regulation and guidance.

[3] If located within the Aviation Reserve area, these uses must be within a building and may not exceed 30 percent of the gross floor area.

[4] Food and beverage establishments are permitted in the Aviation Reserve area if they are accessory to a primary use. No more than two stand-alone food and beverage establishments, such as fast-food restaurants, may be established on airport property. See also catering (FBO, publicly operated, or third party).

[5] All manufacturing and processing must be conducted entirely within an enclosed building.

[6] Subject to the County determination that water demand can be adequately served.

[7] Must be conducted within an enclosed building. Recycling of hazardous materials, including household hazardous waste, paint, batteries, etc. is subject to approval of a land use permit.

[8] Subject to the County determination that the equipment to be used does not have the potential for interference with airport operations.

APPENDIX B

NOP Comments

CALIFORNIA
Water Boards

Edmund G. Brown Jr.
Governor

Matthew Rodriquez
Secretary for
Environmental Protection

Central Valley Regional Water Quality Control Board

CONTRA COSTA
2017 OCT 19 P 3:53
DEPARTMENT OF CONSERVATION AND DEVELOPMENT

13 October 2017

Will Nelson
Contra Costa County
Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

CERTIFIED MAIL
91 7199 9991 7035 8360 4084

COMMENTS TO REQUEST FOR REVIEW FOR THE NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT, BYRON AIRPORT DEVELOPMENT PROGRAM PROJECT, SCH# 2017092059, CONTRA COSTA COUNTY

Pursuant to the State Clearinghouse's 21 September 2017 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Request for Review for the Notice of Preparation for the Draft Environment Impact Report* for the Byron Airport Development Program Project, located in Contra Costa County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

I. Regulatory Setting

Basin Plan

The Central Valley Water Board is required to formulate and adopt Basin Plans for all areas within the Central Valley region under Section 13240 of the Porter-Cologne Water Quality Control Act. Each Basin Plan must contain water quality objectives to ensure the reasonable protection of beneficial uses, as well as a program of implementation for achieving water quality objectives with the Basin Plans. Federal regulations require each state to adopt water quality standards to protect the public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. In California, the beneficial uses, water quality objectives, and the Antidegradation Policy are the State's water quality standards. Water quality standards are also contained in the National Toxics Rule, 40 CFR Section 131.36, and the California Toxics Rule, 40 CFR Section 131.38.

The Basin Plan is subject to modification as necessary, considering applicable laws, policies, technologies, water quality conditions and priorities. The original Basin Plans were adopted in 1975, and have been updated and revised periodically as required, using Basin Plan amendments. Once the Central Valley Water Board has adopted a Basin Plan amendment in noticed public hearings, it must be approved by the State Water Resources

Control Board (State Water Board), Office of Administrative Law (OAL) and in some cases, the United States Environmental Protection Agency (USEPA). Basin Plan amendments only become effective after they have been approved by the OAL and in some cases, the USEPA. Every three (3) years, a review of the Basin Plan is completed that assesses the appropriateness of existing standards and evaluates and prioritizes Basin Planning issues.

For more information on the *Water Quality Control Plan for the Sacramento and San Joaquin River Basins*, please visit our website:
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/.

Antidegradation Considerations

All wastewater discharges must comply with the Antidegradation Policy (State Water Board Resolution 68-16) and the Antidegradation Implementation Policy contained in the Basin Plan. The Antidegradation Policy is available on page IV-15.01 at:
http://www.waterboards.ca.gov/centralvalleywater_issues/basin_plans/sacsjr.pdf

In part it states:

> *Any discharge of waste to high quality waters must apply best practicable treatment or control not only to prevent a condition of pollution or nuisance from occurring, but also to maintain the highest water quality possible consistent with the maximum benefit to the people of the State.*
>
> *This information must be presented as an analysis of the impacts and potential impacts of the discharge on water quality, as measured by background concentrations and applicable water quality objectives.*

The antidegradation analysis is a mandatory element in the National Pollutant Discharge Elimination System and land discharge Waste Discharge Requirements (WDRs) permitting processes. The environmental review document should evaluate potential impacts to both surface and groundwater quality.

II. Permitting Requirements

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan

(SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml.

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]
The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/.

For more information on the Caltrans Phase I MS4 Permit, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/caltrans.shtml.

For more information on the Phase II MS4 permit and who it applies to, visit the State Water Resources Control Board at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/phase_ii_municipal.shtml

Industrial Storm Water General Permit
Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 2014-0057-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit
If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed from the

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit (e.g., Non-Reporting Nationwide Permit, Nationwide Permit, Letter of Permission, Individual Permit, Regional General Permit, Programmatic General Permit), or any other federal permit (e.g., Section 10 of the Rivers and Harbors Act or Section 9 from the United States Coast Guard), is required for this project due to the disturbance (i.e., discharge of dredge or fill material) of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

Waste Discharge Requirements (WDRs)

Discharges to Waters of the State

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project may require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

Land Disposal of Dredge Material

If the project will involve dredging, Water Quality Certification for the dredging activity and Waste Discharge Requirements for the land disposal may be needed.

Local Agency Oversite

Pursuant to the State Water Board's Onsite Wastewater Treatment Systems Policy (OWTS Policy), the regulation of septic tank and leach field systems may be regulated under the local agency's management program in lieu of WDRs. A county environmental health department may permit septic tank and leach field systems designed for less than 10,000 gpd. For more information on septic system regulations, visit the Central Valley Water Board's website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/owts/sb_owts_policy.pdf

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit2.shtml.

Dewatering Permit

If the proposed project includes construction or groundwater dewatering to be discharged to land, the proponent may apply for coverage under State Water Board General Water Quality Order (Low Risk General Order) 2003-0003 or the Central Valley Water Board's Waiver of Report of Waste Discharge and Waste Discharge Requirements (Low Risk Waiver) R5-2013-0145. Small temporary construction dewatering projects are projects that discharge groundwater to land from excavation activities or dewatering of underground utility vaults. Dischargers seeking coverage under the General Order or Waiver must file a Notice of Intent with the Central Valley Water Board prior to beginning discharge.

For more information regarding the Low Risk General Order and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

For more information regarding the Low Risk Waiver and the application process, visit the Central Valley Water Board website at:

http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/waivers/r5-2013-0145_res.pdf

Regulatory Compliance for Commercially Irrigated Agriculture

If the property will be used for commercial irrigated agricultural, the discharger will be required to obtain regulatory coverage under the Irrigated Lands Regulatory Program. There are two options to comply:

1. **Obtain Coverage Under a Coalition Group.** Join the local Coalition Group that supports land owners with the implementation of the Irrigated Lands Regulatory Program. The Coalition Group conducts water quality monitoring and reporting to the Central Valley Water Board on behalf of its growers. The Coalition Groups charge an annual membership fee, which varies by Coalition Group. To find the Coalition Group in your area, visit the Central Valley Water Board's website at: http://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/app_approval/index.shtml; or contact water board staff at (916) 464-4611 or via email at IrrLands@waterboards.ca.gov.

2. **Obtain Coverage Under the General Waste Discharge Requirements for Individual Growers, General Order R5-2013-0100**. Dischargers not participating in a third-party group (Coalition) are regulated individually. Depending on the specific site conditions, growers may be required to monitor runoff from their property, install monitoring wells, and submit a notice of intent, farm plan, and other action plans regarding their actions to comply with their General Order. Yearly costs would include State administrative fees (for example, annual fees for farm sizes from 10-100 acres are currently $1,084 + $6.70/Acre); the cost to prepare annual monitoring reports; and water quality monitoring costs. To enroll as an Individual Discharger under the Irrigated Lands Regulatory Program, call the

Central Valley Water Board phone line at (916) 464-4611 or e-mail board staff at IrrLands@waterboards.ca.gov.

Low or Limited Threat General NPDES Permit

If the proposed project includes construction dewatering and it is necessary to discharge the groundwater to waters of the United States, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. Dewatering discharges are typically considered a low or limited threat to water quality and may be covered under the General Order for *Dewatering and Other Low Threat Discharges to Surface Waters* (Low Threat General Order) or the General Order for *Limited Threat Discharges of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water* (Limited Threat General Order). A complete application must be submitted to the Central Valley Water Board to obtain coverage under these General NPDES permits.

For more information regarding the Low Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0074.pdf

For more information regarding the Limited Threat General Order and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2013-0073.pdf

NPDES Permit

If the proposed project discharges waste that could affect the quality of the waters of the State, other than into a community sewer system, the proposed project will require coverage under a National Pollutant Discharge Elimination System (NPDES) permit. A complete Report of Waste Discharge must be submitted with the Central Valley Water Board to obtain a NPDES Permit.

For more information regarding the NPDES Permit and the application process, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/help/business_help/permit3.shtml

If you have questions regarding these comments, please contact me at (916) 464-4644 or Stephanie.Tadlock@waterboards.ca.gov.

Stephanie Tadlock

Stephanie Tadlock
Environmental Scientist

cc: State Clearinghouse unit, Governor's Office of Planning and Research, Sacramento

DEPARTMENT OF TRANSPORTATION
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Making Conservation
a California Way of Life

October 20, 2017

04-CC-2017-00140
SCH # 2017082033
GTS ID 7461

William Nelson
Contra Costa County Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Byron Airport – Notice of Preparation

Dear Mr. Nelson:

Thank you for including the California Department of Transportation (Caltrans) in the review process for the above referenced project. In tandem with the Metropolitan Transportation Commission's (MTC) Sustainable Communities Strategy (SCS), the Caltrans *Strategic Management Plan 2015-2020* includes targets to reduce Vehicle Miles Travelled (VMT), in part, by tripling bicycle and doubling both pedestrian and transit travel by 2020. Our comments on the Notice of Preparation are based on these initiatives and goals.

Lead Agency
As the Lead Agency, Contra Costa County Department of Conservation and Development is responsible for all project mitigation, including any needed improvements to the State Transportation Network (STN). The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Project Understanding
Existing General Plan policies and zoning regulations for Byron Airport prohibit most of the uses necessary for the airport to reach its aviation potential and achieve economic self-sufficiency. To promote economic development, the County intends to amend its Airport Land Use Compatibility Plan, General Plan, and planned unit development zoning to substantially broaden the range of uses allowed by-right on airport property. This will include a variety of aviation uses (aircraft sales, aviation-supporting business, etc) and airport compatible uses (warehousing/distribution/offices, etc). Up to 835,000 square feet of development may be permitted.

Specific Plan and Capital Improvement Plan
Due to the magnitude and pace of development in the region, Caltrans suggests that the lead agency update the Byron Master Airport plan (2005) for the area. The specific plan will engage the public in the CEQA process, address the project's environmental and VMT impacts, and reassess economic conditions before to create an updated development strategy. The lead agency should strive to obtain multimodal fees on pace with the project's phases, so that mitigation of each phase is aligned with the development as it occurs. The lead agency should also develop a capital improvement plan that identifies the cost of needed improvements and include a scheduled plan for implementation. Developer fees must be identified. These fees should go towards regional transportation improvements and phase II eBART

studies. Additionally, though phase I of the eBART project has not been complete, please include an update on the phase II eBART project in the draft environmental impact report. This will be important, given that a BART station in Byron could significantly impact this project.

Vehicle Trip Reduction

Caltrans encourages the development of Travel Demand Management (TDM) policies to encourage the use of the nearest public transit lines and reduce vehicle trips on the STN. These policies could include lower parking ratios, car-sharing programs, bicycle parking, and providing transit passes for residents, patrons, and employees on a permanent basis. For information about parking ratios, see the Metropolitan Transportation Commission (MTC) report *Reforming Parking Policies to Support Smart Growth* or visit the MTC parking webpage: http://www.mtc.ca.gov/planning/smart_growth/parking. To reduce VMT and better integrate the proposed project with nearby land uses, providing a network of complete streets that benefits all users of the transportation system, Caltrans recommends the following:

- Annual reporting with the Lead Agency monitoring;
- Aggressive trip reduction targets with Lead Agency monitoring and enforcement.
- Membership in a transportation management association (TMA)
- Transit subsidies on a permanent basis to all employees
- Transit and trip planning resources
- Electrical vehicle (EV) charging stations and designated parking spaces for EVs
- Carpool/Vanpool incentives and dedicated parking spaces for carpooling employees
- Transportation and commute information kiosk
- Kick-off commuter event at full occupancy
- Bicycle route mapping resources and bicycle parking incentives

Transportation Demand Management programs should be documented with annual monitoring reports by an onsite TDM coordinator to demonstrate effectiveness. If the project does not achieve the VMT reduction goals, the reports should also include next steps to achieve those targets. Reducing parking supply can encourage active forms of transportation, reduce regional VMT, and lessen future transportation impacts on nearby State facilities.

Please note that because this project proposes a number of new land uses to capitalize on the site's economic potential, it is vital that VMT is monitored. New aviation-related land use projects on the site warrant a travel demand analysis. For instance, if an airplane servicing station is proposed, the number of employees that the airport plans to hire should be accounted into the total VMT of the airport. Accordingly, new projects on the site should contribute fair share fees to alleviate increased congestion in the area. The same should also be done for non-aviation related land uses. This is vital so that greenhouse gas emissions and VMT are anticipated and accounted for within the region. Should appropriate, subsequent projects on Byron Airport should be submitted to Caltrans for CEQA review.

Multimodal Fees

Please identify project-generated travel demand and estimate the costs of public transportation improvements necessitated by the proposed project; viable funding sources such as development and/or transportation impact fees should also be identified. We encourage a sufficient allocation of fair share contributions toward multi-modal and regional transit improvements to fully mitigate cumulative impacts to regional transportation. We also strongly support measures to increase sustainable mode shares, thereby reducing VMT.

Additionally, please consider subsidizing the Tri Delta 386 line which connects Byron to the Brentwood park and ride lot. Currently, there is only one bus in the morning at 6:22AM; providing more buses at different times throughout the morning could encourage more drivers to switch to public transit.

Thank you again for including Caltrans in the environmental review process. Should you have any questions regarding this letter, please contact Jerry Cheung at 510-286-5562 or jerry.cheung@dot.ca.gov.

Sincerely

PATRICIA MAURICE
District Branch Chief
Local Development - Intergovernmental Review

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
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Edmund G. Brown Jr., Governor

CONTRA COSTA
2018 FEB 20 P 4:23
DEPARTMENT OF CONSERVATION AND DEVELOPMENT

October 31, 2017

Will Nelson
Contra Costa Department of Development
30 Muir Road
Martinez, CA 94553

RE: SCH#2017092059, Byron Airport Development Program, Contra Costa County

Dear Mr. Nelson:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws**.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.

b. The lead agency contact information.
c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources

Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

cc: State Clearinghouse

APPENDIX C

AQ-GHG Model Outputs

Byron Airport - Airport Related Use Construction
Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Unrefrigerated Warehouse-No Rail	274.00	1000sqft	18.53	274,000.00	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2019-2023) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	40.00
tblConstructionPhase	NumDays	75.00	102.00
tblConstructionPhase	NumDays	740.00	1,017.00
tblConstructionPhase	NumDays	55.00	72.00
tblConstructionPhase	NumDays	55.00	73.00
tblLandUse	LotAcreage	1.86	1.78
tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	6.29	18.53
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	PhaseName		Grading
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.6809	7.0640	4.6418	0.0129	1.1797	0.2797	1.4594	0.4848	0.2595	0.7443	0.0000	1,178.1162	1,178.1162	0.1747	0.0000	1,182.4824
2020	0.6269	6.2367	4.7464	0.0187	0.7989	0.1728	0.9717	0.2185	0.1628	0.3813	0.0000	1,730.9383	1,730.9383	0.1216	0.0000	1,733.9770
2021	0.5522	5.5475	4.4433	0.0184	0.7958	0.1373	0.9332	0.2177	0.1292	0.3469	0.0000	1,699.3457	1,699.3457	0.1168	0.0000	1,702.2645
2022	0.5042	5.0729	4.2332	0.0180	0.7928	0.1161	0.9089	0.2169	0.1093	0.3262	0.0000	1,667.3675	1,667.3675	0.1132	0.0000	1,670.1986
2023	3.7852	2.2314	2.4552	9.0100e-003	0.3854	0.0643	0.4497	0.1052	0.0603	0.1654	0.0000	827.4966	827.4966	0.0717	0.0000	829.2889
Maximum	**3.7852**	**7.0640**	**4.7464**	**0.0187**	**1.1797**	**0.2797**	**1.4594**	**0.4848**	**0.2595**	**0.7443**	**0.0000**	**1,730.9383**	**1,730.9383**	**0.1747**	**0.0000**	**1,733.9770**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.6809	6.8632	4.6418	0.0129	0.7377	0.2797	1.0173	0.2747	0.2595	0.5341	0.0000	1,178.1156	1,178.1156	0.1747	0.0000	1,182.4818
2020	0.6269	6.2367	4.7464	0.0187	0.7989	0.1728	0.9717	0.2185	0.1628	0.3813	0.0000	1,730.9379	1,730.9379	0.1216	0.0000	1,733.9767
2021	0.5522	5.5475	4.4433	0.0184	0.7958	0.1373	0.9332	0.2177	0.1292	0.3469	0.0000	1,699.3453	1,699.3453	0.1168	0.0000	1,702.2641
2022	0.5042	5.0729	4.2332	0.0180	0.7928	0.1161	0.9089	0.2169	0.1093	0.3262	0.0000	1,667.3672	1,667.3672	0.1132	0.0000	1,670.1983
2023	3.7852	2.2314	2.4552	9.0100e-003	0.3854	0.0643	0.4497	0.1052	0.0603	0.1654	0.0000	827.4964	827.4964	0.0717	0.0000	829.2886

Maximum	3.7852	6.8632	4.7464	0.0187	0.7989	0.2797	1.0173	0.2747	0.2595	0.5341	0.0000	1,730.9379	1,730.9379	0.1747	0.0000	1,733.9767

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.77	0.00	0.00	11.18	0.00	9.36	16.90	0.00	10.70	0.00	0.00	0.00	0.00	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2019	3-31-2019	1.7758	1.7280
2	4-1-2019	6-30-2019	2.0729	1.9449
3	7-1-2019	9-30-2019	1.9410	1.9171
4	10-1-2019	12-31-2019	1.9447	1.9447
5	1-1-2020	3-31-2020	1.7168	1.7168
6	4-1-2020	6-30-2020	1.6851	1.6851
7	7-1-2020	9-30-2020	1.7036	1.7036
8	10-1-2020	12-31-2020	1.7357	1.7357
9	1-1-2021	3-31-2021	1.5142	1.5142
10	4-1-2021	6-30-2021	1.5049	1.5049
11	7-1-2021	9-30-2021	1.5214	1.5214
12	10-1-2021	12-31-2021	1.5479	1.5479
13	1-1-2022	3-31-2022	1.3896	1.3896
14	4-1-2022	6-30-2022	1.3816	1.3816
15	7-1-2022	9-30-2022	1.3968	1.3968
16	10-1-2022	12-31-2022	1.4205	1.4205
17	1-1-2023	3-31-2023	1.1316	1.1316
18	4-1-2023	6-30-2023	0.9544	0.9544
19	7-1-2023	9-30-2023	0.7227	0.7227
		Highest	2.0729	1.9449

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.9528	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315
Energy	0.0437	0.3976	0.3340	2.3900e-003		0.0302	0.0302		0.0302	0.0302	0.0000	1,137.3630	1,137.3630	0.0778	0.0223	1,145.9571
Mobile	1.0074	4.6389	11.5089	0.0503	5.5191	0.0343	5.5534	1.4801	0.0319	1.5120	0.0000	4,621.3374	4,621.3374	0.1392	0.0000	4,624.8180
Waste						0.0000	0.0000		0.0000	0.0000	140.5834	0.0000	140.5834	8.3082	0.0000	348.2895
Water						0.0000	0.0000		0.0000	0.0000	42.4345	102.5635	144.9981	4.3686	0.1050	285.5034
Total	**4.0039**	**5.0367**	**11.8581**	**0.0526**	**5.5191**	**0.0646**	**5.5837**	**1.4801**	**0.0622**	**1.5423**	**183.0180**	**5,861.2934**	**6,044.3114**	**12.8939**	**0.1273**	**6,404.5995**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.9528	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315
Energy	0.0437	0.3976	0.3340	2.3900e-003		0.0302	0.0302		0.0302	0.0302	0.0000	1,137.3630	1,137.3630	0.0778	0.0223	1,145.9571
Mobile	1.0074	4.6389	11.5089	0.0503	5.5191	0.0343	5.5534	1.4801	0.0319	1.5120	0.0000	4,621.3374	4,621.3374	0.1392	0.0000	4,624.8180
Waste						0.0000	0.0000		0.0000	0.0000	140.5834	0.0000	140.5834	8.3082	0.0000	348.2895
Water						0.0000	0.0000		0.0000	0.0000	42.4345	102.5635	144.9981	4.3686	0.1050	285.5034
Total	**4.0039**	**5.0367**	**11.8581**	**0.0526**	**5.5191**	**0.0646**	**5.5837**	**1.4801**	**0.0622**	**1.5423**	**183.0180**	**5,861.2934**	**6,044.3114**	**12.8939**	**0.1273**	**6,404.5995**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	2/25/2019	5	40	
2	Grading	Grading	2/26/2019	7/17/2019	5	102	
3	Building Construction	Building Construction	7/18/2019	6/9/2023	5	1017	
4	Paving	Paving	6/10/2023	9/19/2023	5	72	
5	Architectural Coating	Architectural Coating	9/20/2023	12/29/2023	5	73	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 255

Acres of Paving: 8.96

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 988,500; Non-Residential Outdoor: 329,500; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36

Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	427.00	173.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	85.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0867	0.9115	0.4413	7.6000e-004		0.0478	0.0478		0.0440	0.0440	0.0000	68.3374	68.3374	0.0216	0.0000	68.8779
Total	**0.0867**	**0.9115**	**0.4413**	**7.6000e-004**	**0.3613**	**0.0478**	**0.4091**	**0.1986**	**0.0440**	**0.2426**	**0.0000**	**68.3374**	**68.3374**	**0.0216**	**0.0000**	**68.8779**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.1600e-003	0.0118	3.0000e-005	3.4400e-003	2.0000e-005	3.4600e-003	9.1000e-004	2.0000e-005	9.3000e-004	0.0000	3.0987	3.0987	8.0000e-005	0.0000	3.1008
Total	**1.5200e-003**	**1.1600e-003**	**0.0118**	**3.0000e-005**	**3.4400e-003**	**2.0000e-005**	**3.4600e-003**	**9.1000e-004**	**2.0000e-005**	**9.3000e-004**	**0.0000**	**3.0987**	**3.0987**	**8.0000e-005**	**0.0000**	**3.1008**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1626	0.0000	0.1626	0.0894	0.0000	0.0894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0867	0.9115	0.4413	7.6000e-004		0.0478	0.0478		0.0440	0.0440	0.0000	68.3373	68.3373	0.0216	0.0000	68.8778
Total	**0.0867**	**0.9115**	**0.4413**	**7.6000e-004**	**0.1626**	**0.0478**	**0.2104**	**0.0894**	**0.0440**	**0.1334**	**0.0000**	**68.3373**	**68.3373**	**0.0216**	**0.0000**	**68.8778**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5200e-003	1.1600e-003	0.0118	3.0000e-005	3.4400e-003	2.0000e-005	3.4600e-003	9.1000e-004	2.0000e-005	9.3000e-004	0.0000	3.0987	3.0987	8.0000e-005	0.0000	3.1008
Total	**1.5200e-003**	**1.1600e-003**	**0.0118**	**3.0000e-005**	**3.4400e-003**	**2.0000e-005**	**3.4600e-003**	**9.1000e-004**	**2.0000e-005**	**9.3000e-004**	**0.0000**	**3.0987**	**3.0987**	**8.0000e-005**	**0.0000**	**3.1008**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4423	0.0000	0.4423	0.1834	0.0000	0.1834	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2640	2.9813	1.8375	3.3300e-003		0.1367	0.1367		0.1258	0.1258	0.0000	299.6002	299.6002	0.0948	0.0000	301.9699
Total	**0.2640**	**2.9813**	**1.8375**	**3.3300e-003**	**0.4423**	**0.1367**	**0.5790**	**0.1834**	**0.1258**	**0.3092**	**0.0000**	**299.6002**	**299.6002**	**0.0948**	**0.0000**	**301.9699**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	3.3000e-003	0.0333	1.0000e-004	9.7400e-003	7.0000e-005	9.8000e-003	2.5900e-003	6.0000e-005	2.6500e-003	0.0000	8.7797	8.7797	2.4000e-004	0.0000	8.7856
Total	**4.3000e-003**	**3.3000e-003**	**0.0333**	**1.0000e-004**	**9.7400e-003**	**7.0000e-005**	**9.8000e-003**	**2.5900e-003**	**6.0000e-005**	**2.6500e-003**	**0.0000**	**8.7797**	**8.7797**	**2.4000e-004**	**0.0000**	**8.7856**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1991	0.0000	0.1991	0.0825	0.0000	0.0825	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2640	2.7805	1.8375	3.3300e-003		0.1367	0.1367		0.1258	0.1258	0.0000	299.5998	299.5998	0.0948	0.0000	301.9696
Total	**0.2640**	**2.7805**	**1.8375**	**3.3300e-003**	**0.1991**	**0.1367**	**0.3357**	**0.0825**	**0.1258**	**0.2083**	**0.0000**	**299.5998**	**299.5998**	**0.0948**	**0.0000**	**301.9696**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.3000e-003	3.3000e-003	0.0333	1.0000e-004	9.7400e-003	7.0000e-005	9.8000e-003	2.5900e-003	6.0000e-005	2.6500e-003	0.0000	8.7797	8.7797	2.4000e-004	0.0000	8.7856
Total	**4.3000e-003**	**3.3000e-003**	**0.0333**	**1.0000e-004**	**9.7400e-003**	**7.0000e-005**	**9.8000e-003**	**2.5900e-003**	**6.0000e-005**	**2.6500e-003**	**0.0000**	**8.7797**	**8.7797**	**2.4000e-004**	**0.0000**	**8.7856**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1405	1.2542	1.0212	1.6000e-003		0.0768	0.0768		0.0722	0.0722	0.0000	139.8870	139.8870	0.0341	0.0000	140.7389

Total	**0.1405**	**1.2542**	**1.0212**	**1.6000e-003**		**0.0768**	**0.0768**		**0.0722**	**0.0722**	**0.0000**	**139.8870**	**139.8870**	**0.0341**	**0.0000**	**140.7389**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0768	1.8304	0.4665	4.6000e-003	0.1203	0.0167	0.1371	0.0348	0.0160	0.0508	0.0000	439.7249	439.7249	0.0180	0.0000	440.1746
Worker	0.1071	0.0822	0.8302	2.4200e-003	0.2425	1.6200e-003	0.2441	0.0645	1.5000e-003	0.0660	0.0000	218.6883	218.6883	5.8600e-003	0.0000	218.8347
Total	**0.1839**	**1.9126**	**1.2967**	**7.0200e-003**	**0.3628**	**0.0183**	**0.3812**	**0.0993**	**0.0175**	**0.1167**	**0.0000**	**658.4132**	**658.4132**	**0.0239**	**0.0000**	**659.0092**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1405	1.2542	1.0212	1.6000e-003		0.0768	0.0768		0.0722	0.0722	0.0000	139.8868	139.8868	0.0341	0.0000	140.7388
Total	**0.1405**	**1.2542**	**1.0212**	**1.6000e-003**		**0.0768**	**0.0768**		**0.0722**	**0.0722**	**0.0000**	**139.8868**	**139.8868**	**0.0341**	**0.0000**	**140.7388**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0768	1.8304	0.4665	4.6000e-003	0.1203	0.0167	0.1371	0.0348	0.0160	0.0508	0.0000	439.7249	439.7249	0.0180	0.0000	440.1746
Worker	0.1071	0.0822	0.8302	2.4200e-003	0.2425	1.6200e-003	0.2441	0.0645	1.5000e-003	0.0660	0.0000	218.6883	218.6883	5.8600e-003	0.0000	218.8347
Total	**0.1839**	**1.9126**	**1.2967**	**7.0200e-003**	**0.3628**	**0.0183**	**0.3812**	**0.0993**	**0.0175**	**0.1167**	**0.0000**	**658.4132**	**658.4132**	**0.0239**	**0.0000**	**659.0092**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4091	303.4091	0.0740	0.0000	305.2596
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4091**	**303.4091**	**0.0740**	**0.0000**	**305.2596**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.1341	3.5637	0.9047	0.0101	0.2650	0.0230	0.2880	0.0766	0.0220	0.0986	0.0000	961.3676	961.3676	0.0363	0.0000	962.2749
Worker	0.2151	0.1596	1.6346	5.1600e-003	0.5339	3.5000e-003	0.5374	0.1420	3.2200e-003	0.1452	0.0000	466.1616	466.1616	0.0112	0.0000	466.4426
Total	**0.3492**	**3.7233**	**2.5393**	**0.0152**	**0.7989**	**0.0265**	**0.8254**	**0.2185**	**0.0252**	**0.2438**	**0.0000**	**1,427.5292**	**1,427.5292**	**0.0475**	**0.0000**	**1,428.7174**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2777	2.5134	2.2072	3.5300e-003		0.1463	0.1463		0.1376	0.1376	0.0000	303.4087	303.4087	0.0740	0.0000	305.2592
Total	**0.2777**	**2.5134**	**2.2072**	**3.5300e-003**		**0.1463**	**0.1463**		**0.1376**	**0.1376**	**0.0000**	**303.4087**	**303.4087**	**0.0740**	**0.0000**	**305.2592**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1341	3.5637	0.9047	0.0101	0.2650	0.0230	0.2880	0.0766	0.0220	0.0986	0.0000	961.3676	961.3676	0.0363	0.0000	962.2749
Worker	0.2151	0.1596	1.6346	5.1600e-003	0.5339	3.5000e-003	0.5374	0.1420	3.2200e-003	0.1452	0.0000	466.1616	466.1616	0.0112	0.0000	466.4426
Total	**0.3492**	**3.7233**	**2.5393**	**0.0152**	**0.7989**	**0.0265**	**0.8254**	**0.2185**	**0.0252**	**0.2438**	**0.0000**	**1,427.5292**	**1,427.5292**	**0.0475**	**0.0000**	**1,428.7174**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2867	302.2867	0.0729	0.0000	304.1099
Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2867**	**302.2867**	**0.0729**	**0.0000**	**304.1099**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1062	3.1307	0.7949	9.9200e-003	0.2640	8.8400e-003	0.2728	0.0763	8.4600e-003	0.0847	0.0000	949.1488	949.1488	0.0338	0.0000	949.9944
Worker	0.1980	0.1419	1.4854	4.9500e-003	0.5319	3.3900e-003	0.5353	0.1414	3.1200e-003	0.1446	0.0000	447.9103	447.9103	0.0100	0.0000	448.1602
Total	**0.3042**	**3.2726**	**2.2802**	**0.0149**	**0.7958**	**0.0122**	**0.8081**	**0.2177**	**0.0116**	**0.2293**	**0.0000**	**1,397.0590**	**1,397.0590**	**0.0438**	**0.0000**	**1,398.1546**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2481	2.2749	2.1631	3.5100e-003		0.1251	0.1251		0.1176	0.1176	0.0000	302.2863	302.2863	0.0729	0.0000	304.1095

Total	**0.2481**	**2.2749**	**2.1631**	**3.5100e-003**		**0.1251**	**0.1251**		**0.1176**	**0.1176**	**0.0000**	**302.2863**	**302.2863**	**0.0729**	**0.0000**	**304.1095**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1062	3.1307	0.7949	9.9200e-003	0.2640	8.8400e-003	0.2728	0.0763	8.4600e-003	0.0847	0.0000	949.1488	949.1488	0.0338	0.0000	949.9944
Worker	0.1980	0.1419	1.4854	4.9500e-003	0.5319	3.3900e-003	0.5353	0.1414	3.1200e-003	0.1446	0.0000	447.9103	447.9103	0.0100	0.0000	448.1602
Total	**0.3042**	**3.2726**	**2.2802**	**0.0149**	**0.7958**	**0.0122**	**0.8081**	**0.2177**	**0.0116**	**0.2293**	**0.0000**	**1,397.0590**	**1,397.0590**	**0.0438**	**0.0000**	**1,398.1546**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2428	301.2428	0.0722	0.0000	303.0471
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2428**	**301.2428**	**0.0722**	**0.0000**	**303.0471**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0989	2.9162	0.7457	9.7900e-003	0.2630	7.6500e-003	0.2706	0.0760	7.3100e-003	0.0833	0.0000	936.5045	936.5045	0.0321	0.0000	937.3081
Worker	0.1834	0.1267	1.3602	4.7500e-003	0.5298	3.3000e-003	0.5331	0.1409	3.0400e-003	0.1439	0.0000	429.6202	429.6202	8.9300e-003	0.0000	429.8435
Total	**0.2823**	**3.0429**	**2.1059**	**0.0145**	**0.7928**	**0.0110**	**0.8037**	**0.2169**	**0.0104**	**0.2272**	**0.0000**	**1,366.1247**	**1,366.1247**	**0.0411**	**0.0000**	**1,367.1516**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2218	2.0300	2.1272	3.5000e-003		0.1052	0.1052		0.0990	0.0990	0.0000	301.2425	301.2425	0.0722	0.0000	303.0467
Total	**0.2218**	**2.0300**	**2.1272**	**3.5000e-003**		**0.1052**	**0.1052**		**0.0990**	**0.0990**	**0.0000**	**301.2425**	**301.2425**	**0.0722**	**0.0000**	**303.0467**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0989	2.9162	0.7457	9.7900e-003	0.2630	7.6500e-003	0.2706	0.0760	7.3100e-003	0.0833	0.0000	936.5045	936.5045	0.0321	0.0000	937.3081
Worker	0.1834	0.1267	1.3602	4.7500e-003	0.5298	3.3000e-003	0.5331	0.1409	3.0400e-003	0.1439	0.0000	429.6202	429.6202	8.9300e-003	0.0000	429.8435
Total	**0.2823**	**3.0429**	**2.1059**	**0.0145**	**0.7928**	**0.0110**	**0.8037**	**0.2169**	**0.0104**	**0.2272**	**0.0000**	**1,366.1247**	**1,366.1247**	**0.0411**	**0.0000**	**1,367.1516**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0904	0.8271	0.9340	1.5500e-003		0.0402	0.0402		0.0379	0.0379	0.0000	133.2877	133.2877	0.0317	0.0000	134.0804
Total	**0.0904**	**0.8271**	**0.9340**	**1.5500e-003**		**0.0402**	**0.0402**		**0.0379**	**0.0379**	**0.0000**	**133.2877**	**133.2877**	**0.0317**	**0.0000**	**134.0804**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0327	0.9320	0.2942	4.2100e-003	0.1163	1.4800e-003	0.1178	0.0336	1.4100e-003	0.0350	0.0000	403.0578	403.0578	0.0120	0.0000	403.3588
Worker	0.0757	0.0504	0.5537	2.0200e-003	0.2344	1.4300e-003	0.2358	0.0623	1.3100e-003	0.0636	0.0000	182.6395	182.6395	3.5400e-003	0.0000	182.7280
Total	**0.1083**	**0.9823**	**0.8479**	**6.2300e-003**	**0.3507**	**2.9100e-003**	**0.3536**	**0.0959**	**2.7200e-003**	**0.0987**	**0.0000**	**585.6972**	**585.6972**	**0.0156**	**0.0000**	**586.0868**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0904	0.8271	0.9340	1.5500e-003		0.0402	0.0402		0.0379	0.0379	0.0000	133.2876	133.2876	0.0317	0.0000	134.0803
Total	**0.0904**	**0.8271**	**0.9340**	**1.5500e-003**		**0.0402**	**0.0402**		**0.0379**	**0.0379**	**0.0000**	**133.2876**	**133.2876**	**0.0317**	**0.0000**	**134.0803**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0327	0.9320	0.2942	4.2100e-003	0.1163	1.4800e-003	0.1178	0.0336	1.4100e-003	0.0350	0.0000	403.0578	403.0578	0.0120	0.0000	403.3588
Worker	0.0757	0.0504	0.5537	2.0200e-003	0.2344	1.4300e-003	0.2358	0.0623	1.3100e-003	0.0636	0.0000	182.6395	182.6395	3.5400e-003	0.0000	182.7280
Total	**0.1083**	**0.9823**	**0.8479**	**6.2300e-003**	**0.3507**	**2.9100e-003**	**0.3536**	**0.0959**	**2.7200e-003**	**0.0987**	**0.0000**	**585.6972**	**585.6972**	**0.0156**	**0.0000**	**586.0868**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3669	0.5250	8.2000e-004		0.0184	0.0184		0.0169	0.0169	0.0000	72.0967	72.0967	0.0233	0.0000	72.6797

Paving	0.0117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0489**	**0.3669**	**0.5250**	**8.2000e-004**		**0.0184**	**0.0184**		**0.0169**	**0.0169**	**0.0000**	**72.0967**	**72.0967**	**0.0233**	**0.0000**	**72.6797**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.1100e-003	0.0122	4.0000e-005	5.1500e-003	3.0000e-005	5.1900e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	4.0169	4.0169	8.0000e-005	0.0000	4.0189
Total	**1.6600e-003**	**1.1100e-003**	**0.0122**	**4.0000e-005**	**5.1500e-003**	**3.0000e-005**	**5.1900e-003**	**1.3700e-003**	**3.0000e-005**	**1.4000e-003**	**0.0000**	**4.0169**	**4.0169**	**8.0000e-005**	**0.0000**	**4.0189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0372	0.3669	0.5250	8.2000e-004		0.0184	0.0184		0.0169	0.0169	0.0000	72.0966	72.0966	0.0233	0.0000	72.6796
Paving	0.0117					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0489**	**0.3669**	**0.5250**	**8.2000e-004**		**0.0184**	**0.0184**		**0.0169**	**0.0169**	**0.0000**	**72.0966**	**72.0966**	**0.0233**	**0.0000**	**72.6796**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6600e-003	1.1100e-003	0.0122	4.0000e-005	5.1500e-003	3.0000e-005	5.1900e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	4.0169	4.0169	8.0000e-005	0.0000	4.0189
Total	**1.6600e-003**	**1.1100e-003**	**0.0122**	**4.0000e-005**	**5.1500e-003**	**3.0000e-005**	**5.1900e-003**	**1.3700e-003**	**3.0000e-005**	**1.4000e-003**	**0.0000**	**4.0169**	**4.0169**	**8.0000e-005**	**0.0000**	**4.0189**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5193					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0000e-003	0.0476	0.0661	1.1000e-004		2.5800e-003	2.5800e-003		2.5800e-003	2.5800e-003	0.0000	9.3194	9.3194	5.6000e-004	0.0000	9.3333
Total	**3.5263**	**0.0476**	**0.0661**	**1.1000e-004**		**2.5800e-003**	**2.5800e-003**		**2.5800e-003**	**2.5800e-003**	**0.0000**	**9.3194**	**9.3194**	**5.6000e-004**	**0.0000**	**9.3333**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5600e-003	6.3600e-003	0.0700	2.6000e-004	0.0296	1.8000e-004	0.0298	7.8700e-003	1.7000e-004	8.0400e-003	0.0000	23.0787	23.0787	4.5000e-004	0.0000	23.0899
Total	**9.5600e-003**	**6.3600e-003**	**0.0700**	**2.6000e-004**	**0.0296**	**1.8000e-004**	**0.0298**	**7.8700e-003**	**1.7000e-004**	**8.0400e-003**	**0.0000**	**23.0787**	**23.0787**	**4.5000e-004**	**0.0000**	**23.0899**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	3.5193					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.0000e-003	0.0476	0.0661	1.1000e-004		2.5800e-003	2.5800e-003		2.5800e-003	2.5800e-003	0.0000	9.3194	9.3194	5.6000e-004	0.0000	9.3333
Total	**3.5263**	**0.0476**	**0.0661**	**1.1000e-004**		**2.5800e-003**	**2.5800e-003**		**2.5800e-003**	**2.5800e-003**	**0.0000**	**9.3194**	**9.3194**	**5.6000e-004**	**0.0000**	**9.3333**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.5600e-003	6.3600e-003	0.0700	2.6000e-004	0.0296	1.8000e-004	0.0298	7.8700e-003	1.7000e-004	8.0400e-003	0.0000	23.0787	23.0787	4.5000e-004	0.0000	23.0899
Total	**9.5600e-003**	**6.3600e-003**	**0.0700**	**2.6000e-004**	**0.0296**	**1.8000e-004**	**0.0298**	**7.8700e-003**	**1.7000e-004**	**8.0400e-003**	**0.0000**	**23.0787**	**23.0787**	**4.5000e-004**	**0.0000**	**23.0899**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0074	4.6389	11.5089	0.0503	5.5191	0.0343	5.5534	1.4801	0.0319	1.5120	0.0000	4,621.3374	4,621.3374	0.1392	0.0000	4,624.8180
Unmitigated	1.0074	4.6389	11.5089	0.0503	5.5191	0.0343	5.5534	1.4801	0.0319	1.5120	0.0000	4,621.3374	4,621.3374	0.1392	0.0000	4,624.8180

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,484.61	281.16	144.84	4,332,077	4,332,077
General Office Building	893.43	199.26	85.05	1,873,991	1,873,991
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	3,885.70	4,547.27	2296.84	6,804,905	6,804,905
Unrefrigerated Warehouse-No Rail	460.32	460.32	460.32	1,778,431	1,778,431
Total	6,724.06	5,488.01	2,987.05	14,789,404	14,789,404

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
General Office Building	14.70	6.60	6.60	33.00	48.00	19.00	77	19	4
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.70	6.60	6.60	16.30	64.70	19.00	54	35	11
Unrefrigerated Warehouse-No	14.70	6.60	6.60	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	704.5099	704.5099	0.0695	0.0144	710.5318
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	704.5099	704.5099	0.0695	0.0144	710.5318
NaturalGas Mitigated	0.0437	0.3976	0.3340	2.3900e-003		0.0302	0.0302		0.0302	0.0302	0.0000	432.8531	432.8531	8.3000e-003	7.9400e-003	435.4253
NaturalGas Unmitigated	0.0437	0.3976	0.3340	2.3900e-003		0.0302	0.0302		0.0302	0.0302	0.0000	432.8531	432.8531	8.3000e-003	7.9400e-003	435.4253

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					

General Light Industry	5.61894e+006	0.0303	0.2754	0.2314	1.6500e-003		0.0209	0.0209		0.0209	0.0209	0.0000	299.8480	299.8480	5.7500e-003	5.5000e-003	301.6299
General Office Building	1.32597e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7588	70.7588	1.3600e-003	1.3000e-003	71.1793
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	215670	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.5090	11.5090	2.2000e-004	2.1000e-004	11.5774
Unrefrigerated Warehouse-No	950780	5.1300e-003	0.0466	0.0392	2.8000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	50.7372	50.7372	9.7000e-004	9.3000e-004	51.0388
Total		**0.0437**	**0.3976**	**0.3340**	**2.3800e-003**		**0.0302**	**0.0302**		**0.0302**	**0.0302**	**0.0000**	**432.8531**	**432.8531**	**8.3000e-003**	**7.9400e-003**	**435.4253**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	5.61894e+006	0.0303	0.2754	0.2314	1.6500e-003		0.0209	0.0209		0.0209	0.0209	0.0000	299.8480	299.8480	5.7500e-003	5.5000e-003	301.6299
General Office Building	1.32597e+006	7.1500e-003	0.0650	0.0546	3.9000e-004		4.9400e-003	4.9400e-003		4.9400e-003	4.9400e-003	0.0000	70.7588	70.7588	1.3600e-003	1.3000e-003	71.1793
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	215670	1.1600e-003	0.0106	8.8800e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.5090	11.5090	2.2000e-004	2.1000e-004	11.5774
Unrefrigerated Warehouse-No	950780	5.1300e-003	0.0466	0.0392	2.8000e-004		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	50.7372	50.7372	9.7000e-004	9.3000e-004	51.0388
Total		**0.0437**	**0.3976**	**0.3340**	**2.3800e-003**		**0.0302**	**0.0302**		**0.0302**	**0.0302**	**0.0000**	**432.8531**	**432.8531**	**8.3000e-003**	**7.9400e-003**	**435.4253**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			

General Light Industry	1.75938e+006	234.6242	0.0231	4.7900e-003	236.6296
General Office Building	1.44423e+006	192.5970	0.0190	3.9300e-003	194.2432
Parking Lot	139300	18.5765	1.8300e-003	3.8000e-004	18.7353
Regional Shopping Center	972790	129.7275	0.0128	2.6500e-003	130.8364
Unrefrigerated Warehouse-No	967220	128.9847	0.0127	2.6300e-003	130.0873
Total		**704.5099**	**0.0695**	**0.0144**	**710.5318**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.75938e+006	234.6242	0.0231	4.7900e-003	236.6296
General Office Building	1.44423e+006	192.5970	0.0190	3.9300e-003	194.2432
Parking Lot	139300	18.5765	1.8300e-003	3.8000e-004	18.7353
Regional Shopping Center	972790	129.7275	0.0128	2.6500e-003	130.8364
Unrefrigerated Warehouse-No	967220	128.9847	0.0127	2.6300e-003	130.0873
Total		**704.5099**	**0.0695**	**0.0144**	**710.5318**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.9528	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315
Unmitigated	2.9528	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.5995					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-003	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315
Total	**2.9528**	**1.4000e-004**	**0.0152**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0296**	**0.0296**	**8.0000e-005**	**0.0000**	**0.0315**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.3519					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.5995					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-003	1.4000e-004	0.0152	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.0296	0.0296	8.0000e-005	0.0000	0.0315

Total	**2.9528**	**1.4000e-004**	**0.0152**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.0296**	**0.0296**	**8.0000e-005**	**0.0000**	**0.0315**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	144.9981	4.3686	0.1050	285.5034
Unmitigated	144.9981	4.3686	0.1050	285.5034

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	49.2563 / 0	51.1696	1.6085	0.0386	102.8923
General Office Building	14.3964 / 8.82362	19.0740	0.4705	0.0114	34.2266
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	6.7406 / 4.13134	8.9307	0.2203	5.3200e-003	16.0253
Unrefrigerated Warehouse-No Rail	63.3625 / 0	65.8238	2.0692	0.0497	132.3592

Total		**144.9981**	**4.3686**	**0.1050**	**285.5034**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	49.2563 / 0	51.1696	1.6085	0.0386	102.8923
General Office Building	14.3964 / 8.82362	19.0740	0.4705	0.0114	34.2266
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	6.7406 / 4.13134	8.9307	0.2203	5.3200e-003	16.0253
Unrefrigerated Warehouse-No	63.3625 / 0	65.8238	2.0692	0.0497	132.3592
Total		**144.9981**	**4.3686**	**0.1050**	**285.5034**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	140.5834	8.3082	0.0000	348.2895
Unmitigated	140.5834	8.3082	0.0000	348.2895

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	264.12	53.6140	3.1685	0.0000	132.8264
General Office Building	75.33	15.2913	0.9037	0.0000	37.8836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	95.55	19.3958	1.1463	0.0000	48.0522
Unrefrigerated Warehouse-No	257.56	52.2824	3.0898	0.0000	129.5273
Total		**140.5834**	**8.3083**	**0.0000**	**348.2895**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	264.12	53.6140	3.1685	0.0000	132.8264
General Office Building	75.33	15.2913	0.9037	0.0000	37.8836
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	95.55	19.3958	1.1463	0.0000	48.0522
Unrefrigerated Warehouse-No	257.56	52.2824	3.0898	0.0000	129.5273

Total		**140.5834**	**8.3083**	**0.0000**	**348.2895**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Airport Related Use Construction
Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Unrefrigerated Warehouse-No Rail	274.00	1000sqft	18.53	274,000.00	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2019-2023) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	40.00
tblConstructionPhase	NumDays	75.00	102.00
tblConstructionPhase	NumDays	740.00	1,017.00
tblConstructionPhase	NumDays	55.00	72.00
tblConstructionPhase	NumDays	55.00	73.00
tblLandUse	LotAcreage	1.86	1.78
tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	6.29	18.53
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	PhaseName		Grading
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.5646	58.5150	40.3943	0.1491	18.2442	2.6816	20.6357	9.9779	2.4671	12.1781	0.0000	15,208.8844	15,208.8844	2.0543	0.0000	15,235.7045
2020	4.8875	46.9615	37.5597	0.1471	6.3030	1.3186	7.6216	1.7184	1.2422	2.9606	0.0000	14,973.7482	14,973.7482	1.0225	0.0000	14,999.3111
2021	4.3251	41.9781	35.2827	0.1449	6.3031	1.0518	7.3549	1.7184	0.9895	2.7079	0.0000	14,749.7329	14,749.7329	0.9855	0.0000	14,774.3704
2022	3.9634	38.5474	33.7209	0.1426	6.3032	0.8927	7.1959	1.7185	0.8403	2.5588	0.0000	14,520.7552	14,520.7552	0.9593	0.0000	14,544.7378
2023	96.8900	31.1525	32.1093	0.1389	6.3032	0.7500	7.0532	1.7185	0.7056	2.4241	0.0000	14,151.0694	14,151.0694	0.9068	0.0000	14,173.7402
Maximum	**96.8900**	**58.5150**	**40.3943**	**0.1491**	**18.2442**	**2.6816**	**20.6357**	**9.9779**	**2.4671**	**12.1781**	**0.0000**	**15,208.8844**	**15,208.8844**	**2.0543**	**0.0000**	**15,235.7045**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.5646	54.5781	40.3943	0.1491	8.3078	2.6816	10.6993	4.5160	2.4671	6.7162	0.0000	15,208.8844	15,208.8844	2.0543	0.0000	15,235.7045
2020	4.8875	46.9615	37.5597	0.1471	6.3030	1.3186	7.6216	1.7184	1.2422	2.9606	0.0000	14,973.7482	14,973.7482	1.0225	0.0000	14,999.3111
2021	4.3251	41.9781	35.2827	0.1449	6.3031	1.0518	7.3549	1.7184	0.9895	2.7079	0.0000	14,749.7329	14,749.7329	0.9855	0.0000	14,774.3703
2022	3.9634	38.5474	33.7209	0.1426	6.3032	0.8927	7.1959	1.7185	0.8403	2.5588	0.0000	14,520.7552	14,520.7552	0.9593	0.0000	14,544.7378
2023	96.8900	31.1525	32.1093	0.1389	6.3032	0.7500	7.0532	1.7185	0.7056	2.4241	0.0000	14,151.0694	14,151.0694	0.9068	0.0000	14,173.7402

Maximum	**96.8900**	**54.5781**	**40.3943**	**0.1491**	**8.3078**	**2.6816**	**10.6993**	**4.5160**	**2.4671**	**6.7162**	**0.0000**	**15,208.8844**	**15,208.8844**	**2.0543**	**0.0000**	**15,235.7045**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**1.81**	**0.00**	**0.00**	**22.87**	**0.00**	**19.93**	**32.41**	**0.00**	**23.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Energy	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
Mobile	8.2115	30.6272	83.3915	0.3634	38.6849	0.2322	38.9171	10.3448	0.2158	10.5606		36,817.2890	36,817.2890	1.0468		36,843.4590
Total	**24.6387**	**32.8074**	**85.3900**	**0.3765**	**38.6849**	**0.3983**	**39.0832**	**10.3448**	**0.3820**	**10.7268**		**39,432.1103**	**39,432.1103**	**1.0979**	**0.0479**	**39,473.8403**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Energy	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
Mobile	8.2115	30.6272	83.3915	0.3634	38.6849	0.2322	38.9171	10.3448	0.2158	10.5606		36,817.2890	36,817.2890	1.0468		36,843.4590
Total	**24.6387**	**32.8074**	**85.3900**	**0.3765**	**38.6849**	**0.3983**	**39.0832**	**10.3448**	**0.3820**	**10.7268**		**39,432.1103**	**39,432.1103**	**1.0979**	**0.0479**	**39,473.8403**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	2/25/2019	5	40	
2	Grading	Grading	2/26/2019	7/17/2019	5	102	
3	Building Construction	Building Construction	7/18/2019	6/9/2023	5	1017	
4	Paving	Paving	6/10/2023	9/19/2023	5	72	
5	Architectural Coating	Architectural Coating	9/20/2023	12/29/2023	5	73	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 255

Acres of Paving: 8.96

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 988,500; Non-Residential Outdoor: 329,500; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74

Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	427.00	173.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	85.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445

Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0812	0.0521	0.6626	1.8700e-003	0.1780	1.1500e-003	0.1791	0.0472	1.0600e-003	0.0483		186.2203	186.2203	4.9800e-003		186.3448
Total	**0.0812**	**0.0521**	**0.6626**	**1.8700e-003**	**0.1780**	**1.1500e-003**	**0.1791**	**0.0472**	**1.0600e-003**	**0.0483**		**186.2203**	**186.2203**	**4.9800e-003**		**186.3448**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**8.1298**	**2.3904**	**10.5202**	**4.4688**	**2.1991**	**6.6679**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0812	0.0521	0.6626	1.8700e-003	0.1780	1.1500e-003	0.1791	0.0472	1.0600e-003	0.0483		186.2203	186.2203	4.9800e-003		186.3448
Total	**0.0812**	**0.0521**	**0.6626**	**1.8700e-003**	**0.1780**	**1.1500e-003**	**0.1791**	**0.0472**	**1.0600e-003**	**0.0483**		**186.2203**	**186.2203**	**4.9800e-003**		**186.3448**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.1754	58.4571	36.0291	0.0654		2.6803	2.6803		2.4659	2.4659		6,475.5423	6,475.5423	2.0488		6,526.7621
Total	**5.1754**	**58.4571**	**36.0291**	**0.0654**	**8.6733**	**2.6803**	**11.3536**	**3.5965**	**2.4659**	**6.0624**		**6,475.5423**	**6,475.5423**	**2.0488**		**6,526.7621**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0903	0.0579	0.7362	2.0800e-003	0.1977	1.2800e-003	0.1990	0.0524	1.1800e-003	0.0536		206.9114	206.9114	5.5300e-003		207.0498
Total	**0.0903**	**0.0579**	**0.7362**	**2.0800e-003**	**0.1977**	**1.2800e-003**	**0.1990**	**0.0524**	**1.1800e-003**	**0.0536**		**206.9114**	**206.9114**	**5.5300e-003**		**207.0498**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.1754	54.5202	36.0291	0.0654		2.6803	2.6803		2.4659	2.4659	0.0000	6,475.5423	6,475.5423	2.0488		6,526.7621
Total	**5.1754**	**54.5202**	**36.0291**	**0.0654**	**3.9030**	**2.6803**	**6.5833**	**1.6184**	**2.4659**	**4.0843**	**0.0000**	**6,475.5423**	**6,475.5423**	**2.0488**		**6,526.7621**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0903	0.0579	0.7362	2.0800e-003	0.1977	1.2800e-003	0.1990	0.0524	1.1800e-003	0.0536		206.9114	206.9114	5.5300e-003		207.0498
Total	**0.0903**	**0.0579**	**0.7362**	**2.0800e-003**	**0.1977**	**1.2800e-003**	**0.1990**	**0.0524**	**1.1800e-003**	**0.0536**		**206.9114**	**206.9114**	**5.5300e-003**		**207.0498**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.2767	30.1295	7.5126	0.0778	2.0816	0.2798	2.3614	0.5988	0.2676	0.8665		8,199.7451	8,199.7451	0.3233		8,207.8276
Worker	1.9268	1.2355	15.7179	0.0444	4.2214	0.0273	4.2487	1.1196	0.0251	1.1447		4,417.5592	4,417.5592	0.1182		4,420.5133
Total	**3.2035**	**31.3651**	**23.2305**	**0.1222**	**6.3030**	**0.3071**	**6.6100**	**1.7184**	**0.2928**	**2.0112**		**12,617.3043**	**12,617.3043**	**0.4415**		**12,628.3410**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635

Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.2767	30.1295	7.5126	0.0778	2.0816	0.2798	2.3614	0.5988	0.2676	0.8665		8,199.7451	8,199.7451	0.3233		8,207.8276
Worker	1.9268	1.2355	15.7179	0.0444	4.2214	0.0273	4.2487	1.1196	0.0251	1.1447		4,417.5592	4,417.5592	0.1182		4,420.5133
Total	**3.2035**	**31.3651**	**23.2305**	**0.1222**	**6.3030**	**0.3071**	**6.6100**	**1.7184**	**0.2928**	**2.0112**		**12,617.3043**	**12,617.3043**	**0.4415**		**12,628.3410**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.0106	26.6849	6.6045	0.0773	2.0816	0.1749	2.2565	0.5988	0.1673	0.7661		8,143.4645	8,143.4645	0.2963		8,150.8714
Worker	1.7570	1.0906	14.1066	0.0429	4.2214	0.0267	4.2481	1.1196	0.0246	1.1442		4,277.2207	4,277.2207	0.1034		4,279.8052
Total	**2.7677**	**27.7754**	**20.7112**	**0.1202**	**6.3030**	**0.2016**	**6.5046**	**1.7184**	**0.1919**	**1.9103**		**12,420.6852**	**12,420.6852**	**0.3997**		**12,430.6767**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	1.0106	26.6849	6.6045	0.0773	2.0816	0.1749	2.2565	0.5988	0.1673	0.7661		8,143.4645	8,143.4645	0.2963		8,150.8714
Worker	1.7570	1.0906	14.1066	0.0429	4.2214	0.0267	4.2481	1.1196	0.0246	1.1442		4,277.2207	4,277.2207	0.1034		4,279.8052
Total	**2.7677**	**27.7754**	**20.7112**	**0.1202**	**6.3030**	**0.2016**	**6.5046**	**1.7184**	**0.1919**	**1.9103**		**12,420.6852**	**12,420.6852**	**0.3997**		**12,430.6767**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8014	23.5723	5.8069	0.0766	2.0817	0.0672	2.1489	0.5989	0.0643	0.6631		8,070.9131	8,070.9131	0.2771		8,077.8395
Worker	1.6228	0.9737	12.9006	0.0414	4.2214	0.0260	4.2473	1.1196	0.0239	1.1435		4,125.4558	4,125.4558	0.0924		4,127.7666
Total	**2.4242**	**24.5460**	**18.7075**	**0.1179**	**6.3031**	**0.0932**	**6.3962**	**1.7184**	**0.0882**	**1.8066**		**12,196.3690**	**12,196.3690**	**0.3695**		**12,205.6061**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8014	23.5723	5.8069	0.0766	2.0817	0.0672	2.1489	0.5989	0.0643	0.6631		8,070.9131	8,070.9131	0.2771		8,077.8395
Worker	1.6228	0.9737	12.9006	0.0414	4.2214	0.0260	4.2473	1.1196	0.0239	1.1435		4,125.4558	4,125.4558	0.0924		4,127.7666
Total	**2.4242**	**24.5460**	**18.7075**	**0.1179**	**6.3031**	**0.0932**	**6.3962**	**1.7184**	**0.0882**	**1.8066**		**12,196.3690**	**12,196.3690**	**0.3695**		**12,205.6061**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7493	22.0584	5.4685	0.0758	2.0818	0.0583	2.1401	0.5989	0.0558	0.6547		7,994.3470	7,994.3470	0.2644		8,000.9559
Worker	1.5079	0.8734	11.8890	0.0398	4.2214	0.0254	4.2467	1.1196	0.0234	1.1429		3,972.0747	3,972.0747	0.0830		3,974.1497
Total	**2.2571**	**22.9318**	**17.3575**	**0.1156**	**6.3032**	**0.0837**	**6.3869**	**1.7185**	**0.0791**	**1.7976**		**11,966.4217**	**11,966.4217**	**0.3474**		**11,975.1056**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7493	22.0584	5.4685	0.0758	2.0818	0.0583	2.1401	0.5989	0.0558	0.6547		7,994.3470	7,994.3470	0.2644		8,000.9559
Worker	1.5079	0.8734	11.8890	0.0398	4.2214	0.0254	4.2467	1.1196	0.0234	1.1429		3,972.0747	3,972.0747	0.0830		3,974.1497
Total	**2.2571**	**22.9318**	**17.3575**	**0.1156**	**6.3032**	**0.0837**	**6.3869**	**1.7185**	**0.0791**	**1.7976**		**11,966.4217**	**11,966.4217**	**0.3474**		**11,975.1056**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.5590	15.9824	4.8974	0.0737	2.0819	0.0254	2.1073	0.5989	0.0243	0.6232		7,778.2955	7,778.2955	0.2245		7,783.9077
Worker	1.4044	0.7852	10.9680	0.0383	4.2214	0.0248	4.2462	1.1196	0.0229	1.1425		3,817.5640	3,817.5640	0.0745		3,819.4265
Total	**1.9634**	**16.7676**	**15.8653**	**0.1120**	**6.3032**	**0.0502**	**6.3535**	**1.7185**	**0.0471**	**1.7657**		**11,595.8595**	**11,595.8595**	**0.2990**		**11,603.3342**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5590	15.9824	4.8974	0.0737	2.0819	0.0254	2.1073	0.5989	0.0243	0.6232		7,778.2955	7,778.2955	0.2245		7,783.9077
Worker	1.4044	0.7852	10.9680	0.0383	4.2214	0.0248	4.2462	1.1196	0.0229	1.1425		3,817.5640	3,817.5640	0.0745		3,819.4265
Total	**1.9634**	**16.7676**	**15.8653**	**0.1120**	**6.3032**	**0.0502**	**6.3535**	**1.7185**	**0.0471**	**1.7657**		**11,595.8595**	**11,595.8595**	**0.2990**		**11,603.3342**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.3260					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3588**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0493	0.0276	0.3853	1.3400e-003	0.1483	8.7000e-004	0.1492	0.0393	8.0000e-004	0.0401		134.1065	134.1065	2.6200e-003		134.1719
Total	**0.0493**	**0.0276**	**0.3853**	**1.3400e-003**	**0.1483**	**8.7000e-004**	**0.1492**	**0.0393**	**8.0000e-004**	**0.0401**		**134.1065**	**134.1065**	**2.6200e-003**		**134.1719**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336

Paving	0.3260					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3588**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0493	0.0276	0.3853	1.3400e-003	0.1483	8.7000e-004	0.1492	0.0393	8.0000e-004	0.0401		134.1065	134.1065	2.6200e-003		134.1719
Total	**0.0493**	**0.0276**	**0.3853**	**1.3400e-003**	**0.1483**	**8.7000e-004**	**0.1492**	**0.0393**	**8.0000e-004**	**0.0401**		**134.1065**	**134.1065**	**2.6200e-003**		**134.1719**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	96.4188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**96.6105**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2796	0.1563	2.1833	7.6200e-003	0.8403	4.9400e-003	0.8453	0.2229	4.5500e-003	0.2274		759.9366	759.9366	0.0148		760.3074
Total	**0.2796**	**0.1563**	**2.1833**	**7.6200e-003**	**0.8403**	**4.9400e-003**	**0.8453**	**0.2229**	**4.5500e-003**	**0.2274**		**759.9366**	**759.9366**	**0.0148**		**760.3074**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	96.4188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**96.6105**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2796	0.1563	2.1833	7.6200e-003	0.8403	4.9400e-003	0.8453	0.2229	4.5500e-003	0.2274		759.9366	759.9366	0.0148		760.3074
Total	**0.2796**	**0.1563**	**2.1833**	**7.6200e-003**	**0.8403**	**4.9400e-003**	**0.8453**	**0.2229**	**4.5500e-003**	**0.2274**		**759.9366**	**759.9366**	**0.0148**		**760.3074**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8.2115	30.6272	83.3915	0.3634	38.6849	0.2322	38.9171	10.3448	0.2158	10.5606		36,817.2890	36,817.2890	1.0468		36,843.4590
Unmitigated	8.2115	30.6272	83.3915	0.3634	38.6849	0.2322	38.9171	10.3448	0.2158	10.5606		36,817.2890	36,817.2890	1.0468		36,843.4590

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,484.61	281.16	144.84	4,332,077	4,332,077
General Office Building	893.43	199.26	85.05	1,873,991	1,873,991
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	3,885.70	4,547.27	2296.84	6,804,905	6,804,905
Unrefrigerated Warehouse-No Rail	460.32	460.32	460.32	1,778,431	1,778,431
Total	6,724.06	5,488.01	2,987.05	14,789,404	14,789,404

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
General Office Building	14.70	6.60	6.60	33.00	48.00	19.00	77	19	4
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.70	6.60	6.60	16.30	64.70	19.00	54	35	11
Unrefrigerated Warehouse-No	14.70	6.60	6.60	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
NaturalGas Unmitigated	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15394.4	0.1660	1.5093	1.2678	9.0600e-003		0.1147	0.1147		0.1147	0.1147		1,811.1007	1,811.1007	0.0347	0.0332	1,821.8632
General Office Building	3632.79	0.0392	0.3562	0.2992	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3876	427.3876	8.1900e-003	7.8400e-003	429.9273
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	590.877	6.3700e-003	0.0579	0.0487	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003		69.5149	69.5149	1.3300e-003	1.2700e-003	69.9280
Unrefrigerated Warehouse-No	2604.88	0.0281	0.2554	0.2145	1.5300e-003		0.0194	0.0194		0.0194	0.0194		306.4561	306.4561	5.8700e-003	5.6200e-003	308.2772
Total		**0.2397**	**2.1787**	**1.8301**	**0.0131**		**0.1656**	**0.1656**		**0.1656**	**0.1656**		**2,614.4593**	**2,614.4593**	**0.0501**	**0.0479**	**2,629.9957**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15.3944	0.1660	1.5093	1.2678	9.0600e-003		0.1147	0.1147		0.1147	0.1147		1,811.1007	1,811.1007	0.0347	0.0332	1,821.8632
General Office Building	3.63279	0.0392	0.3562	0.2992	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3876	427.3876	8.1900e-003	7.8400e-003	429.9273
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.590877	6.3700e-003	0.0579	0.0487	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003		69.5149	69.5149	1.3300e-003	1.2700e-003	69.9280
Unrefrigerated Warehouse-No	2.60488	0.0281	0.2554	0.2145	1.5300e-003		0.0194	0.0194		0.0194	0.0194		306.4561	306.4561	5.8700e-003	5.6200e-003	308.2772
Total		**0.2397**	**2.1787**	**1.8301**	**0.0131**		**0.1656**	**0.1656**		**0.1656**	**0.1656**		**2,614.4593**	**2,614.4593**	**0.0501**	**0.0479**	**2,629.9957**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Unmitigated	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9284					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	14.2436					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0155	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Total	**16.1875**	**1.5300e-003**	**0.1684**	**1.0000e-005**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**		**0.3620**	**0.3620**	**9.4000e-004**		**0.3855**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Architectural Coating	1.9284					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	14.2436					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0155	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Total	**16.1875**	**1.5300e-003**	**0.1684**	**1.0000e-005**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**		**0.3620**	**0.3620**	**9.4000e-004**		**0.3855**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Airport Related Use Construction
Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Unrefrigerated Warehouse-No Rail	274.00	1000sqft	18.53	274,000.00	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2019-2023) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	30.00	40.00
tblConstructionPhase	NumDays	75.00	102.00
tblConstructionPhase	NumDays	740.00	1,017.00
tblConstructionPhase	NumDays	55.00	72.00
tblConstructionPhase	NumDays	55.00	73.00
tblLandUse	LotAcreage	1.86	1.78
tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	6.29	18.53
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	PhaseName		Grading
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.6762	58.5285	39.6748	0.1437	18.2442	2.6816	20.6357	9.9779	2.4671	12.1781	0.0000	14,665.8139	14,665.8139	2.0539	0.0000	14,692.9581
2020	4.9889	47.8366	36.8473	0.1419	6.3030	1.3202	7.6232	1.7184	1.2438	2.9622	0.0000	14,442.1099	14,442.1099	1.0341	0.0000	14,467.9631
2021	4.4206	42.6888	34.5986	0.1398	6.3031	1.0531	7.3562	1.7184	0.9907	2.7092	0.0000	14,233.2518	14,233.2518	0.9968	0.0000	14,258.1728
2022	4.0556	39.1766	33.0616	0.1376	6.3032	0.8939	7.1971	1.7185	0.8414	2.5599	0.0000	14,019.3245	14,019.3245	0.9703	0.0000	14,043.5806
2023	96.9015	31.5834	31.3929	0.1342	6.3032	0.7506	7.0539	1.7185	0.7062	2.4247	0.0000	13,669.1221	13,669.1221	0.9139	0.0000	13,691.9697
Maximum	**96.9015**	**58.5285**	**39.6748**	**0.1437**	**18.2442**	**2.6816**	**20.6357**	**9.9779**	**2.4671**	**12.1781**	**0.0000**	**14,665.8139**	**14,665.8139**	**2.0539**	**0.0000**	**14,692.9581**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	5.6762	54.5916	39.6748	0.1437	8.3078	2.6816	10.6993	4.5160	2.4671	6.7162	0.0000	14,665.8139	14,665.8139	2.0539	0.0000	14,692.9581
2020	4.9889	47.8366	36.8473	0.1419	6.3030	1.3202	7.6232	1.7184	1.2438	2.9622	0.0000	14,442.1099	14,442.1099	1.0341	0.0000	14,467.9630
2021	4.4206	42.6888	34.5986	0.1398	6.3031	1.0531	7.3562	1.7184	0.9907	2.7092	0.0000	14,233.2518	14,233.2518	0.9968	0.0000	14,258.1728
2022	4.0556	39.1766	33.0616	0.1376	6.3032	0.8939	7.1971	1.7185	0.8414	2.5599	0.0000	14,019.3245	14,019.3245	0.9703	0.0000	14,043.5806
2023	96.9015	31.5834	31.3929	0.1342	6.3032	0.7506	7.0539	1.7185	0.7062	2.4247	0.0000	13,669.1221	13,669.1221	0.9139	0.0000	13,691.9697

Maximum	**96.9015**	**54.5916**	**39.6748**	**0.1437**	**8.3078**	**2.6816**	**10.6993**	**4.5160**	**2.4671**	**6.7162**	**0.0000**	**14,665.8139**	**14,665.8139**	**2.0539**	**0.0000**	**14,692.9581**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**1.79**	**0.00**	**0.00**	**22.87**	**0.00**	**19.93**	**32.41**	**0.00**	**23.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Energy	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
Mobile	6.5991	31.8505	81.1889	0.3362	38.6849	0.2329	38.9178	10.3448	0.2165	10.5613		34,076.5939	34,076.5939	1.0644		34,103.2025
Total	**23.0262**	**34.0307**	**83.1874**	**0.3493**	**38.6849**	**0.3991**	**39.0840**	**10.3448**	**0.3827**	**10.7275**		**36,691.4152**	**36,691.4152**	**1.1154**	**0.0479**	**36,733.5838**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Energy	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
Mobile	6.5991	31.8505	81.1889	0.3362	38.6849	0.2329	38.9178	10.3448	0.2165	10.5613		34,076.5939	34,076.5939	1.0644		34,103.2025
Total	**23.0262**	**34.0307**	**83.1874**	**0.3493**	**38.6849**	**0.3991**	**39.0840**	**10.3448**	**0.3827**	**10.7275**		**36,691.4152**	**36,691.4152**	**1.1154**	**0.0479**	**36,733.5838**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2019	2/25/2019	5	40	
2	Grading	Grading	2/26/2019	7/17/2019	5	102	
3	Building Construction	Building Construction	7/18/2019	6/9/2023	5	1017	
4	Paving	Paving	6/10/2023	9/19/2023	5	72	
5	Architectural Coating	Architectural Coating	9/20/2023	12/29/2023	5	73	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 255

Acres of Paving: 8.96

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 988,500; Non-Residential Outdoor: 329,500; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74

Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	427.00	173.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	85.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991		3,766.4529	3,766.4529	1.1917		3,796.2445

Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**18.0663**	**2.3904**	**20.4566**	**9.9307**	**2.1991**	**12.1298**		**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0841	0.0643	0.6013	1.6900e-003	0.1780	1.1500e-003	0.1791	0.0472	1.0600e-003	0.0483		168.6736	168.6736	4.5700e-003		168.7879
Total	**0.0841**	**0.0643**	**0.6013**	**1.6900e-003**	**0.1780**	**1.1500e-003**	**0.1791**	**0.0472**	**1.0600e-003**	**0.0483**		**168.6736**	**168.6736**	**4.5700e-003**		**168.7879**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.3350	45.5727	22.0630	0.0380		2.3904	2.3904		2.1991	2.1991	0.0000	3,766.4529	3,766.4529	1.1917		3,796.2445
Total	**4.3350**	**45.5727**	**22.0630**	**0.0380**	**8.1298**	**2.3904**	**10.5202**	**4.4688**	**2.1991**	**6.6679**	**0.0000**	**3,766.4529**	**3,766.4529**	**1.1917**		**3,796.2445**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0841	0.0643	0.6013	1.6900e-003	0.1780	1.1500e-003	0.1791	0.0472	1.0600e-003	0.0483		168.6736	168.6736	4.5700e-003		168.7879
Total	**0.0841**	**0.0643**	**0.6013**	**1.6900e-003**	**0.1780**	**1.1500e-003**	**0.1791**	**0.0472**	**1.0600e-003**	**0.0483**		**168.6736**	**168.6736**	**4.5700e-003**		**168.7879**

3.3 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	5.1754	58.4571	36.0291	0.0654		2.6803	2.6803		2.4659	2.4659		6,475.5423	6,475.5423	2.0488		6,526.7621
Total	**5.1754**	**58.4571**	**36.0291**	**0.0654**	**8.6733**	**2.6803**	**11.3536**	**3.5965**	**2.4659**	**6.0624**		**6,475.5423**	**6,475.5423**	**2.0488**		**6,526.7621**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0934	0.0714	0.6681	1.8800e-003	0.1977	1.2800e-003	0.1990	0.0524	1.1800e-003	0.0536		187.4151	187.4151	5.0800e-003		187.5421
Total	**0.0934**	**0.0714**	**0.6681**	**1.8800e-003**	**0.1977**	**1.2800e-003**	**0.1990**	**0.0524**	**1.1800e-003**	**0.0536**		**187.4151**	**187.4151**	**5.0800e-003**		**187.5421**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	5.1754	54.5202	36.0291	0.0654		2.6803	2.6803		2.4659	2.4659	0.0000	6,475.5423	6,475.5423	2.0488		6,526.7621
Total	**5.1754**	**54.5202**	**36.0291**	**0.0654**	**3.9030**	**2.6803**	**6.5833**	**1.6184**	**2.4659**	**4.0843**	**0.0000**	**6,475.5423**	**6,475.5423**	**2.0488**		**6,526.7621**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0934	0.0714	0.6681	1.8800e-003	0.1977	1.2800e-003	0.1990	0.0524	1.1800e-003	0.0536		187.4151	187.4151	5.0800e-003		187.5421
Total	**0.0934**	**0.0714**	**0.6681**	**1.8800e-003**	**0.1977**	**1.2800e-003**	**0.1990**	**0.0524**	**1.1800e-003**	**0.0536**		**187.4151**	**187.4151**	**5.0800e-003**		**187.5421**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127		2,591.5802	2,591.5802	0.6313		2,607.3635
Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**		**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.3201	30.9056	8.2480	0.0767	2.0816	0.2823	2.3639	0.5988	0.2700	0.8689		8,072.9222	8,072.9222	0.3460		8,081.5715
Worker	1.9949	1.5245	14.2630	0.0402	4.2214	0.0273	4.2487	1.1196	0.0251	1.1447		4,001.3116	4,001.3116	0.1085		4,004.0231
Total	**3.3150**	**32.4300**	**22.5111**	**0.1168**	**6.3030**	**0.3096**	**6.6125**	**1.7184**	**0.2952**	**2.0136**		**12,074.2338**	**12,074.2338**	**0.4544**		**12,085.5946**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3612	21.0788	17.1638	0.0269		1.2899	1.2899		1.2127	1.2127	0.0000	2,591.5802	2,591.5802	0.6313		2,607.3635

Total	**2.3612**	**21.0788**	**17.1638**	**0.0269**		**1.2899**	**1.2899**		**1.2127**	**1.2127**	**0.0000**	**2,591.5802**	**2,591.5802**	**0.6313**		**2,607.3635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.3201	30.9056	8.2480	0.0767	2.0816	0.2823	2.3639	0.5988	0.2700	0.8689		8,072.9222	8,072.9222	0.3460		8,081.5715
Worker	1.9949	1.5245	14.2630	0.0402	4.2214	0.0273	4.2487	1.1196	0.0251	1.1447		4,001.3116	4,001.3116	0.1085		4,004.0231
Total	**3.3150**	**32.4300**	**22.5111**	**0.1168**	**6.3030**	**0.3096**	**6.6125**	**1.7184**	**0.2952**	**2.0136**		**12,074.2338**	**12,074.2338**	**0.4544**		**12,085.5946**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**		**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.0500	27.3060	7.2739	0.0761	2.0816	0.1765	2.2581	0.5988	0.1688	0.7677		8,015.0823	8,015.0823	0.3171		8,023.0092
Worker	1.8190	1.3447	12.7249	0.0389	4.2214	0.0267	4.2481	1.1196	0.0246	1.1442		3,873.9646	3,873.9646	0.0942		3,876.3193
Total	**2.8690**	**28.6506**	**19.9988**	**0.1149**	**6.3030**	**0.2032**	**6.5062**	**1.7184**	**0.1934**	**1.9118**		**11,889.0469**	**11,889.0469**	**0.4113**		**11,899.3286**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.0631	2,553.0631	0.6229		2,568.6345
Total	**2.1198**	**19.1860**	**16.8485**	**0.0269**		**1.1171**	**1.1171**		**1.0503**	**1.0503**	**0.0000**	**2,553.0631**	**2,553.0631**	**0.6229**		**2,568.6345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	1.0500	27.3060	7.2739	0.0761	2.0816	0.1765	2.2581	0.5988	0.1688	0.7677		8,015.0823	8,015.0823	0.3171		8,023.0092
Worker	1.8190	1.3447	12.7249	0.0389	4.2214	0.0267	4.2481	1.1196	0.0246	1.1442		3,873.9646	3,873.9646	0.0942		3,876.3193
Total	**2.8690**	**28.6506**	**19.9988**	**0.1149**	**6.3030**	**0.2032**	**6.5062**	**1.7184**	**0.1934**	**1.9118**		**11,889.0469**	**11,889.0469**	**0.4113**		**11,899.3286**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**		**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8381	24.0567	6.4314	0.0754	2.0817	0.0685	2.1502	0.5989	0.0655	0.6644		7,943.3299	7,943.3299	0.2968		7,950.7509
Worker	1.6816	1.2000	11.5920	0.0375	4.2214	0.0260	4.2473	1.1196	0.0239	1.1435		3,736.5580	3,736.5580	0.0840		3,738.6576
Total	**2.5197**	**25.2567**	**18.0234**	**0.1128**	**6.3031**	**0.0945**	**6.3976**	**1.7184**	**0.0895**	**1.8079**		**11,679.8879**	**11,679.8879**	**0.3808**		**11,689.4085**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	**1.9009**	**17.4321**	**16.5752**	**0.0269**		**0.9586**	**0.9586**		**0.9013**	**0.9013**	**0.0000**	**2,553.3639**	**2,553.3639**	**0.6160**		**2,568.7643**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8381	24.0567	6.4314	0.0754	2.0817	0.0685	2.1502	0.5989	0.0655	0.6644		7,943.3299	7,943.3299	0.2968		7,950.7509
Worker	1.6816	1.2000	11.5920	0.0375	4.2214	0.0260	4.2473	1.1196	0.0239	1.1435		3,736.5580	3,736.5580	0.0840		3,738.6576
Total	**2.5197**	**25.2567**	**18.0234**	**0.1128**	**6.3031**	**0.0945**	**6.3976**	**1.7184**	**0.0895**	**1.8079**		**11,679.8879**	**11,679.8879**	**0.3808**		**11,689.4085**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322

Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7837	22.4850	6.0572	0.0746	2.0818	0.0595	2.1413	0.5989	0.0569	0.6558		7,867.2090	7,867.2090	0.2831		7,874.2860
Worker	1.5657	1.0759	10.6409	0.0361	4.2214	0.0254	4.2467	1.1196	0.0234	1.1429		3,597.7819	3,597.7819	0.0752		3,599.6624
Total	**2.3494**	**23.5609**	**16.6982**	**0.1107**	**6.3032**	**0.0849**	**6.3881**	**1.7185**	**0.0803**	**1.7988**		**11,464.9909**	**11,464.9909**	**0.3583**		**11,473.9484**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.7837	22.4850	6.0572	0.0746	2.0818	0.0595	2.1413	0.5989	0.0569	0.6558		7,867.2090	7,867.2090	0.2831		7,874.2860
Worker	1.5657	1.0759	10.6409	0.0361	4.2214	0.0254	4.2467	1.1196	0.0234	1.1429		3,597.7819	3,597.7819	0.0752		3,599.6624
Total	**2.3494**	**23.5609**	**16.6982**	**0.1107**	**6.3032**	**0.0849**	**6.3881**	**1.7185**	**0.0803**	**1.7988**		**11,464.9909**	**11,464.9909**	**0.3583**		**11,473.9484**

3.4 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.5870	16.2317	5.3716	0.0726	2.0819	0.0261	2.1079	0.5989	0.0249	0.6238		7,655.9299	7,655.9299	0.2388		7,661.8986
Worker	1.4621	0.9668	9.7773	0.0347	4.2214	0.0248	4.2462	1.1196	0.0229	1.1425		3,457.9823	3,457.9823	0.0673		3,459.6650
Total	**2.0491**	**17.1985**	**15.1489**	**0.1072**	**6.3032**	**0.0509**	**6.3541**	**1.7185**	**0.0478**	**1.7663**		**11,113.9122**	**11,113.9122**	**0.3061**		**11,121.5637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5870	16.2317	5.3716	0.0726	2.0819	0.0261	2.1079	0.5989	0.0249	0.6238		7,655.9299	7,655.9299	0.2388		7,661.8986
Worker	1.4621	0.9668	9.7773	0.0347	4.2214	0.0248	4.2462	1.1196	0.0229	1.1425		3,457.9823	3,457.9823	0.0673		3,459.6650
Total	**2.0491**	**17.1985**	**15.1489**	**0.1072**	**6.3032**	**0.0509**	**6.3541**	**1.7185**	**0.0478**	**1.7663**		**11,113.9122**	**11,113.9122**	**0.3061**		**11,121.5637**

3.5 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.3260					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3588**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0514	0.0340	0.3435	1.2200e-003	0.1483	8.7000e-004	0.1492	0.0393	8.0000e-004	0.0401		121.4748	121.4748	2.3600e-003		121.5339
Total	**0.0514**	**0.0340**	**0.3435**	**1.2200e-003**	**0.1483**	**8.7000e-004**	**0.1492**	**0.0393**	**8.0000e-004**	**0.0401**		**121.4748**	**121.4748**	**2.3600e-003**		**121.5339**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336

Paving	0.3260					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3588**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0514	0.0340	0.3435	1.2200e-003	0.1483	8.7000e-004	0.1492	0.0393	8.0000e-004	0.0401		121.4748	121.4748	2.3600e-003		121.5339
Total	**0.0514**	**0.0340**	**0.3435**	**1.2200e-003**	**0.1483**	**8.7000e-004**	**0.1492**	**0.0393**	**8.0000e-004**	**0.0401**		**121.4748**	**121.4748**	**2.3600e-003**		**121.5339**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	96.4188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**96.6105**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2910	0.1925	1.9463	6.9000e-003	0.8403	4.9400e-003	0.8453	0.2229	4.5500e-003	0.2274		688.3571	688.3571	0.0134		688.6921
Total	**0.2910**	**0.1925**	**1.9463**	**6.9000e-003**	**0.8403**	**4.9400e-003**	**0.8453**	**0.2229**	**4.5500e-003**	**0.2274**		**688.3571**	**688.3571**	**0.0134**		**688.6921**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	96.4188					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**96.6105**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2910	0.1925	1.9463	6.9000e-003	0.8403	4.9400e-003	0.8453	0.2229	4.5500e-003	0.2274		688.3571	688.3571	0.0134		688.6921
Total	**0.2910**	**0.1925**	**1.9463**	**6.9000e-003**	**0.8403**	**4.9400e-003**	**0.8453**	**0.2229**	**4.5500e-003**	**0.2274**		**688.3571**	**688.3571**	**0.0134**		**688.6921**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.5991	31.8505	81.1889	0.3362	38.6849	0.2329	38.9178	10.3448	0.2165	10.5613		34,076.5939	34,076.5939	1.0644		34,103.2025
Unmitigated	6.5991	31.8505	81.1889	0.3362	38.6849	0.2329	38.9178	10.3448	0.2165	10.5613		34,076.5939	34,076.5939	1.0644		34,103.2025

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1,484.61	281.16	144.84	4,332,077	4,332,077
General Office Building	893.43	199.26	85.05	1,873,991	1,873,991
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	3,885.70	4,547.27	2296.84	6,804,905	6,804,905
Unrefrigerated Warehouse-No Rail	460.32	460.32	460.32	1,778,431	1,778,431
Total	6,724.06	5,488.01	2,987.05	14,789,404	14,789,404

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

General Light Industry	14.70	6.60	6.60	59.00	28.00	13.00	92	5	3
General Office Building	14.70	6.60	6.60	33.00	48.00	19.00	77	19	4
Parking Lot	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
Regional Shopping Center	14.70	6.60	6.60	16.30	64.70	19.00	54	35	11
Unrefrigerated Warehouse-No	14.70	6.60	6.60	59.00	0.00	41.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957
NaturalGas Unmitigated	0.2397	2.1787	1.8301	0.0131		0.1656	0.1656		0.1656	0.1656		2,614.4593	2,614.4593	0.0501	0.0479	2,629.9957

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15394.4	0.1660	1.5093	1.2678	9.0600e-003		0.1147	0.1147		0.1147	0.1147		1,811.1007	1,811.1007	0.0347	0.0332	1,821.8632
General Office Building	3632.79	0.0392	0.3562	0.2992	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3876	427.3876	8.1900e-003	7.8400e-003	429.9273
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	590.877	6.3700e-003	0.0579	0.0487	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003		69.5149	69.5149	1.3300e-003	1.2700e-003	69.9280
Unrefrigerated Warehouse-No	2604.88	0.0281	0.2554	0.2145	1.5300e-003		0.0194	0.0194		0.0194	0.0194		306.4561	306.4561	5.8700e-003	5.6200e-003	308.2772
Total		**0.2397**	**2.1787**	**1.8301**	**0.0131**		**0.1656**	**0.1656**		**0.1656**	**0.1656**		**2,614.4593**	**2,614.4593**	**0.0501**	**0.0479**	**2,629.9957**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15.3944	0.1660	1.5093	1.2678	9.0600e-003		0.1147	0.1147		0.1147	0.1147		1,811.1007	1,811.1007	0.0347	0.0332	1,821.8632
General Office Building	3.63279	0.0392	0.3562	0.2992	2.1400e-003		0.0271	0.0271		0.0271	0.0271		427.3876	427.3876	8.1900e-003	7.8400e-003	429.9273
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.590877	6.3700e-003	0.0579	0.0487	3.5000e-004		4.4000e-003	4.4000e-003		4.4000e-003	4.4000e-003		69.5149	69.5149	1.3300e-003	1.2700e-003	69.9280
Unrefrigerated Warehouse-No	2.60488	0.0281	0.2554	0.2145	1.5300e-003		0.0194	0.0194		0.0194	0.0194		306.4561	306.4561	5.8700e-003	5.6200e-003	308.2772
Total		**0.2397**	**2.1787**	**1.8301**	**0.0131**		**0.1656**	**0.1656**		**0.1656**	**0.1656**		**2,614.4593**	**2,614.4593**	**0.0501**	**0.0479**	**2,629.9957**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Unmitigated	16.1875	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.9284					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	14.2436					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0155	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Total	**16.1875**	**1.5300e-003**	**0.1684**	**1.0000e-005**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**		**0.3620**	**0.3620**	**9.4000e-004**		**0.3855**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Architectural Coating	1.9284					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	14.2436					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0155	1.5300e-003	0.1684	1.0000e-005		6.0000e-004	6.0000e-004		6.0000e-004	6.0000e-004		0.3620	0.3620	9.4000e-004		0.3855
Total	**16.1875**	**1.5300e-003**	**0.1684**	**1.0000e-005**		**6.0000e-004**	**6.0000e-004**		**6.0000e-004**	**6.0000e-004**		**0.3620**	**0.3620**	**9.4000e-004**		**0.3855**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Version: CalEEMod.2016.3.2

Date: 12/18/2018 3:48 PM

Byron Airport - Airport Related Use Construction

Contra Costa County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00

Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00
Welders	Diesel	No Change	0	1	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	7.00000E-003	4.75600E-002	6.61100E-002	1.10000E-004	2.58000E-003	2.58000E-003	0.00000E+000	9.31938E+000	9.31938E+000	5.60000E-004	0.00000E+000	9.33332E+000
Cranes	1.85470E-001	2.15241E+000	8.95820E-001	2.57000E-003	8.89900E-002	8.18800E-002	0.00000E+000	2.26137E+002	2.26137E+002	7.29500E-002	0.00000E+000	2.27961E+002
Excavators	2.65900E-002	2.73550E-001	3.32850E-001	5.30000E-004	1.31900E-002	1.21400E-002	0.00000E+000	4.72959E+001	4.72959E+001	1.49600E-002	0.00000E+000	4.76700E+001
Forklifts	1.97770E-001	1.80345E+000	1.78166E+000	2.33000E-003	1.27990E-001	1.17750E-001	0.00000E+000	2.05394E+002	2.05394E+002	6.62600E-002	0.00000E+000	2.07050E+002
Generator Sets	1.85820E-001	1.63048E+000	1.87667E+000	3.34000E-003	8.75100E-002	8.75100E-002	0.00000E+000	2.87408E+002	2.87408E+002	1.49800E-002	0.00000E+000	2.87783E+002
Graders	2.48200E-002	3.35560E-001	9.37400E-002	3.40000E-004	1.07700E-002	9.91000E-003	0.00000E+000	3.04261E+001	3.04261E+001	9.63000E-003	0.00000E+000	3.06667E+001
Pavers	1.38200E-002	1.35560E-001	2.07590E-001	3.40000E-004	6.38000E-003	5.87000E-003	0.00000E+000	2.97336E+001	2.97336E+001	9.62000E-003	0.00000E+000	2.99740E+001
Paving Equipment	1.22900E-002	1.15410E-001	1.84080E-001	2.90000E-004	5.61000E-003	5.16000E-003	0.00000E+000	2.57655E+001	2.57655E+001	8.33000E-003	0.00000E+000	2.59739E+001
Rollers	1.10700E-002	1.15930E-001	1.33360E-001	1.90000E-004	6.38000E-003	5.87000E-003	0.00000E+000	1.65976E+001	1.65976E+001	5.37000E-003	0.00000E+000	1.67318E+001
Rubber Tired Dozers	1.25940E-001	1.34026E+000	4.75530E-001	9.50000E-004	6.53500E-002	6.01200E-002	0.00000E+000	8.51325E+001	8.51325E+001	2.69400E-002	0.00000E+000	8.58059E+001
Scrapers	1.08660E-001	1.31721E+000	8.22270E-001	1.54000E-003	5.16100E-002	4.74800E-002	0.00000E+000	1.38782E+002	1.38782E+002	4.39100E-002	0.00000E+000	1.39880E+002
Tractors/Loaders/Backhoes	2.93980E-001	2.96741E+000	3.43743E+000	4.71000E-003	1.79030E-001	1.64710E-001	0.00000E+000	4.16241E+002	4.16241E+002	1.33960E-001	0.00000E+000	4.19590E+002
Trenchers	2.22600E-002	2.00780E-001	1.35270E-001	1.70000E-004	1.51800E-002	1.39700E-002	0.00000E+000	1.55234E+001	1.55234E+001	4.91000E-003	0.00000E+000	1.56462E+001
Welders	1.57830E-001	7.71260E-001	8.80250E-001	1.30000E-003	3.84600E-002	3.84600E-002	0.00000E+000	9.57102E+001	9.57102E+001	1.28200E-002	0.00000E+000	9.60308E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	7.00000E-003	4.75600E-002	6.61100E-002	1.10000E-004	2.58000E-003	2.58000E-003	0.00000E+000	9.31937E+000	9.31937E+000	5.60000E-004	0.00000E+000	9.33330E+000
Cranes	1.85470E-001	2.15240E+000	8.95820E-001	2.57000E-003	8.89900E-002	8.18800E-002	0.00000E+000	2.26137E+002	2.26137E+002	7.29500E-002	0.00000E+000	2.27960E+002
Excavators	2.65900E-002	2.73550E-001	3.32850E-001	5.30000E-004	1.31900E-002	1.21400E-002	0.00000E+000	4.72959E+001	4.72959E+001	1.49600E-002	0.00000E+000	4.76699E+001
Forklifts	1.97770E-001	1.80345E+000	1.78166E+000	2.33000E-003	1.27990E-001	1.17750E-001	0.00000E+000	2.05394E+002	2.05394E+002	6.62600E-002	0.00000E+000	2.07050E+002

Generator Sets	1.85820E-001	1.63048E+000	1.87666E+000	3.34000E-003	8.75100E-002	8.75100E-002	0.00000E+000	2.87408E+002	2.87408E+002	1.49800E-002	0.00000E+000	2.87782E+002
Graders	2.48200E-002	3.35560E-001	9.37400E-002	3.40000E-004	1.07700E-002	9.91000E-003	0.00000E+000	3.04260E+001	3.04260E+001	9.63000E-003	0.00000E+000	3.06667E+001
Pavers	1.38200E-002	1.35560E-001	2.07590E-001	3.40000E-004	6.38000E-003	5.87000E-003	0.00000E+000	2.97335E+001	2.97335E+001	9.62000E-003	0.00000E+000	2.99739E+001
Paving Equipment	1.22900E-002	1.15410E-001	1.84080E-001	2.90000E-004	5.61000E-003	5.16000E-003	0.00000E+000	2.57655E+001	2.57655E+001	8.33000E-003	0.00000E+000	2.59738E+001
Rollers	1.10700E-002	1.15930E-001	1.33360E-001	1.90000E-004	6.38000E-003	5.87000E-003	0.00000E+000	1.65976E+001	1.65976E+001	5.37000E-003	0.00000E+000	1.67318E+001
Rubber Tired Dozers	1.25940E-001	1.34026E+000	4.75530E-001	9.50000E-004	6.53500E-002	6.01200E-002	0.00000E+000	8.51324E+001	8.51324E+001	2.69300E-002	0.00000E+000	8.58058E+001
Scrapers	1.08660E-001	1.31721E+000	8.22260E-001	1.54000E-003	5.16100E-002	4.74800E-002	0.00000E+000	1.38782E+002	1.38782E+002	4.39100E-002	0.00000E+000	1.39880E+002
Tractors/Loaders/Backhoes	2.93980E-001	2.96741E+000	3.43742E+000	4.71000E-003	1.79030E-001	1.64710E-001	0.00000E+000	4.16241E+002	4.16241E+002	1.33960E-001	0.00000E+000	4.19590E+002
Trenchers	2.22600E-002		1.35270E-001	1.70000E-004	1.51800E-002	1.39700E-002	0.00000E+000	1.55234E+001	1.55234E+001	4.91000E-003	0.00000E+000	1.56462E+001
Welders	1.57830E-001	7.71260E-001	8.80250E-001	1.30000E-003	3.84600E-002	3.84600E-002	0.00000E+000	9.57101E+001	9.57101E+001	1.28200E-002	0.00000E+000	9.60307E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.07303E-006	1.07303E-006	0.00000E+000	0.00000E+000	2.14286E-006
Cranes	0.00000E+000	4.64595E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19397E-006	1.19397E-006	0.00000E+000	0.00000E+000	1.18441E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.05717E-006	1.05717E-006	0.00000E+000	0.00000E+000	1.25865E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16849E-006	1.16849E-006	0.00000E+000	0.00000E+000	1.20743E-006
Generator Sets	0.00000E+000	0.00000E+000	5.32859E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18299E-006	1.18299E-006	0.00000E+000	0.00000E+000	1.18145E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	9.85997E-007	9.85997E-007	0.00000E+000	0.00000E+000	1.30435E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.34528E-006	1.34528E-006	0.00000E+000	0.00000E+000	1.33449E-006
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16435E-006	1.16435E-006	0.00000E+000	0.00000E+000	1.15501E-006
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20499E-006	1.20499E-006	0.00000E+000	0.00000E+000	1.19533E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17464E-006	1.17464E-006	3.71195E-004	0.00000E+000	1.28196E-006
Scrapers	0.00000E+000	0.00000E+000	1.21615E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22494E-006	1.22494E-006	0.00000E+000	0.00000E+000	1.21533E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	2.90915E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20123E-006	1.20123E-006	0.00000E+000	0.00000E+000	1.19164E-006
Trenchers	0.00000E+000	1.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.28837E-006	1.28837E-006	0.00000E+000	0.00000E+000	1.27826E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14930E-006	1.14930E-006	0.00000E+000	0.00000E+000	1.24960E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.03	0.01	0.03	0.01	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	3.10	0.85	3.10	0.85	0.00	0.00
Grading	Fugitive Dust	0.44	0.18	0.20	0.08	0.55	0.55
Grading	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.36	0.20	0.16	0.09	0.55	0.55
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.19	0.47		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			

	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00

No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	

No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Byron Airport - Aviation Related Use Construction
Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2024-2028) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Energy Use - Default

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	29.00
tblConstructionPhase	NumDays	35.00	100.00
tblConstructionPhase	NumDays	370.00	1,061.00
tblConstructionPhase	NumDays	20.00	57.00
tblConstructionPhase	NumDays	20.00	58.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	0.00	4.16
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.4248	4.0426	3.7102	0.0120	1.0722	0.1394	1.2115	0.4267	0.1291	0.5558	0.0000	1,088.5306	1,088.5306	0.1606	0.0000	1,092.5444
2025	0.3769	3.5013	3.6203	0.0156	0.7125	0.0745	0.7870	0.1948	0.0701	0.2648	0.0000	1,437.6287	1,437.6287	0.0999	0.0000	1,440.1272
2026	0.3681	3.4648	3.5407	0.0154	0.7125	0.0744	0.7868	0.1948	0.0699	0.2647	0.0000	1,420.4216	1,420.4216	0.0990	0.0000	1,422.8956
2027	0.3599	3.4281	3.4713	0.0152	0.7125	0.0742	0.7866	0.1948	0.0698	0.2645	0.0000	1,404.9034	1,404.9034	0.0981	0.0000	1,407.3550
2028	1.8557	2.1692	2.4056	9.2900e-003	0.4212	0.0546	0.4758	0.1150	0.0512	0.1662	0.0000	853.9228	853.9228	0.0731	0.0000	855.7513
Maximum	**1.8557**	**4.0426**	**3.7102**	**0.0156**	**1.0722**	**0.1394**	**1.2115**	**0.4267**	**0.1291**	**0.5558**	**0.0000**	**1,437.6287**	**1,437.6287**	**0.1606**	**0.0000**	**1,440.1272**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.4248	4.0426	3.7102	0.0120	0.6896	0.1394	0.8289	0.2486	0.1291	0.3777	0.0000	1,088.5300	1,088.5300	0.1606	0.0000	1,092.5438
2025	0.3769	3.5013	3.6203	0.0156	0.7125	0.0745	0.7870	0.1948	0.0701	0.2648	0.0000	1,437.6284	1,437.6284	0.0999	0.0000	1,440.1268
2026	0.3681	3.4648	3.5407	0.0154	0.7125	0.0744	0.7868	0.1948	0.0699	0.2647	0.0000	1,420.4213	1,420.4213	0.0990	0.0000	1,422.8952
2027	0.3599	3.4281	3.4713	0.0152	0.7125	0.0742	0.7866	0.1948	0.0698	0.2645	0.0000	1,404.9031	1,404.9031	0.0981	0.0000	1,407.3547
2028	1.8557	2.1692	2.4056	9.2900e-003	0.4212	0.0546	0.4758	0.1150	0.0512	0.1662	0.0000	853.9225	853.9225	0.0731	0.0000	855.7510
Maximum	**1.8557**	**4.0426**	**3.7102**	**0.0156**	**0.7125**	**0.1394**	**0.8289**	**0.2486**	**0.1291**	**0.3777**	**0.0000**	**1,437.6284**	**1,437.6284**	**0.1606**	**0.0000**	**1,440.1268**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**10.54**	**0.00**	**9.45**	**15.82**	**0.00**	**11.75**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2024**	**3-31-2024**	1.1455	1.1455
2	**4-1-2024**	**6-30-2024**	1.2658	1.2658
3	**7-1-2024**	**9-30-2024**	1.0174	1.0174
4	**10-1-2024**	**12-31-2024**	1.0317	1.0317
5	**1-1-2025**	**3-31-2025**	0.9623	0.9623
6	**4-1-2025**	**6-30-2025**	0.9596	0.9596
7	**7-1-2025**	**9-30-2025**	0.9701	0.9701
8	**10-1-2025**	**12-31-2025**	0.9837	0.9837
9	**1-1-2026**	**3-31-2026**	0.9508	0.9508
10	**4-1-2026**	**6-30-2026**	0.9485	0.9485
11	**7-1-2026**	**9-30-2026**	0.9590	0.9590
12	**10-1-2026**	**12-31-2026**	0.9719	0.9719
13	**1-1-2027**	**3-31-2027**	0.9394	0.9394
14	**4-1-2027**	**6-30-2027**	0.9376	0.9376
15	**7-1-2027**	**9-30-2027**	0.9479	0.9479
16	**10-1-2027**	**12-31-2027**	0.9602	0.9602
17	**1-1-2028**	**3-31-2028**	0.9400	0.9400
18	**4-1-2028**	**6-30-2028**	0.9283	0.9283
19	**7-1-2028**	**9-30-2028**	0.4735	0.4735
		Highest	1.2658	1.2658

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Area	1.3034	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003
Energy	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	500.7011	500.7011	0.0387	9.9400e-003	504.6304
Mobile	0.1587	0.7450	2.0663	9.4800e-003	1.0645	6.3400e-003	1.0708	0.2855	5.8900e-003	0.2914	0.0000	871.3024	871.3024	0.0246	0.0000	871.9182
Waste						0.0000	0.0000		0.0000	0.0000	38.7632	0.0000	38.7632	2.2908	0.0000	96.0341
Water						0.0000	0.0000		0.0000	0.0000	11.2982	25.6976	36.9958	1.1630	0.0279	74.3916
Total	**1.4756**	**0.8686**	**2.1729**	**0.0102**	**1.0645**	**0.0157**	**1.0802**	**0.2855**	**0.0153**	**0.3008**	**50.0614**	**1,397.7065**	**1,447.7678**	**3.5172**	**0.0379**	**1,546.9799**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.3034	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003
Energy	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	500.7011	500.7011	0.0387	9.9400e-003	504.6304
Mobile	0.1587	0.7450	2.0663	9.4800e-003	1.0645	6.3400e-003	1.0708	0.2855	5.8900e-003	0.2914	0.0000	871.3024	871.3024	0.0246	0.0000	871.9182
Waste						0.0000	0.0000		0.0000	0.0000	38.7632	0.0000	38.7632	2.2908	0.0000	96.0341
Water						0.0000	0.0000		0.0000	0.0000	11.2982	25.6976	36.9958	1.1630	0.0279	74.3916
Total	**1.4756**	**0.8686**	**2.1729**	**0.0102**	**1.0645**	**0.0157**	**1.0802**	**0.2855**	**0.0153**	**0.3008**	**50.0614**	**1,397.7065**	**1,447.7678**	**3.5172**	**0.0379**	**1,546.9799**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2024	2/8/2024	5	29	
2	Grading	Grading	2/9/2024	6/27/2024	5	100	
3	Building Construction	Building Construction	6/28/2024	7/21/2028	5	1061	
4	Paving	Paving	7/22/2028	10/10/2028	5	57	
5	Architectural Coating	Architectural Coating	10/11/2028	12/29/2028	5	58	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 250

Acres of Paving: 14.69

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 423,000; Non-Residential Outdoor: 141,000; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Trenchers	1	8.00	78	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38

Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	387.00	151.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	77.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2620	0.0000	0.2620	0.1440	0.0000	0.1440	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0386	0.3941	0.2659	5.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	48.5127	48.5127	0.0157	0.0000	48.9050
Total	**0.0386**	**0.3941**	**0.2659**	**5.5000e-004**	**0.2620**	**0.0178**	**0.2798**	**0.1440**	**0.0164**	**0.1604**	**0.0000**	**48.5127**	**48.5127**	**0.0157**	**0.0000**	**48.9050**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.5000e-004	4.8000e-004	5.4500e-003	2.0000e-005	2.4900e-003	1.0000e-005	2.5100e-003	6.6000e-004	1.0000e-005	6.8000e-004	0.0000	1.8635	1.8635	3.0000e-005	0.0000	1.8644
Total	**7.5000e-004**	**4.8000e-004**	**5.4500e-003**	**2.0000e-005**	**2.4900e-003**	**1.0000e-005**	**2.5100e-003**	**6.6000e-004**	**1.0000e-005**	**6.8000e-004**	**0.0000**	**1.8635**	**1.8635**	**3.0000e-005**	**0.0000**	**1.8644**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1179	0.0000	0.1179	0.0648	0.0000	0.0648	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0386	0.3941	0.2659	5.5000e-004		0.0178	0.0178		0.0164	0.0164	0.0000	48.5127	48.5127	0.0157	0.0000	48.9049
Total	**0.0386**	**0.3941**	**0.2659**	**5.5000e-004**	**0.1179**	**0.0178**	**0.1357**	**0.0648**	**0.0164**	**0.0812**	**0.0000**	**48.5127**	**48.5127**	**0.0157**	**0.0000**	**48.9049**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	7.5000e-004	4.8000e-004	5.4500e-003	2.0000e-005	2.4900e-003	1.0000e-005	2.5100e-003	6.6000e-004	1.0000e-005	6.8000e-004	0.0000	1.8635	1.8635	3.0000e-005	0.0000	1.8644
Total	**7.5000e-004**	**4.8000e-004**	**5.4500e-003**	**2.0000e-005**	**2.4900e-003**	**1.0000e-005**	**2.5100e-003**	**6.6000e-004**	**1.0000e-005**	**6.8000e-004**	**0.0000**	**1.8635**	**1.8635**	**3.0000e-005**	**0.0000**	**1.8644**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4337	0.0000	0.4337	0.1798	0.0000	0.1798	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1780	1.7776	1.5164	3.2700e-003		0.0778	0.0778		0.0715	0.0715	0.0000	287.5115	287.5115	0.0930	0.0000	289.8362
Total	**0.1780**	**1.7776**	**1.5164**	**3.2700e-003**	**0.4337**	**0.0778**	**0.5114**	**0.1798**	**0.0715**	**0.2514**	**0.0000**	**287.5115**	**287.5115**	**0.0930**	**0.0000**	**289.8362**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3200e-003	2.1300e-003	0.0240	9.0000e-005	0.0110	7.0000e-005	0.0110	2.9200e-003	6.0000e-005	2.9800e-003	0.0000	8.2109	8.2109	1.5000e-004	0.0000	8.2146
Total	**3.3200e-003**	**2.1300e-003**	**0.0240**	**9.0000e-005**	**0.0110**	**7.0000e-005**	**0.0110**	**2.9200e-003**	**6.0000e-005**	**2.9800e-003**	**0.0000**	**8.2109**	**8.2109**	**1.5000e-004**	**0.0000**	**8.2146**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1952	0.0000	0.1952	0.0809	0.0000	0.0809	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1780	1.7776	1.5164	3.2700e-003		0.0778	0.0778		0.0715	0.0715	0.0000	287.5112	287.5112	0.0930	0.0000	289.8359
Total	**0.1780**	**1.7776**	**1.5164**	**3.2700e-003**	**0.1952**	**0.0778**	**0.2729**	**0.0809**	**0.0715**	**0.1525**	**0.0000**	**287.5112**	**287.5112**	**0.0930**	**0.0000**	**289.8359**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.3200e-003	2.1300e-003	0.0240	9.0000e-005	0.0110	7.0000e-005	0.0110	2.9200e-003	6.0000e-005	2.9800e-003	0.0000	8.2109	8.2109	1.5000e-004	0.0000	8.2146
Total	**3.3200e-003**	**2.1300e-003**	**0.0240**	**9.0000e-005**	**0.0110**	**7.0000e-005**	**0.0110**	**2.9200e-003**	**6.0000e-005**	**2.9800e-003**	**0.0000**	**8.2109**	**8.2109**	**1.5000e-004**	**0.0000**	**8.2146**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0979	0.8940	1.0751	1.7900e-003		0.0408	0.0408		0.0384	0.0384	0.0000	154.1797	154.1797	0.0365	0.0000	155.0911

Total	**0.0979**	**0.8940**	**1.0751**	**1.7900e-003**		**0.0408**	**0.0408**		**0.0384**	**0.0384**	**0.0000**	**154.1797**	**154.1797**	**0.0365**	**0.0000**	**155.0911**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0320	0.9267	0.2864	4.2200e-003	0.1174	1.4700e-003	0.1189	0.0339	1.4000e-003	0.0353	0.0000	404.5036	404.5036	0.0119	0.0000	404.8009
Worker	0.0743	0.0476	0.5370	2.0300e-003	0.2456	1.4700e-003	0.2471	0.0653	1.3500e-003	0.0667	0.0000	183.7487	183.7487	3.3400e-003	0.0000	183.8322
Total	**0.1063**	**0.9743**	**0.8234**	**6.2500e-003**	**0.3631**	**2.9400e-003**	**0.3660**	**0.0992**	**2.7500e-003**	**0.1020**	**0.0000**	**588.2523**	**588.2523**	**0.0152**	**0.0000**	**588.6331**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0979	0.8940	1.0751	1.7900e-003		0.0408	0.0408		0.0384	0.0384	0.0000	154.1795	154.1795	0.0365	0.0000	155.0910
Total	**0.0979**	**0.8940**	**1.0751**	**1.7900e-003**		**0.0408**	**0.0408**		**0.0384**	**0.0384**	**0.0000**	**154.1795**	**154.1795**	**0.0365**	**0.0000**	**155.0910**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0320	0.9267	0.2864	4.2200e-003	0.1174	1.4700e-003	0.1189	0.0339	1.4000e-003	0.0353	0.0000	404.5036	404.5036	0.0119	0.0000	404.8009
Worker	0.0743	0.0476	0.5370	2.0300e-003	0.2456	1.4700e-003	0.2471	0.0653	1.3500e-003	0.0667	0.0000	183.7487	183.7487	3.3400e-003	0.0000	183.8322
Total	**0.1063**	**0.9743**	**0.8234**	**6.2500e-003**	**0.3631**	**2.9400e-003**	**0.3660**	**0.0992**	**2.7500e-003**	**0.1020**	**0.0000**	**588.2523**	**588.2523**	**0.0152**	**0.0000**	**588.6331**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0612	1.7892	0.5462	8.2400e-003	0.2304	2.8300e-003	0.2333	0.0666	2.7000e-003	0.0693	0.0000	789.2695	789.2695	0.0229	0.0000	789.8411
Worker	0.1373	0.0848	0.9751	3.8200e-003	0.4820	2.8300e-003	0.4849	0.1282	2.6100e-003	0.1308	0.0000	345.7044	345.7044	5.9300e-003	0.0000	345.8526
Total	**0.1985**	**1.8740**	**1.5213**	**0.0121**	**0.7125**	**5.6600e-003**	**0.7181**	**0.1948**	**5.3100e-003**	**0.2001**	**0.0000**	**1,134.9739**	**1,134.9739**	**0.0288**	**0.0000**	**1,135.6937**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0612	1.7892	0.5462	8.2400e-003	0.2304	2.8300e-003	0.2333	0.0666	2.7000e-003	0.0693	0.0000	789.2695	789.2695	0.0229	0.0000	789.8411
Worker	0.1373	0.0848	0.9751	3.8200e-003	0.4820	2.8300e-003	0.4849	0.1282	2.6100e-003	0.1308	0.0000	345.7044	345.7044	5.9300e-003	0.0000	345.8526
Total	**0.1985**	**1.8740**	**1.5213**	**0.0121**	**0.7125**	**5.6600e-003**	**0.7181**	**0.1948**	**5.3100e-003**	**0.2001**	**0.0000**	**1,134.9739**	**1,134.9739**	**0.0288**	**0.0000**	**1,135.6937**

3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0597	1.7600	0.5343	8.2000e-003	0.2304	2.7700e-003	0.2332	0.0666	2.6500e-003	0.0692	0.0000	785.1033	785.1033	0.0224	0.0000	785.6639
Worker	0.1300	0.0775	0.9073	3.6700e-003	0.4820	2.7500e-003	0.4848	0.1282	2.5300e-003	0.1307	0.0000	332.6634	332.6634	5.3900e-003	0.0000	332.7982
Total	**0.1897**	**1.8375**	**1.4417**	**0.0119**	**0.7125**	**5.5200e-003**	**0.7180**	**0.1948**	**5.1800e-003**	**0.1999**	**0.0000**	**1,117.7667**	**1,117.7667**	**0.0278**	**0.0000**	**1,118.4620**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331

Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0597	1.7600	0.5343	8.2000e-003	0.2304	2.7700e-003	0.2332	0.0666	2.6500e-003	0.0692	0.0000	785.1033	785.1033	0.0224	0.0000	785.6639
Worker	0.1300	0.0775	0.9073	3.6700e-003	0.4820	2.7500e-003	0.4848	0.1282	2.5300e-003	0.1307	0.0000	332.6634	332.6634	5.3900e-003	0.0000	332.7982
Total	**0.1897**	**1.8375**	**1.4417**	**0.0119**	**0.7125**	**5.5200e-003**	**0.7180**	**0.1948**	**5.1800e-003**	**0.1999**	**0.0000**	**1,117.7667**	**1,117.7667**	**0.0278**	**0.0000**	**1,118.4620**

3.4 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1785	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6549	302.6549	0.0711	0.0000	304.4335
Total	**0.1785**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6549**	**302.6549**	**0.0711**	**0.0000**	**304.4335**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0585	1.7297	0.5245	8.1500e-003	0.2304	2.7100e-003	0.2332	0.0666	2.5900e-003	0.0692	0.0000	781.0998	781.0998	0.0220	0.0000	781.6499
Worker	0.1230	0.0711	0.8478	3.5500e-003	0.4820	2.6100e-003	0.4847	0.1282	2.4000e-003	0.1306	0.0000	321.1487	321.1487	4.9200e-003	0.0000	321.2716
Total	**0.1815**	**1.8008**	**1.3723**	**0.0117**	**0.7125**	**5.3200e-003**	**0.7178**	**0.1948**	**4.9900e-003**	**0.1998**	**0.0000**	**1,102.2485**	**1,102.2485**	**0.0269**	**0.0000**	**1,102.9215**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1784	1.6273	2.0991	3.5200e-003		0.0689	0.0689		0.0648	0.0648	0.0000	302.6545	302.6545	0.0711	0.0000	304.4331
Total	**0.1784**	**1.6273**	**2.0991**	**3.5200e-003**		**0.0689**	**0.0689**		**0.0648**	**0.0648**	**0.0000**	**302.6545**	**302.6545**	**0.0711**	**0.0000**	**304.4331**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0585	1.7297	0.5245	8.1500e-003	0.2304	2.7100e-003	0.2332	0.0666	2.5900e-003	0.0692	0.0000	781.0998	781.0998	0.0220	0.0000	781.6499
Worker	0.1230	0.0711	0.8478	3.5500e-003	0.4820	2.6100e-003	0.4847	0.1282	2.4000e-003	0.1306	0.0000	321.1487	321.1487	4.9200e-003	0.0000	321.2716
Total	**0.1815**	**1.8008**	**1.3723**	**0.0117**	**0.7125**	**5.3200e-003**	**0.7178**	**0.1948**	**4.9900e-003**	**0.1998**	**0.0000**	**1,102.2485**	**1,102.2485**	**0.0269**	**0.0000**	**1,102.9215**

3.4 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0991	0.9041	1.1661	1.9500e-003		0.0383	0.0383		0.0360	0.0360	0.0000	168.1416	168.1416	0.0395	0.0000	169.1297
Total	**0.0991**	**0.9041**	**1.1661**	**1.9500e-003**		**0.0383**	**0.0383**		**0.0360**	**0.0360**	**0.0000**	**168.1416**	**168.1416**	**0.0395**	**0.0000**	**169.1297**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0319	0.9476	0.2876	4.5100e-003	0.1280	1.4800e-003	0.1295	0.0370	1.4100e-003	0.0384	0.0000	432.1294	432.1294	0.0120	0.0000	432.4298
Worker	0.0644	0.0363	0.4420	1.9100e-003	0.2678	1.3400e-003	0.2692	0.0712	1.2400e-003	0.0725	0.0000	172.8064	172.8064	2.5000e-003	0.0000	172.8690
Total	**0.0963**	**0.9839**	**0.7296**	**6.4200e-003**	**0.3958**	**2.8200e-003**	**0.3987**	**0.1082**	**2.6500e-003**	**0.1109**	**0.0000**	**604.9358**	**604.9358**	**0.0145**	**0.0000**	**605.2988**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0991	0.9041	1.1661	1.9500e-003		0.0383	0.0383		0.0360	0.0360	0.0000	168.1414	168.1414	0.0395	0.0000	169.1295
Total	**0.0991**	**0.9041**	**1.1661**	**1.9500e-003**		**0.0383**	**0.0383**		**0.0360**	**0.0360**	**0.0000**	**168.1414**	**168.1414**	**0.0395**	**0.0000**	**169.1295**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0319	0.9476	0.2876	4.5100e-003	0.1280	1.4800e-003	0.1295	0.0370	1.4100e-003	0.0384	0.0000	432.1294	432.1294	0.0120	0.0000	432.4298
Worker	0.0644	0.0363	0.4420	1.9100e-003	0.2678	1.3400e-003	0.2692	0.0712	1.2400e-003	0.0725	0.0000	172.8064	172.8064	2.5000e-003	0.0000	172.8690
Total	**0.0963**	**0.9839**	**0.7296**	**6.4200e-003**	**0.3958**	**2.8200e-003**	**0.3987**	**0.1082**	**2.6500e-003**	**0.1109**	**0.0000**	**604.9358**	**604.9358**	**0.0145**	**0.0000**	**605.2988**

3.5 Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0261	0.2446	0.4155	6.5000e-004		0.0119	0.0119		0.0110	0.0110	0.0000	57.0549	57.0549	0.0185	0.0000	57.5162

Paving	0.0192					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0453**	**0.2446**	**0.4155**	**6.5000e-004**		**0.0119**	**0.0119**		**0.0110**	**0.0110**	**0.0000**	**57.0549**	**57.0549**	**0.0185**	**0.0000**	**57.5162**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	5.5000e-004	6.7300e-003	3.0000e-005	4.0800e-003	2.0000e-005	4.1000e-003	1.0900e-003	2.0000e-005	1.1000e-003	0.0000	2.6330	2.6330	4.0000e-005	0.0000	2.6339
Total	**9.8000e-004**	**5.5000e-004**	**6.7300e-003**	**3.0000e-005**	**4.0800e-003**	**2.0000e-005**	**4.1000e-003**	**1.0900e-003**	**2.0000e-005**	**1.1000e-003**	**0.0000**	**2.6330**	**2.6330**	**4.0000e-005**	**0.0000**	**2.6339**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0261	0.2446	0.4155	6.5000e-004		0.0119	0.0119		0.0110	0.0110	0.0000	57.0548	57.0548	0.0185	0.0000	57.5161
Paving	0.0192					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0453**	**0.2446**	**0.4155**	**6.5000e-004**		**0.0119**	**0.0119**		**0.0110**	**0.0110**	**0.0000**	**57.0548**	**57.0548**	**0.0185**	**0.0000**	**57.5161**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	5.5000e-004	6.7300e-003	3.0000e-005	4.0800e-003	2.0000e-005	4.1000e-003	1.0900e-003	2.0000e-005	1.1000e-003	0.0000	2.6330	2.6330	4.0000e-005	0.0000	2.6339
Total	**9.8000e-004**	**5.5000e-004**	**6.7300e-003**	**3.0000e-005**	**4.0800e-003**	**2.0000e-005**	**4.1000e-003**	**1.0900e-003**	**2.0000e-005**	**1.1000e-003**	**0.0000**	**2.6330**	**2.6330**	**4.0000e-005**	**0.0000**	**2.6339**

3.6 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6039					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9500e-003	0.0332	0.0525	9.0000e-005		1.4900e-003	1.4900e-003		1.4900e-003	1.4900e-003	0.0000	7.4044	7.4044	4.0000e-004	0.0000	7.4145
Total	**1.6089**	**0.0332**	**0.0525**	**9.0000e-005**		**1.4900e-003**	**1.4900e-003**		**1.4900e-003**	**1.4900e-003**	**0.0000**	**7.4044**	**7.4044**	**4.0000e-004**	**0.0000**	**7.4145**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1200e-003	2.8900e-003	0.0352	1.5000e-004	0.0213	1.1000e-004	0.0214	5.6700e-003	1.0000e-004	5.7700e-003	0.0000	13.7531	13.7531	2.0000e-004	0.0000	13.7581
Total	**5.1200e-003**	**2.8900e-003**	**0.0352**	**1.5000e-004**	**0.0213**	**1.1000e-004**	**0.0214**	**5.6700e-003**	**1.0000e-004**	**5.7700e-003**	**0.0000**	**13.7531**	**13.7531**	**2.0000e-004**	**0.0000**	**13.7581**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6039					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.9500e-003	0.0332	0.0525	9.0000e-005		1.4900e-003	1.4900e-003		1.4900e-003	1.4900e-003	0.0000	7.4044	7.4044	4.0000e-004	0.0000	7.4145
Total	**1.6089**	**0.0332**	**0.0525**	**9.0000e-005**		**1.4900e-003**	**1.4900e-003**		**1.4900e-003**	**1.4900e-003**	**0.0000**	**7.4044**	**7.4044**	**4.0000e-004**	**0.0000**	**7.4145**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1200e-003	2.8900e-003	0.0352	1.5000e-004	0.0213	1.1000e-004	0.0214	5.6700e-003	1.0000e-004	5.7700e-003	0.0000	13.7531	13.7531	2.0000e-004	0.0000	13.7581
Total	**5.1200e-003**	**2.8900e-003**	**0.0352**	**1.5000e-004**	**0.0213**	**1.1000e-004**	**0.0214**	**5.6700e-003**	**1.0000e-004**	**5.7700e-003**	**0.0000**	**13.7531**	**13.7531**	**2.0000e-004**	**0.0000**	**13.7581**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1587	0.7450	2.0663	9.4800e-003	1.0645	6.3400e-003	1.0708	0.2855	5.8900e-003	0.2914	0.0000	871.3024	871.3024	0.0246	0.0000	871.9182
Unmitigated	0.1587	0.7450	2.0663	9.4800e-003	1.0645	6.3400e-003	1.0708	0.2855	5.8900e-003	0.2914	0.0000	871.3024	871.3024	0.0246	0.0000	871.9182

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	1,051.82	383.46	112.42	2,852,510	2,852,510
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	1,051.82	383.46	112.42	2,852,510	2,852,510

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	14.70	6.60	6.60	59.00	28.00	13.00	79	19	2
Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	366.1720	366.1720	0.0361	7.4700e-003	369.3019
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	366.1720	366.1720	0.0361	7.4700e-003	369.3019
NaturalGas Mitigated	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	134.5291	134.5291	2.5800e-003	2.4700e-003	135.3285
NaturalGas Unmitigated	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	134.5291	134.5291	2.5800e-003	2.4700e-003	135.3285

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	2.52098e+006	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	134.5291	134.5291	2.5800e-003	2.4700e-003	135.3285
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total		**0.0136**	**0.1236**	**0.1038**	**7.4000e-004**		**9.3900e-003**	**9.3900e-003**		**9.3900e-003**	**9.3900e-003**	**0.0000**	**134.5291**	**134.5291**	**2.5800e-003**	**2.4700e-003**	**135.3285**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	2.52098e+006	0.0136	0.1236	0.1038	7.4000e-004		9.3900e-003	9.3900e-003		9.3900e-003	9.3900e-003	0.0000	134.5291	134.5291	2.5800e-003	2.4700e-003	135.3285
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0136**	**0.1236**	**0.1038**	**7.4000e-004**		**9.3900e-003**	**9.3900e-003**		**9.3900e-003**	**9.3900e-003**	**0.0000**	**134.5291**	**134.5291**	**2.5800e-003**	**2.4700e-003**	**135.3285**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	2.74582e+006	366.1720	0.0361	7.4700e-003	369.3019
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**366.1720**	**0.0361**	**7.4700e-003**	**369.3019**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	2.74582e+006	366.1720	0.0361	7.4700e-003	369.3019
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**366.1720**	**0.0361**	**7.4700e-003**	**369.3019**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.3034	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003
Unmitigated	1.3034	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1604					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.5000e-004	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003
Total	**1.3034**	**2.0000e-005**	**2.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.3000e-003**	**5.3000e-003**	**1.0000e-005**	**0.0000**	**5.6500e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1604					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.1427					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.5000e-004	2.0000e-005	2.7200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	5.3000e-003	5.3000e-003	1.0000e-005	0.0000	5.6500e-003
Total	**1.3034**	**2.0000e-005**	**2.7200e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**5.3000e-003**	**5.3000e-003**	**1.0000e-005**	**0.0000**	**5.6500e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			

Mitigated	36.9958	1.1630	0.0279	74.3916
Unmitigated	36.9958	1.1630	0.0279	74.3916

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	35.6125 / 0	36.9958	1.1630	0.0279	74.3916
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**36.9958**	**1.1630**	**0.0279**	**74.3916**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	35.6125 / 0	36.9958	1.1630	0.0279	74.3916
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**36.9958**	**1.1630**	**0.0279**	**74.3916**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	38.7632	2.2908	0.0000	96.0341
Unmitigated	38.7632	2.2908	0.0000	96.0341

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	190.96	38.7632	2.2908	0.0000	96.0341
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**38.7632**	**2.2908**	**0.0000**	**96.0341**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	190.96	38.7632	2.2908	0.0000	96.0341
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**38.7632**	**2.2908**	**0.0000**	**96.0341**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Aviation Related Use Construction
Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2024-2028) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Energy Use - Default

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	29.00
tblConstructionPhase	NumDays	35.00	100.00
tblConstructionPhase	NumDays	370.00	1,061.00
tblConstructionPhase	NumDays	20.00	57.00
tblConstructionPhase	NumDays	20.00	58.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	0.00	4.16
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.6306	35.5903	30.8757	0.1242	18.2442	1.5564	19.4746	9.9779	1.4319	11.1098	0.0000	12,625.8291	12,625.8291	2.0536	0.0000	12,647.2542
2025	2.9484	26.5774	28.6343	0.1224	5.6432	0.5708	6.2139	1.5375	0.5368	2.0743	0.0000	12,450.5101	12,450.5101	0.8441	0.0000	12,471.6118
2026	2.8762	26.3097	27.9673	0.1209	5.6432	0.5697	6.2129	1.5375	0.5358	2.0733	0.0000	12,294.6785	12,294.6785	0.8356	0.0000	12,315.5684
2027	2.8083	26.0400	27.3847	0.1195	5.6433	0.5682	6.2115	1.5375	0.5344	2.0719	0.0000	12,154.4760	12,154.4760	0.8279	0.0000	12,175.1731
2028	55.6658	25.8205	26.8876	0.1183	5.6433	0.5664	6.2097	1.5376	0.5327	2.0702	0.0000	12,033.6521	12,033.6521	0.8211	0.0000	12,054.1804
Maximum	**55.6658**	**35.5903**	**30.8757**	**0.1242**	**18.2442**	**1.5564**	**19.4746**	**9.9779**	**1.4319**	**11.1098**	**0.0000**	**12,625.8291**	**12,625.8291**	**2.0536**	**0.0000**	**12,647.2542**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.6306	35.5903	30.8757	0.1242	8.3078	1.5564	9.5382	4.5160	1.4319	5.6480	0.0000	12,625.8291	12,625.8291	2.0536	0.0000	12,647.2542
2025	2.9484	26.5774	28.6343	0.1224	5.6432	0.5708	6.2139	1.5375	0.5368	2.0743	0.0000	12,450.5101	12,450.5101	0.8441	0.0000	12,471.6118
2026	2.8762	26.3097	27.9673	0.1209	5.6432	0.5697	6.2129	1.5375	0.5358	2.0733	0.0000	12,294.6785	12,294.6785	0.8356	0.0000	12,315.5684
2027	2.8083	26.0400	27.3847	0.1195	5.6433	0.5682	6.2115	1.5375	0.5344	2.0719	0.0000	12,154.4760	12,154.4760	0.8279	0.0000	12,175.1731
2028	55.6658	25.8205	26.8876	0.1183	5.6433	0.5664	6.2097	1.5376	0.5327	2.0702	0.0000	12,033.6521	12,033.6521	0.8211	0.0000	12,054.1804
Maximum	**55.6658**	**35.5903**	**30.8757**	**0.1242**	**8.3078**	**1.5564**	**9.5382**	**4.5160**	**1.4319**	**5.6480**	**0.0000**	**12,625.8291**	**12,625.8291**	**2.0536**	**0.0000**	**12,647.2542**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.34**	**0.00**	**22.42**	**33.87**	**0.00**	**28.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Energy	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Mobile	1.3186	5.0882	15.8496	0.0712	7.7462	0.0446	7.7908	2.0714	0.0414	2.1129		7,212.3532	7,212.3532	0.1940		7,217.2028
Total	**8.5362**	**5.7656**	**16.4486**	**0.0753**	**7.7462**	**0.0961**	**7.8423**	**2.0714**	**0.0930**	**2.1644**		**8,024.9822**	**8,024.9822**	**0.2097**	**0.0149**	**8,034.6647**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Energy	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Mobile	1.3186	5.0882	15.8496	0.0712	7.7462	0.0446	7.7908	2.0714	0.0414	2.1129		7,212.3532	7,212.3532	0.1940		7,217.2028
Total	**8.5362**	**5.7656**	**16.4486**	**0.0753**	**7.7462**	**0.0961**	**7.8423**	**2.0714**	**0.0930**	**2.1644**		**8,024.9822**	**8,024.9822**	**0.2097**	**0.0149**	**8,034.6647**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2024	2/8/2024	5	29	
2	Grading	Grading	2/9/2024	6/27/2024	5	100	
3	Building Construction	Building Construction	6/28/2024	7/21/2028	5	1061	
4	Paving	Paving	7/22/2028	10/10/2028	5	57	
5	Architectural Coating	Architectural Coating	10/11/2028	12/29/2028	5	58	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 250

Acres of Paving: 14.69

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 423,000; Non-Residential Outdoor: 141,000; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Trenchers	1	8.00	78	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	387.00	151.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	77.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**18.0663**	**1.2294**	**19.2956**	**9.9307**	**1.1310**	**11.0617**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0299	0.4287	1.5500e-003	0.1780	1.0200e-003	0.1790	0.0472	9.4000e-004	0.0481		154.4567	154.4567	2.8300e-003		154.5273
Total	**0.0554**	**0.0299**	**0.4287**	**1.5500e-003**	**0.1780**	**1.0200e-003**	**0.1790**	**0.0472**	**9.4000e-004**	**0.0481**		**154.4567**	**154.4567**	**2.8300e-003**		**154.5273**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**8.1298**	**1.2294**	**9.3592**	**4.4688**	**1.1310**	**5.5998**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0554	0.0299	0.4287	1.5500e-003	0.1780	1.0200e-003	0.1790	0.0472	9.4000e-004	0.0481		154.4567	154.4567	2.8300e-003		154.5273
Total	**0.0554**	**0.0299**	**0.4287**	**1.5500e-003**	**0.1780**	**1.0200e-003**	**0.1790**	**0.0472**	**9.4000e-004**	**0.0481**		**154.4567**	**154.4567**	**2.8300e-003**		**154.5273**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.5599	35.5521	30.3279	0.0655		1.5551	1.5551		1.4307	1.4307		6,338.5445	6,338.5445	2.0500		6,389.7949
Total	**3.5599**	**35.5521**	**30.3279**	**0.0655**	**8.6733**	**1.5551**	**10.2284**	**3.5965**	**1.4307**	**5.0272**		**6,338.5445**	**6,338.5445**	**2.0500**		**6,389.7949**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0707	0.0382	0.5477	1.9800e-003	0.2274	1.3100e-003	0.2287	0.0603	1.2100e-003	0.0615		197.3613	197.3613	3.6100e-003		197.4516

Total	**0.0707**	**0.0382**	**0.5477**	**1.9800e-003**	**0.2274**	**1.3100e-003**	**0.2287**	**0.0603**	**1.2100e-003**	**0.0615**		**197.3613**	**197.3613**	**3.6100e-003**		**197.4516**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.5599	35.5521	30.3279	0.0655		1.5551	1.5551		1.4307	1.4307	0.0000	6,338.5445	6,338.5445	2.0500		6,389.7949
Total	**3.5599**	**35.5521**	**30.3279**	**0.0655**	**3.9030**	**1.5551**	**5.4581**	**1.6184**	**1.4307**	**3.0491**	**0.0000**	**6,338.5445**	**6,338.5445**	**2.0500**		**6,389.7949**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0707	0.0382	0.5477	1.9800e-003	0.2274	1.3100e-003	0.2287	0.0603	1.2100e-003	0.0615		197.3613	197.3613	3.6100e-003		197.4516
Total	**0.0707**	**0.0382**	**0.5477**	**1.9800e-003**	**0.2274**	**1.3100e-003**	**0.2287**	**0.0603**	**1.2100e-003**	**0.0615**		**197.3613**	**197.3613**	**3.6100e-003**		**197.4516**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4734	13.7437	4.1240	0.0639	1.8172	0.0219	1.8390	0.5228	0.0209	0.5437		6,749.3123	6,749.3123	0.1919		6,754.1092
Worker	1.1902	0.6420	9.2164	0.0333	3.8259	0.0220	3.8480	1.0147	0.0203	1.0350		3,320.8179	3,320.8179	0.0608		3,322.3374
Total	**1.6637**	**14.3857**	**13.3404**	**0.0972**	**5.6431**	**0.0439**	**5.6870**	**1.5375**	**0.0412**	**1.5787**		**10,070.1302**	**10,070.1302**	**0.2527**		**10,076.4465**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4734	13.7437	4.1240	0.0639	1.8172	0.0219	1.8390	0.5228	0.0209	0.5437		6,749.3123	6,749.3123	0.1919		6,754.1092
Worker	1.1902	0.6420	9.2164	0.0333	3.8259	0.0220	3.8480	1.0147	0.0203	1.0350		3,320.8179	3,320.8179	0.0608		3,322.3374
Total	**1.6637**	**14.3857**	**13.3404**	**0.0972**	**5.6431**	**0.0439**	**5.6870**	**1.5375**	**0.0412**	**1.5787**		**10,070.1302**	**10,070.1302**	**0.2527**		**10,076.4465**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4612	13.5247	4.0087	0.0636	1.8172	0.0215	1.8387	0.5228	0.0205	0.5433		6,710.4412	6,710.4412	0.1881		6,715.1429
Worker	1.1198	0.5831	8.5409	0.0319	3.8259	0.0217	3.8476	1.0147	0.0200	1.0347		3,183.5945	3,183.5945	0.0551		3,184.9709
Total	**1.5810**	**14.1078**	**12.5496**	**0.0955**	**5.6432**	**0.0432**	**5.6864**	**1.5375**	**0.0405**	**1.5780**		**9,894.0357**	**9,894.0357**	**0.2431**		**9,900.1138**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4612	13.5247	4.0087	0.0636	1.8172	0.0215	1.8387	0.5228	0.0205	0.5433		6,710.4412	6,710.4412	0.1881		6,715.1429

Worker	1.1198	0.5831	8.5409	0.0319	3.8259	0.0217	3.8476	1.0147	0.0200	1.0347		3,183.5945	3,183.5945	0.0551		3,184.9709
Total	**1.5810**	**14.1078**	**12.5496**	**0.0955**	**5.6432**	**0.0432**	**5.6864**	**1.5375**	**0.0405**	**1.5780**		**9,894.0357**	**9,894.0357**	**0.2431**		**9,900.1138**

3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4504	13.3069	3.9227	0.0632	1.8173	0.0211	1.8384	0.5228	0.0201	0.5430		6,674.7312	6,674.7312	0.1845		6,679.3447
Worker	1.0584	0.5331	7.9600	0.0307	3.8259	0.0211	3.8470	1.0147	0.0194	1.0341		3,063.4729	3,063.4729	0.0501		3,064.7257
Total	**1.5088**	**13.8400**	**11.8827**	**0.0939**	**5.6432**	**0.0421**	**5.6854**	**1.5375**	**0.0395**	**1.5771**		**9,738.2041**	**9,738.2041**	**0.2347**		**9,744.0704**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4504	13.3069	3.9227	0.0632	1.8173	0.0211	1.8384	0.5228	0.0201	0.5430		6,674.7312	6,674.7312	0.1845		6,679.3447
Worker	1.0584	0.5331	7.9600	0.0307	3.8259	0.0211	3.8470	1.0147	0.0194	1.0341		3,063.4729	3,063.4729	0.0501		3,064.7257
Total	**1.5088**	**13.8400**	**11.8827**	**0.0939**	**5.6432**	**0.0421**	**5.6854**	**1.5375**	**0.0395**	**1.5771**		**9,738.2041**	**9,738.2041**	**0.2347**		**9,744.0704**

3.4 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981

Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4409	13.0813	3.8512	0.0629	1.8173	0.0207	1.8380	0.5228	0.0197	0.5426		6,640.4775	6,640.4775	0.1812		6,645.0070
Worker	1.0001	0.4890	7.4489	0.0296	3.8259	0.0200	3.8459	1.0147	0.0184	1.0331		2,957.5241	2,957.5241	0.0458		2,958.6680
Total	**1.4409**	**13.5703**	**11.3001**	**0.0925**	**5.6433**	**0.0406**	**5.6839**	**1.5375**	**0.0381**	**1.5757**		**9,598.0016**	**9,598.0016**	**0.2269**		**9,603.6750**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4409	13.0813	3.8512	0.0629	1.8173	0.0207	1.8380	0.5228	0.0197	0.5426		6,640.4775	6,640.4775	0.1812		6,645.0070
Worker	1.0001	0.4890	7.4489	0.0296	3.8259	0.0200	3.8459	1.0147	0.0184	1.0331		2,957.5241	2,957.5241	0.0458		2,958.6680
Total	**1.4409**	**13.5703**	**11.3001**	**0.0925**	**5.6433**	**0.0406**	**5.6839**	**1.5375**	**0.0381**	**1.5757**		**9,598.0016**	**9,598.0016**	**0.2269**		**9,603.6750**

3.4 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.4333	12.9007	3.8015	0.0626	1.8174	0.0203	1.8376	0.5228	0.0194	0.5422		6,612.4792	6,612.4792	0.1782		6,616.9338
Worker	0.9413	0.4501	7.0015	0.0287	3.8259	0.0185	3.8445	1.0147	0.0171	1.0318		2,864.6985	2,864.6985	0.0420		2,865.7485
Total	**1.3746**	**13.3508**	**10.8030**	**0.0913**	**5.6433**	**0.0388**	**5.6821**	**1.5376**	**0.0364**	**1.5740**		**9,477.1777**	**9,477.1777**	**0.2202**		**9,482.6823**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4333	12.9007	3.8015	0.0626	1.8174	0.0203	1.8376	0.5228	0.0194	0.5422		6,612.4792	6,612.4792	0.1782		6,616.9338
Worker	0.9413	0.4501	7.0015	0.0287	3.8259	0.0185	3.8445	1.0147	0.0171	1.0318		2,864.6985	2,864.6985	0.0420		2,865.7485
Total	**1.3746**	**13.3508**	**10.8030**	**0.0913**	**5.6433**	**0.0388**	**5.6821**	**1.5376**	**0.0364**	**1.5740**		**9,477.1777**	**9,477.1777**	**0.2202**		**9,482.6823**

3.5 Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.6752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5904**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0365	0.0175	0.2714	1.1100e-003	0.1483	7.2000e-004	0.1490	0.0393	6.6000e-004	0.0400		111.0348	111.0348	1.6300e-003		111.0755
Total	**0.0365**	**0.0175**	**0.2714**	**1.1100e-003**	**0.1483**	**7.2000e-004**	**0.1490**	**0.0393**	**6.6000e-004**	**0.0400**		**111.0348**	**111.0348**	**1.6300e-003**		**111.0755**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878

Paving	0.6752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5904**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0365	0.0175	0.2714	1.1100e-003	0.1483	7.2000e-004	0.1490	0.0393	6.6000e-004	0.0400		111.0348	111.0348	1.6300e-003		111.0755
Total	**0.0365**	**0.0175**	**0.2714**	**1.1100e-003**	**0.1483**	**7.2000e-004**	**0.1490**	**0.0393**	**6.6000e-004**	**0.0400**		**111.0348**	**111.0348**	**1.6300e-003**		**111.0755**

3.6 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	55.3076					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**55.4785**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1873	0.0896	1.3931	5.7100e-003	0.7612	3.6900e-003	0.7649	0.2019	3.3900e-003	0.2053		569.9788	569.9788	8.3600e-003		570.1877
Total	**0.1873**	**0.0896**	**1.3931**	**5.7100e-003**	**0.7612**	**3.6900e-003**	**0.7649**	**0.2019**	**3.3900e-003**	**0.2053**		**569.9788**	**569.9788**	**8.3600e-003**		**570.1877**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	55.3076					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**55.4785**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1873	0.0896	1.3931	5.7100e-003	0.7612	3.6900e-003	0.7649	0.2019	3.3900e-003	0.2053		569.9788	569.9788	8.3600e-003		570.1877
Total	**0.1873**	**0.0896**	**1.3931**	**5.7100e-003**	**0.7612**	**3.6900e-003**	**0.7649**	**0.2019**	**3.3900e-003**	**0.2053**		**569.9788**	**569.9788**	**8.3600e-003**		**570.1877**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.3186	5.0882	15.8496	0.0712	7.7462	0.0446	7.7908	2.0714	0.0414	2.1129		7,212.3532	7,212.3532	0.1940		7,217.2028
Unmitigated	1.3186	5.0882	15.8496	0.0712	7.7462	0.0446	7.7908	2.0714	0.0414	2.1129		7,212.3532	7,212.3532	0.1940		7,217.2028

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	1,051.82	383.46	112.42	2,852,510	2,852,510
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	1,051.82	383.46	112.42	2,852,510	2,852,510

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	14.70	6.60	6.60	59.00	28.00	13.00	79	19	2

Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
NaturalGas Unmitigated	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

Industrial Park	6906.79	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0745**	**0.6771**	**0.5688**	**4.0600e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**812.5641**	**812.5641**	**0.0156**	**0.0149**	**817.3927**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Industrial Park	6.90679	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0745**	**0.6771**	**0.5688**	**4.0600e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**812.5641**	**812.5641**	**0.0156**	**0.0149**	**817.3927**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692

Unmitigated	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2615					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7800e-003	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Total	**7.1431**	**2.7000e-004**	**0.0302**	**0.0000**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**0.0649**	**0.0649**	**1.7000e-004**		**0.0692**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2615					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7800e-003	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Total	**7.1431**	**2.7000e-004**	**0.0302**	**0.0000**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**0.0649**	**0.0649**	**1.7000e-004**		**0.0692**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Aviation Related Use Construction
Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	294	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor based on the 2016 value published in the PG&E 2018 Corporate Responsibility and Sustainability Report

Land Use - Land uses and acreage based on Project Description

Construction Phase - Adjusted construction schedule for 5 year (2024-2028) duration

Off-road Equipment - Default

Off-road Equipment - Added a trencher for utilities install

Trips and VMT - Default on-road construction traffic volumes. Increased trip length of workers and vendors to 13 miles (average of distance to Brentwood and Tracy)

Grading - Default total acres graded. Assumed soils balanced on-site.

Vehicle Trips - Modeling construction only

Energy Use - Default

Construction Off-road Equipment Mitigation - Fugitive Dust BMPs: Water exposed area 2x/day and limit vehicle speed on unpaved roads to 15 mph

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	10.00	29.00
tblConstructionPhase	NumDays	35.00	100.00
tblConstructionPhase	NumDays	370.00	1,061.00
tblConstructionPhase	NumDays	20.00	57.00
tblConstructionPhase	NumDays	20.00	58.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	0.00	4.16
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblProjectCharacteristics	CO2IntensityFactor	641.35	294
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	VendorTripLength	6.60	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00
tblTripsAndVMT	WorkerTripLength	10.80	13.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.6337	35.5991	30.8146	0.1201	18.2442	1.5564	19.4746	9.9779	1.4319	11.1098	0.0000	12,207.9565	12,207.9565	2.0533	0.0000	12,229.5305
2025	3.0242	26.9150	28.0472	0.1185	5.6432	0.5712	6.2144	1.5375	0.5372	2.0747	0.0000	12,047.1319	12,047.1319	0.8500	0.0000	12,068.3819
2026	2.9525	26.6281	27.4185	0.1170	5.6432	0.5701	6.2133	1.5375	0.5362	2.0737	0.0000	11,903.8686	11,903.8686	0.8415	0.0000	11,924.9054
2027	2.8845	26.3399	26.8715	0.1157	5.6433	0.5685	6.2118	1.5375	0.5347	2.0722	0.0000	11,774.5823	11,774.5823	0.8337	0.0000	11,795.4246
2028	55.6766	26.1060	26.4075	0.1146	5.6433	0.5667	6.2100	1.5376	0.5330	2.0705	0.0000	11,663.2886	11,663.2886	0.8269	0.0000	11,683.9602
Maximum	**55.6766**	**35.5991**	**30.8146**	**0.1201**	**18.2442**	**1.5564**	**19.4746**	**9.9779**	**1.4319**	**11.1098**	**0.0000**	**12,207.9565**	**12,207.9565**	**2.0533**	**0.0000**	**12,229.5305**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	3.6337	35.5991	30.8146	0.1201	8.3078	1.5564	9.5382	4.5160	1.4319	5.6480	0.0000	12,207.9565	12,207.9565	2.0533	0.0000	12,229.5305
2025	3.0242	26.9150	28.0472	0.1185	5.6432	0.5712	6.2144	1.5375	0.5372	2.0747	0.0000	12,047.1319	12,047.1319	0.8500	0.0000	12,068.3819
2026	2.9525	26.6281	27.4185	0.1170	5.6432	0.5701	6.2133	1.5375	0.5362	2.0737	0.0000	11,903.8686	11,903.8686	0.8415	0.0000	11,924.9054
2027	2.8845	26.3399	26.8715	0.1157	5.6433	0.5685	6.2118	1.5375	0.5347	2.0722	0.0000	11,774.5823	11,774.5823	0.8337	0.0000	11,795.4246
2028	55.6766	26.1060	26.4075	0.1146	5.6433	0.5667	6.2100	1.5376	0.5330	2.0705	0.0000	11,663.2886	11,663.2886	0.8269	0.0000	11,683.9602
Maximum	**55.6766**	**35.5991**	**30.8146**	**0.1201**	**8.3078**	**1.5564**	**9.5382**	**4.5160**	**1.4319**	**5.6480**	**0.0000**	**12,207.9565**	**12,207.9565**	**2.0533**	**0.0000**	**12,229.5305**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**24.34**	**0.00**	**22.42**	**33.87**	**0.00**	**28.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Energy	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Mobile	1.0871	5.3445	15.0040	0.0659	7.7462	0.0447	7.7909	2.0714	0.0415	2.1130		6,678.3819	6,678.3819	0.1947		6,683.2483
Total	**8.3047**	**6.0219**	**15.6030**	**0.0700**	**7.7462**	**0.0962**	**7.8424**	**2.0714**	**0.0931**	**2.1645**		**7,491.0109**	**7,491.0109**	**0.2104**	**0.0149**	**7,500.7102**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Energy	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Mobile	1.0871	5.3445	15.0040	0.0659	7.7462	0.0447	7.7909	2.0714	0.0415	2.1130		6,678.3819	6,678.3819	0.1947		6,683.2483
Total	**8.3047**	**6.0219**	**15.6030**	**0.0700**	**7.7462**	**0.0962**	**7.8424**	**2.0714**	**0.0931**	**2.1645**		**7,491.0109**	**7,491.0109**	**0.2104**	**0.0149**	**7,500.7102**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2024	2/8/2024	5	29	
2	Grading	Grading	2/9/2024	6/27/2024	5	100	
3	Building Construction	Building Construction	6/28/2024	7/21/2028	5	1061	
4	Paving	Paving	7/22/2028	10/10/2028	5	57	
5	Architectural Coating	Architectural Coating	10/11/2028	12/29/2028	5	58	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 250

Acres of Paving: 14.69

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 423,000; Non-Residential Outdoor: 141,000; Striped Parking

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Trenchers	1	8.00	78	0.50
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	9	23.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	387.00	151.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	77.00	0.00	0.00	13.00	13.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310		3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**18.0663**	**1.2294**	**19.2956**	**9.9307**	**1.1310**	**11.0617**		**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0578	0.0368	0.3809	1.4000e-003	0.1780	1.0200e-003	0.1790	0.0472	9.4000e-004	0.0481		139.9145	139.9145	2.5500e-003		139.9782
Total	**0.0578**	**0.0368**	**0.3809**	**1.4000e-003**	**0.1780**	**1.0200e-003**	**0.1790**	**0.0472**	**9.4000e-004**	**0.0481**		**139.9145**	**139.9145**	**2.5500e-003**		**139.9782**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	2.6609	27.1760	18.3356	0.0381		1.2294	1.2294		1.1310	1.1310	0.0000	3,688.0100	3,688.0100	1.1928		3,717.8294
Total	**2.6609**	**27.1760**	**18.3356**	**0.0381**	**8.1298**	**1.2294**	**9.3592**	**4.4688**	**1.1310**	**5.5998**	**0.0000**	**3,688.0100**	**3,688.0100**	**1.1928**		**3,717.8294**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0578	0.0368	0.3809	1.4000e-003	0.1780	1.0200e-003	0.1790	0.0472	9.4000e-004	0.0481		139.9145	139.9145	2.5500e-003		139.9782
Total	**0.0578**	**0.0368**	**0.3809**	**1.4000e-003**	**0.1780**	**1.0200e-003**	**0.1790**	**0.0472**	**9.4000e-004**	**0.0481**		**139.9145**	**139.9145**	**2.5500e-003**		**139.9782**

3.3 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.5599	35.5521	30.3279	0.0655		1.5551	1.5551		1.4307	1.4307		6,338.5445	6,338.5445	2.0500		6,389.7949
Total	**3.5599**	**35.5521**	**30.3279**	**0.0655**	**8.6733**	**1.5551**	**10.2284**	**3.5965**	**1.4307**	**5.0272**		**6,338.5445**	**6,338.5445**	**2.0500**		**6,389.7949**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0739	0.0470	0.4867	1.7900e-003	0.2274	1.3100e-003	0.2287	0.0603	1.2100e-003	0.0615		178.7797	178.7797	3.2500e-003		178.8610

Total	**0.0739**	**0.0470**	**0.4867**	**1.7900e-003**	**0.2274**	**1.3100e-003**	**0.2287**	**0.0603**	**1.2100e-003**	**0.0615**		**178.7797**	**178.7797**	**3.2500e-003**		**178.8610**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.5599	35.5521	30.3279	0.0655		1.5551	1.5551		1.4307	1.4307	0.0000	6,338.5445	6,338.5445	2.0500		6,389.7949
Total	**3.5599**	**35.5521**	**30.3279**	**0.0655**	**3.9030**	**1.5551**	**5.4581**	**1.6184**	**1.4307**	**3.0491**	**0.0000**	**6,338.5445**	**6,338.5445**	**2.0500**		**6,389.7949**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0739	0.0470	0.4867	1.7900e-003	0.2274	1.3100e-003	0.2287	0.0603	1.2100e-003	0.0615		178.7797	178.7797	3.2500e-003		178.8610
Total	**0.0739**	**0.0470**	**0.4867**	**1.7900e-003**	**0.2274**	**1.3100e-003**	**0.2287**	**0.0603**	**1.2100e-003**	**0.0615**		**178.7797**	**178.7797**	**3.2500e-003**		**178.8610**

3.4 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4968	13.9544	4.5200	0.0630	1.8172	0.0224	1.8395	0.5228	0.0214	0.5441		6,644.0951	6,644.0951	0.2039		6,649.1914
Worker	1.2432	0.7902	8.1894	0.0302	3.8259	0.0220	3.8480	1.0147	0.0203	1.0350		3,008.1625	3,008.1625	0.0548		3,009.5314
Total	**1.7400**	**14.7446**	**12.7094**	**0.0931**	**5.6431**	**0.0444**	**5.6875**	**1.5375**	**0.0417**	**1.5791**		**9,652.2576**	**9,652.2576**	**0.2586**		**9,658.7228**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4968	13.9544	4.5200	0.0630	1.8172	0.0224	1.8395	0.5228	0.0214	0.5441		6,644.0951	6,644.0951	0.2039		6,649.1914
Worker	1.2432	0.7902	8.1894	0.0302	3.8259	0.0220	3.8480	1.0147	0.0203	1.0350		3,008.1625	3,008.1625	0.0548		3,009.5314
Total	**1.7400**	**14.7446**	**12.7094**	**0.0931**	**5.6431**	**0.0444**	**5.6875**	**1.5375**	**0.0417**	**1.5791**		**9,652.2576**	**9,652.2576**	**0.2586**		**9,658.7228**

3.4 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4837	13.7279	4.3910	0.0626	1.8172	0.0219	1.8392	0.5228	0.0210	0.5438		6,606.6534	6,606.6534	0.1996		6,611.6423
Worker	1.1732	0.7173	7.5716	0.0289	3.8259	0.0217	3.8476	1.0147	0.0200	1.0347		2,884.0042	2,884.0042	0.0495		2,885.2415
Total	**1.6568**	**14.4453**	**11.9626**	**0.0915**	**5.6432**	**0.0436**	**5.6868**	**1.5375**	**0.0409**	**1.5784**		**9,490.6576**	**9,490.6576**	**0.2491**		**9,496.8838**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4837	13.7279	4.3910	0.0626	1.8172	0.0219	1.8392	0.5228	0.0210	0.5438		6,606.6534	6,606.6534	0.1996		6,611.6423

Worker	1.1732	0.7173	7.5716	0.0289	3.8259	0.0217	3.8476	1.0147	0.0200	1.0347		2,884.0042	2,884.0042	0.0495		2,885.2415
Total	**1.6568**	**14.4453**	**11.9626**	**0.0915**	**5.6432**	**0.0436**	**5.6868**	**1.5375**	**0.0409**	**1.5784**		**9,490.6576**	**9,490.6576**	**0.2491**		**9,496.8838**

3.4 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4721	13.5028	4.2943	0.0622	1.8173	0.0215	1.8387	0.5228	0.0205	0.5433		6,572.1795	6,572.1795	0.1956		6,577.0687
Worker	1.1130	0.6556	7.0396	0.0278	3.8259	0.0211	3.8470	1.0147	0.0194	1.0341		2,775.2147	2,775.2147	0.0450		2,776.3386
Total	**1.5851**	**14.1584**	**11.3339**	**0.0901**	**5.6432**	**0.0425**	**5.6857**	**1.5375**	**0.0399**	**1.5774**		**9,347.3943**	**9,347.3943**	**0.2405**		**9,353.4073**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4721	13.5028	4.2943	0.0622	1.8173	0.0215	1.8387	0.5228	0.0205	0.5433		6,572.1795	6,572.1795	0.1956		6,577.0687
Worker	1.1130	0.6556	7.0396	0.0278	3.8259	0.0211	3.8470	1.0147	0.0194	1.0341		2,775.2147	2,775.2147	0.0450		2,776.3386
Total	**1.5851**	**14.1584**	**11.3339**	**0.0901**	**5.6432**	**0.0425**	**5.6857**	**1.5375**	**0.0399**	**1.5774**		**9,347.3943**	**9,347.3943**	**0.2405**		**9,353.4073**

3.4 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981

Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4619	13.2690	4.2149	0.0619	1.8173	0.0210	1.8383	0.5228	0.0201	0.5429		6,538.9660	6,538.9660	0.1918		6,543.7603
Worker	1.0552	0.6012	6.5720	0.0268	3.8259	0.0200	3.8459	1.0147	0.0184	1.0331		2,679.1420	2,679.1420	0.0410		2,680.1662
Total	**1.5171**	**13.8702**	**10.7868**	**0.0888**	**5.6433**	**0.0410**	**5.6842**	**1.5375**	**0.0384**	**1.5760**		**9,218.1080**	**9,218.1080**	**0.2327**		**9,223.9265**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4619	13.2690	4.2149	0.0619	1.8173	0.0210	1.8383	0.5228	0.0201	0.5429		6,538.9660	6,538.9660	0.1918		6,543.7603
Worker	1.0552	0.6012	6.5720	0.0268	3.8259	0.0200	3.8459	1.0147	0.0184	1.0331		2,679.1420	2,679.1420	0.0410		2,680.1662
Total	**1.5171**	**13.8702**	**10.7868**	**0.0888**	**5.6433**	**0.0410**	**5.6842**	**1.5375**	**0.0384**	**1.5760**		**9,218.1080**	**9,218.1080**	**0.2327**		**9,223.9265**

3.4 Building Construction - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.4538	13.0831	4.1593	0.0617	1.8174	0.0206	1.8379	0.5228	0.0197	0.5425		6,511.9285	6,511.9285	0.1884		6,516.6378
Worker	0.9957	0.5532	6.1636	0.0260	3.8259	0.0185	3.8445	1.0147	0.0171	1.0318		2,594.8857	2,594.8857	0.0376		2,595.8244
Total	**1.4495**	**13.6363**	**10.3229**	**0.0877**	**5.6433**	**0.0391**	**5.6824**	**1.5376**	**0.0367**	**1.5743**		**9,106.8142**	**9,106.8142**	**0.2259**		**9,112.4622**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4538	13.0831	4.1593	0.0617	1.8174	0.0206	1.8379	0.5228	0.0197	0.5425		6,511.9285	6,511.9285	0.1884		6,516.6378
Worker	0.9957	0.5532	6.1636	0.0260	3.8259	0.0185	3.8445	1.0147	0.0171	1.0318		2,594.8857	2,594.8857	0.0376		2,595.8244
Total	**1.4495**	**13.6363**	**10.3229**	**0.0877**	**5.6433**	**0.0391**	**5.6824**	**1.5376**	**0.0367**	**1.5743**		**9,106.8142**	**9,106.8142**	**0.2259**		**9,112.4622**

3.5 Paving - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.6752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5904**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0386	0.0214	0.2389	1.0100e-003	0.1483	7.2000e-004	0.1490	0.0393	6.6000e-004	0.0400		100.5770	100.5770	1.4600e-003		100.6134
Total	**0.0386**	**0.0214**	**0.2389**	**1.0100e-003**	**0.1483**	**7.2000e-004**	**0.1490**	**0.0393**	**6.6000e-004**	**0.0400**		**100.5770**	**100.5770**	**1.4600e-003**		**100.6134**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878

Paving	0.6752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5904**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0386	0.0214	0.2389	1.0100e-003	0.1483	7.2000e-004	0.1490	0.0393	6.6000e-004	0.0400		100.5770	100.5770	1.4600e-003		100.6134
Total	**0.0386**	**0.0214**	**0.2389**	**1.0100e-003**	**0.1483**	**7.2000e-004**	**0.1490**	**0.0393**	**6.6000e-004**	**0.0400**		**100.5770**	**100.5770**	**1.4600e-003**		**100.6134**

3.6 Architectural Coating - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	55.3076					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**55.4785**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1981	0.1101	1.2263	5.1700e-003	0.7612	3.6900e-003	0.7649	0.2019	3.3900e-003	0.2053		516.2951	516.2951	7.4700e-003		516.4819
Total	**0.1981**	**0.1101**	**1.2263**	**5.1700e-003**	**0.7612**	**3.6900e-003**	**0.7649**	**0.2019**	**3.3900e-003**	**0.2053**		**516.2951**	**516.2951**	**7.4700e-003**		**516.4819**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	55.3076					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**55.4785**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1981	0.1101	1.2263	5.1700e-003	0.7612	3.6900e-003	0.7649	0.2019	3.3900e-003	0.2053		516.2951	516.2951	7.4700e-003		516.4819
Total	**0.1981**	**0.1101**	**1.2263**	**5.1700e-003**	**0.7612**	**3.6900e-003**	**0.7649**	**0.2019**	**3.3900e-003**	**0.2053**		**516.2951**	**516.2951**	**7.4700e-003**		**516.4819**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0871	5.3445	15.0040	0.0659	7.7462	0.0447	7.7909	2.0714	0.0415	2.1130		6,678.3819	6,678.3819	0.1947		6,683.2483
Unmitigated	1.0871	5.3445	15.0040	0.0659	7.7462	0.0447	7.7909	2.0714	0.0415	2.1130		6,678.3819	6,678.3819	0.1947		6,683.2483

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	1,051.82	383.46	112.42	2,852,510	2,852,510
Other Asphalt Surfaces	0.00	0.00	0.00		
User Defined Industrial	0.00	0.00	0.00		
Total	1,051.82	383.46	112.42	2,852,510	2,852,510

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	14.70	6.60	6.60	59.00	28.00	13.00	79	19	2

Other Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0
User Defined Industrial	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
NaturalGas Unmitigated	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					

Industrial Park	6906.79	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0745**	**0.6771**	**0.5688**	**4.0600e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**812.5641**	**812.5641**	**0.0156**	**0.0149**	**817.3927**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Industrial Park	6.90679	0.0745	0.6771	0.5688	4.0600e-003		0.0515	0.0515		0.0515	0.0515		812.5641	812.5641	0.0156	0.0149	817.3927
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0745**	**0.6771**	**0.5688**	**4.0600e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**812.5641**	**812.5641**	**0.0156**	**0.0149**	**817.3927**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692

Unmitigated	7.1431	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2615					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7800e-003	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Total	**7.1431**	**2.7000e-004**	**0.0302**	**0.0000**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**0.0649**	**0.0649**	**1.7000e-004**		**0.0692**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8789					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	6.2615					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.7800e-003	2.7000e-004	0.0302	0.0000		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004		0.0649	0.0649	1.7000e-004		0.0692
Total	**7.1431**	**2.7000e-004**	**0.0302**	**0.0000**		**1.1000e-004**	**1.1000e-004**		**1.1000e-004**	**1.1000e-004**		**0.0649**	**0.0649**	**1.7000e-004**		**0.0692**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Version: CalEEMod.2016.3.2

Date: 12/18/2018 5:58 PM

Byron Airport - Aviation Related Use Construction

Contra Costa County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	1	No Change	0.00
Cranes	Diesel	No Change	0	1	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	3	No Change	0.00
Generator Sets	Diesel	No Change	0	1	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00

Scrapers	Diesel	No Change	0	2	No Change	0.00	
Tractors/Loaders/Backhoes	Diesel	No Change	0	9	No Change	0.00	
Trenchers	Diesel	No Change	0	1	No Change	0.00	
Welders	Diesel	No Change	0	1	No Change	0.00	

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	4.95000E-003	3.32200E-002	5.24600E-002	9.00000E-005	1.49000E-003	1.49000E-003	0.00000E+000	7.40444E+000	7.40444E+000	4.00000E-004	0.00000E+000	7.41453E+000
Cranes	1.46300E-001	1.49009E+000	8.08270E-001	2.68000E-003	6.31600E-002	5.81000E-002	0.00000E+000	2.35323E+002	2.35323E+002	7.61100E-002	0.00000E+000	2.37226E+002
Excavators	1.80200E-002	1.40280E-001	3.26500E-001	5.20000E-004	6.91000E-003	6.36000E-003	0.00000E+000	4.53833E+001	4.53833E+001	1.46800E-002	0.00000E+000	4.57503E+001
Forklifts	1.39740E-001	1.31567E+000	1.80547E+000	2.43000E-003	7.11800E-002	6.54800E-002	0.00000E+000	2.13725E+002	2.13725E+002	6.91200E-002	0.00000E+000	2.15453E+002
Generator Sets	1.42570E-001	1.28070E+000	1.94166E+000	3.49000E-003	5.16200E-002	5.16200E-002	0.00000E+000	2.99843E+002	2.99843E+002	1.12100E-002	0.00000E+000	3.00123E+002
Graders	1.77300E-002	2.07790E-001	8.28200E-002	3.30000E-004	6.74000E-003	6.20000E-003	0.00000E+000	2.90529E+001	2.90529E+001	9.40000E-003	0.00000E+000	2.92878E+001
Pavers	9.91000E-003	9.02400E-002	1.65060E-001	2.70000E-004	4.23000E-003	3.89000E-003	0.00000E+000	2.35275E+001	2.35275E+001	7.61000E-003	0.00000E+000	2.37177E+001
Paving Equipment	8.37000E-003	7.20900E-002	1.45150E-001	2.30000E-004	3.57000E-003	3.28000E-003	0.00000E+000	2.03900E+001	2.03900E+001	6.59000E-003	0.00000E+000	2.05548E+001
Rollers	7.81000E-003	8.22500E-002	1.05260E-001	1.50000E-004	4.14000E-003	3.81000E-003	0.00000E+000	1.31374E+001	1.31374E+001	4.25000E-003	0.00000E+000	1.32437E+001
Rubber Tired Dozers	6.49900E-002	6.66440E-001	2.92760E-001	8.00000E-004	3.00300E-002	2.76300E-002	0.00000E+000	7.01460E+001	7.01460E+001	2.26900E-002	0.00000E+000	7.07132E+001
Scrapers	7.60100E-002	7.69570E-001	5.96700E-001	1.52000E-003	3.04200E-002	2.79800E-002	0.00000E+000	1.33274E+002	1.33274E+002	4.31000E-002	0.00000E+000	1.34352E+002
Tractors/Loaders/Backhoes	2.08800E-001	2.10778E+000	3.45921E+000	4.84000E-003	8.79900E-002	8.09500E-002	0.00000E+000	4.24799E+002	4.24799E+002	1.37390E-001	0.00000E+000	4.28233E+002
Trenchers	1.70900E-002	1.58760E-001	1.30260E-001	1.70000E-004	1.09800E-002	1.01000E-002	0.00000E+000	1.49139E+001	1.49139E+001	4.82000E-003	0.00000E+000	1.50345E+001
Welders	1.17660E-001	7.14530E-001	8.77000E-001	1.36000E-003	2.21300E-002	2.21300E-002	0.00000E+000	9.98510E+001	9.98510E+001	9.58000E-003	0.00000E+000	1.00090E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	4.95000E-003	3.32200E-002	5.24600E-002	9.00000E-005	1.49000E-003	1.49000E-003	0.00000E+000	7.40443E+000	7.40443E+000	4.00000E-004	0.00000E+000	7.41452E+000
Cranes	1.46300E-001	1.49009E+000	8.08270E-001	2.68000E-003	6.31600E-002	5.81000E-002	0.00000E+000	2.35323E+002	2.35323E+002	7.61100E-002	0.00000E+000	2.37225E+002
Excavators	1.80200E-002	1.40280E-001	3.26500E-001	5.20000E-004	6.91000E-003	6.36000E-003	0.00000E+000	4.53833E+001	4.53833E+001	1.46800E-002	0.00000E+000	4.57502E+001
Forklifts	1.39740E-001	1.31567E+000	1.80547E+000	2.43000E-003	7.11800E-002	6.54800E-002	0.00000E+000	2.13724E+002	2.13724E+002	6.91200E-002	0.00000E+000	2.15452E+002

Generator Sets	1.42570E-001	1.28070E+000	1.94165E+000	3.49000E-003	5.16200E-002	5.16200E-002	0.00000E+000	2.99842E+002	2.99842E+002	1.12100E-002	0.00000E+000	3.00123E+002
Graders	1.77300E-002	2.07780E-001	8.28200E-002	3.30000E-004	6.74000E-003	6.20000E-003	0.00000E+000	2.90529E+001	2.90529E+001	9.40000E-003	0.00000E+000	2.92878E+001
Pavers	9.91000E-003	9.02400E-002	1.65060E-001	2.70000E-004	4.23000E-003	3.89000E-003	0.00000E+000	2.35275E+001	2.35275E+001	7.61000E-003	0.00000E+000	2.37177E+001
Paving Equipment	8.37000E-003	7.20900E-002	1.45150E-001	2.30000E-004	3.57000E-003	3.28000E-003	0.00000E+000	2.03899E+001	2.03899E+001	6.59000E-003	0.00000E+000	2.05548E+001
Rollers	7.81000E-003	8.22500E-002	1.05260E-001	1.50000E-004	4.14000E-003	3.81000E-003	0.00000E+000	1.31374E+001	1.31374E+001	4.25000E-003	0.00000E+000	1.32436E+001
Rubber Tired Dozers	6.49900E-002	6.66440E-001	2.92760E-001	8.00000E-004	3.00300E-002	2.76300E-002	0.00000E+000	7.01459E+001	7.01459E+001	2.26900E-002	0.00000E+000	7.07131E+001
Scrapers	7.60100E-002	7.69570E-001	5.96700E-001	1.52000E-003	3.04200E-002	2.79800E-002	0.00000E+000	1.33274E+002	1.33274E+002	4.31000E-002	0.00000E+000	1.34352E+002
Tractors/Loaders/Backhoes	2.08800E-001	2.10777E+000	3.45920E+000	4.84000E-003	8.79900E-002	8.09500E-002	0.00000E+000	4.24798E+002	4.24798E+002	1.37390E-001	0.00000E+000	4.28233E+002
Trenchers	1.70900E-002	1.58760E-001	1.30260E-001	1.70000E-004	1.09800E-002	1.01000E-002	0.00000E+000	1.49139E+001	1.49139E+001	4.82000E-003	0.00000E+000	1.50345E+001
Welders	1.17660E-001	7.14530E-001	8.77000E-001	1.36000E-003	2.21300E-002	2.21300E-002	0.00000E+000	9.98509E+001	9.98509E+001	9.58000E-003	0.00000E+000	1.00090E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.35054E-006	1.35054E-006	0.00000E+000	0.00000E+000	1.34870E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18985E-006	1.18985E-006	0.00000E+000	0.00000E+000	1.18031E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.10173E-006	1.10173E-006	0.00000E+000	0.00000E+000	1.31147E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16973E-006	1.16973E-006	0.00000E+000	0.00000E+000	1.16035E-006
Generator Sets	0.00000E+000	0.00000E+000	5.15023E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.16728E-006	1.16728E-006	0.00000E+000	0.00000E+000	1.19951E-006
Graders	0.00000E+000	4.81255E-005	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.03260E-006	1.03260E-006	0.00000E+000	0.00000E+000	1.36575E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.27510E-006	1.27510E-006	0.00000E+000	0.00000E+000	1.26488E-006
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.47131E-006	1.47131E-006	0.00000E+000	0.00000E+000	9.73007E-007
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.61184E-007	7.61184E-007	0.00000E+000	0.00000E+000	1.51016E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.14048E-006	1.14048E-006	0.00000E+000	0.00000E+000	1.13133E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20053E-006	1.20053E-006	0.00000E+000	0.00000E+000	1.19090E-006
Tractors/Loaders/Backhoes	0.00000E+000	4.74433E-006	2.89083E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20057E-006	1.20057E-006	0.00000E+000	0.00000E+000	1.19094E-006
Trenchers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.34103E-006	1.34103E-006	0.00000E+000	0.00000E+000	1.33027E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20179E-006	1.20179E-006	0.00000E+000	0.00000E+000	1.19892E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
Yes	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.02	0.01	0.02	0.01	0.00	0.00
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	2.90	0.79	2.90	0.79	0.00	0.00
Grading	Fugitive Dust	0.43	0.18	0.20	0.08	0.55	0.55
Grading	Roads	0.01	0.00	0.01	0.00	0.00	0.00
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Fugitive Dust	0.26	0.14	0.12	0.06	0.55	0.55
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.11	0.33		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			

No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Byron Airport - Buildout Operations - Contra Costa County, Annual

Byron Airport - Buildout Operations

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
Unrefrigerated Warehouse-No Rail	189.06	1000sqft	12.79	189,060.00	0
Unrefrigerated Warehouse-Rail	84.94	1000sqft	5.74	84,940.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	210	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 was adjusted based PG&E's reported intensity for 2017 from the PG&E Corporate Responsibility and Sustainability Report (2019)

Land Use - Land uses and acreage based on Project Description for Buildout. Warehouse split into w/o rail and w/ rail in order to estimate trucks separate from employees

Construction Phase - Modeling operations only

Off-road Equipment - Modeling operations only

Trips and VMT - Modeling operations only

Grading - Modeling operations only

Architectural Coating - Modeling operations only

Vehicle Trips - Adjusted trip rates based on TIS. Adjusted Saturday and Sunday trip rates proportionally to weekday. Increased the trip lengths for all trips based on rural location and project VMT.

Energy Use - Adjusted energy demand to account for 2019 Title 24. For the Airport Storage (User Defined Industrial), matched the electricity usage for the warehouse. Assumed negligible HVAC for the hangar.

Water And Wastewater - Defaults. For Airport Storage, assumed same factor (gals/year/sf) as for Warehouse

Solid Waste - For Airport Storage, applied the solid waste generation rate of the Warehouse use. Default assumptions for all other uses.

Construction Off-road Equipment Mitigation -

Water Mitigation - 20% indoor/outdoor water reduction per CALGreen

Waste Mitigation - 50% reduction in waste based on compliance with AB 939

Fleet Mix - Adjusted fleetmix of warehouse based on SCAQMD High Cube study (69% passenger vehicles and 31% trucks). Other uses are based on CalEEMod defaults

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	470,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,411,500.00	0.00
tblArchitecturalCoating	ConstArea_Parking	62,274.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	1.48	1.32
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	2.76	2.46
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.00	0.29
tblEnergyUse	T24NG	19.71	19.51
tblEnergyUse	T24NG	16.31	16.15

tblEnergyUse	T24NG	16.31	16.15
tblEnergyUse	T24NG	2.37	2.35
tblEnergyUse	T24NG	3.40	3.37
tblEnergyUse	T24NG	3.40	3.37
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.60
tblFleetMix	LDA	0.61	0.73
tblFleetMix	LDA	0.61	0.00
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.22
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD1	0.01	0.16
tblFleetMix	LHD2	4.8470e-003	0.00
tblFleetMix	LHD2	4.8470e-003	0.06
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.18
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	1.86	1.78

tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	4.34	12.79
tblLandUse	LotAcreage	1.95	5.74
tblLandUse	LotAcreage	0.00	4.16
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	120.32
tblTripsAndVMT	WorkerTripNumber	163.00	0.00
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TTP	0.00	28.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	40.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TTP	0.00	13.00

tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	2.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	77.00	81.00
tblVehicleTrips	PR_TP	79.00	81.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	0.00	95.00
tblVehicleTrips	ST_TR	1.32	0.77
tblVehicleTrips	ST_TR	2.46	2.38
tblVehicleTrips	ST_TR	2.49	2.96
tblVehicleTrips	ST_TR	49.97	72.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	0.00	2.96
tblVehicleTrips	SU_TR	0.68	0.40

tblVehicleTrips	SU_TR	1.05	1.02
tblVehicleTrips	SU_TR	0.73	2.96
tblVehicleTrips	SU_TR	25.24	36.62
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	0.00	2.96
tblVehicleTrips	WD_TR	6.97	4.06
tblVehicleTrips	WD_TR	11.03	10.68
tblVehicleTrips	WD_TR	6.83	2.96
tblVehicleTrips	WD_TR	42.70	61.96
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	0.00	2.96
tblWater	IndoorWaterUseRate	0.00	29,600,000.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.2561	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371
Energy	0.0568	0.5168	0.4341	3.1000e-003		0.0393	0.0393		0.0393	0.0393	0.0000	1,309.6954	1,309.6954	0.1140	0.0317	1,321.9791
Mobile	1.8767	11.1972	26.9031	0.1404	14.6880	0.0903	14.7783	3.9450	0.0842	4.0292	0.0000	12,967.8806	12,967.8806	0.3469	0.0000	12,976.5539
Waste						0.0000	0.0000		0.0000	0.0000	203.7705	0.0000	203.7705	12.0425	0.0000	504.8327
Water						0.0000	0.0000		0.0000	0.0000	63.1235	106.8716	169.9951	6.4981	0.1561	378.9784
Total	**6.1896**	**11.7141**	**27.3550**	**0.1435**	**14.6880**	**0.1296**	**14.8176**	**3.9450**	**0.1235**	**4.0686**	**266.8939**	**14,384.4824**	**14,651.3763**	**19.0016**	**0.1878**	**15,182.3812**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	4.2561	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371
Energy	0.0568	0.5168	0.4341	3.1000e-003		0.0393	0.0393		0.0393	0.0393	0.0000	1,309.6954	1,309.6954	0.1140	0.0317	1,321.9791
Mobile	1.8767	11.1972	26.9031	0.1404	14.6880	0.0903	14.7783	3.9450	0.0842	4.0292	0.0000	12,967.8806	12,967.8806	0.3469	0.0000	12,976.5539
Waste						0.0000	0.0000		0.0000	0.0000	101.8852	0.0000	101.8852	6.0212	0.0000	252.4163
Water						0.0000	0.0000		0.0000	0.0000	50.4988	85.4973	135.9960	5.1985	0.1249	303.1827
Total	**6.1896**	**11.7141**	**27.3550**	**0.1435**	**14.6880**	**0.1296**	**14.8176**	**3.9450**	**0.1235**	**4.0686**	**152.3840**	**14,363.1081**	**14,515.4921**	**11.6807**	**0.1566**	**14,854.1692**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**42.90**	**0.15**	**0.93**	**38.53**	**16.63**	**2.16**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2019	4/15/2019	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 23.65

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	0	0.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.8767	11.1972	26.9031	0.1404	14.6880	0.0903	14.7783	3.9450	0.0842	4.0292	0.0000	12,967.8806	12,967.8806	0.3469	0.0000	12,976.5539
Unmitigated	1.8767	11.1972	26.9031	0.1404	14.6880	0.0903	14.7783	3.9450	0.0842	4.0292	0.0000	12,967.8806	12,967.8806	0.3469	0.0000	12,976.5539

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	864.78	164.01	85.20	4,289,838	4,289,838
General Office Building	865.08	192.78	82.62	3,492,960	3,492,960

Industrial Park	455.84	455.84	455.84	2,666,694	2,666,694
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	5,638.36	6,598.41	3332.42	22,885,696	22,885,696
Unrefrigerated Warehouse-No Rail	285.48	285.48	285.48	2,071,175	2,071,175
Unrefrigerated Warehouse-Rail	128.26	128.26	128.26	1,299,001	1,299,001
User Defined Industrial	378.88	378.88	378.88	2,487,878	2,487,878
Total	8,616.68	8,203.66	4,748.70	39,193,242	39,193,242

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0
General Office Building	21.20	12.98	20.00	33.00	48.00	19.00	81	19	0
Industrial Park	21.20	12.98	20.00	59.00	28.00	13.00	81	19	0
Other Asphalt Surfaces	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Parking Lot	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	21.20	12.98	20.00	16.30	64.70	19.00	65	35	0
Unrefrigerated Warehouse-No	21.20	12.98	20.00	59.00	0.00	41.00	95	5	0
Unrefrigerated Warehouse-Rail	21.20	12.98	40.00	59.00	0.00	41.00	95	5	0
User Defined Industrial	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.733898	0.042552	0.223550	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Unrefrigerated Warehouse-Rail	0.000000	0.000000	0.000000	0.000000	0.160000	0.060000	0.180000	0.600000	0.000000	0.000000	0.000000	0.000000	0.000000
User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	747.1288	747.1288	0.1032	0.0214	756.0695
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	747.1288	747.1288	0.1032	0.0214	756.0695
NaturalGas Mitigated	0.0568	0.5168	0.4341	3.1000e-003		0.0393	0.0393		0.0393	0.0393	0.0000	562.5666	562.5666	0.0108	0.0103	565.9097
NaturalGas Unmitigated	0.0568	0.5168	0.4341	3.1000e-003		0.0393	0.0393		0.0393	0.0393	0.0000	562.5666	562.5666	0.0108	0.0103	565.9097

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	5.57634e+006	0.0301	0.2734	0.2296	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	297.5747	297.5747	5.7000e-003	5.4600e-003	299.3431
General Office Building	1.31301e+006	7.0800e-003	0.0644	0.0541	3.9000e-004		4.8900e-003	4.8900e-003		4.8900e-003	4.8900e-003	0.0000	70.0672	70.0672	1.3400e-003	1.2800e-003	70.4836
Industrial Park	2.49634e+006	0.0135	0.1224	0.1028	7.3000e-004		9.3000e-003	9.3000e-003		9.3000e-003	9.3000e-003	0.0000	133.2142	133.2142	2.5500e-003	2.4400e-003	134.0058
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	213850	1.1500e-003	0.0105	8.8100e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.4119	11.4119	2.2000e-004	2.1000e-004	11.4797
Unrefrigerated Warehouse-No	650366	3.5100e-003	0.0319	0.0268	1.9000e-004		2.4200e-003	2.4200e-003		2.4200e-003	2.4200e-003	0.0000	34.7060	34.7060	6.7000e-004	6.4000e-004	34.9123

Unrefrigerated Warehouse-Rail	292194	1.5800e-003	0.0143	0.0120	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.5926	15.5926	3.0000e-004	2.9000e-004	15.6852
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0569**	**0.5168**	**0.4341**	**3.1000e-003**		**0.0393**	**0.0393**		**0.0393**	**0.0393**	**0.0000**	**562.5666**	**562.5666**	**0.0108**	**0.0103**	**565.9097**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	5.57634e+006	0.0301	0.2734	0.2296	1.6400e-003		0.0208	0.0208		0.0208	0.0208	0.0000	297.5747	297.5747	5.7000e-003	5.4600e-003	299.3431
General Office Building	1.31301e+006	7.0800e-003	0.0644	0.0541	3.9000e-004		4.8900e-003	4.8900e-003		4.8900e-003	4.8900e-003	0.0000	70.0672	70.0672	1.3400e-003	1.2800e-003	70.4836
Industrial Park	2.49634e+006	0.0135	0.1224	0.1028	7.3000e-004		9.3000e-003	9.3000e-003		9.3000e-003	9.3000e-003	0.0000	133.2142	133.2142	2.5500e-003	2.4400e-003	134.0058
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	213850	1.1500e-003	0.0105	8.8100e-003	6.0000e-005		8.0000e-004	8.0000e-004		8.0000e-004	8.0000e-004	0.0000	11.4119	11.4119	2.2000e-004	2.1000e-004	11.4797
Unrefrigerated Warehouse-No Rail	650366	3.5100e-003	0.0319	0.0268	1.9000e-004		2.4200e-003	2.4200e-003		2.4200e-003	2.4200e-003	0.0000	34.7060	34.7060	6.7000e-004	6.4000e-004	34.9123
Unrefrigerated Warehouse-Rail	292194	1.5800e-003	0.0143	0.0120	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.5926	15.5926	3.0000e-004	2.9000e-004	15.6852
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0569**	**0.5168**	**0.4341**	**3.1000e-003**		**0.0393**	**0.0393**		**0.0393**	**0.0393**	**0.0000**	**562.5666**	**562.5666**	**0.0108**	**0.0103**	**565.9097**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
General Light Industry	1.7253e+006	164.3424	0.0227	4.7000e-003	166.3090
General Office Building	1.39158e+006	132.5541	0.0183	3.7900e-003	134.1404
Industrial Park	2.64572e+006	252.0165	0.0348	7.2000e-003	255.0323
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	139300	13.2689	1.8300e-003	3.8000e-004	13.4277
Regional Shopping Center	945490	90.0621	0.0124	2.5700e-003	91.1398
Unrefrigerated Warehouse-No Rail	661710	63.0308	8.7000e-003	1.8000e-003	63.7851
Unrefrigerated Warehouse-Rail	297290	28.3182	3.9100e-003	8.1000e-004	28.6571
User Defined Industrial	37120	3.5358	4.9000e-004	1.0000e-004	3.5782
Total		**747.1288**	**0.1032**	**0.0214**	**756.0695**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	1.7253e+006	164.3424	0.0227	4.7000e-003	166.3090
General Office Building	1.39158e+006	132.5541	0.0183	3.7900e-003	134.1404
Industrial Park	2.64572e+006	252.0165	0.0348	7.2000e-003	255.0323
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	139300	13.2689	1.8300e-003	3.8000e-004	13.4277
Regional Shopping Center	945490	90.0621	0.0124	2.5700e-003	91.1398

Unrefrigerated Warehouse-No Rail	661710	63.0308	8.7000e-003	1.8000e-003	63.7851
Unrefrigerated Warehouse-Rail	297290	28.3182	3.9100e-003	8.1000e-004	28.6571
User Defined Industrial	37120	3.5358	4.9000e-004	1.0000e-004	3.5782
Total		**747.1288**	**0.1032**	**0.0214**	**756.0695**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	4.2561	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371
Unmitigated	4.2561	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5123					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.7422					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Landscaping	1.6500e-003	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371
Total	**4.2561**	**1.6000e-004**	**0.0179**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0349**	**0.0349**	**9.0000e-005**	**0.0000**	**0.0371**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5123					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.7422					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.6500e-003	1.6000e-004	0.0179	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0349	0.0349	9.0000e-005	0.0000	0.0371
Total	**4.2561**	**1.6000e-004**	**0.0179**	**0.0000**		**6.0000e-005**	**6.0000e-005**		**6.0000e-005**	**6.0000e-005**	**0.0000**	**0.0349**	**0.0349**	**9.0000e-005**	**0.0000**	**0.0371**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	135.9960	5.1985	0.1249	303.1827
Unmitigated	169.9951	6.4981	0.1561	378.9784

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	49.2563 / 0	41.0145	1.6085	0.0386	92.7372
General Office Building	14.3964 / 8.82362	14.9293	0.4705	0.0114	30.0818
Industrial Park	35.6125 / 0	29.6537	1.1630	0.0279	67.0495
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	6.7406 / 4.13134	6.9901	0.2203	5.3200e-003	14.0847
Unrefrigerated Warehouse-No	43.7201 / 0	36.4047	1.4277	0.0343	82.3141
Unrefrigerated Warehouse-Rail	19.6424 / 0	16.3557	0.6415	0.0154	36.9817
User Defined Industrial	29.6 / 0	24.6472	0.9666	0.0232	55.7294
Total		**169.9951**	**6.4981**	**0.1561**	**378.9784**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	39.405 / 0	32.8116	1.2868	0.0309	74.1898
General Office Building	11.5171 / 7.0589	11.9434	0.3764	9.1000e-003	24.0655

Industrial Park	28.49 / 0	23.7229	0.9304	0.0223	53.6396
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	5.39248 / 3.30507	5.5921	0.1763	4.2600e-003	11.2678
Unrefrigerated Warehouse-No	34.9761 / 0	29.1237	1.1422	0.0274	65.8513
Unrefrigerated Warehouse-Rail	15.7139 / 0	13.0846	0.5132	0.0123	29.5854
User Defined Industrial	23.68 / 0	19.7178	0.7733	0.0186	44.5835
Total		**135.9960**	**5.1985**	**0.1249**	**303.1828**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	101.8852	6.0212	0.0000	252.4163
Unmitigated	203.7705	12.0425	0.0000	504.8327

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	264.12	53.6140	3.1685	0.0000	132.8264
General Office Building	75.33	15.2913	0.9037	0.0000	37.8836
Industrial Park	190.96	38.7632	2.2908	0.0000	96.0341
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	95.55	19.3958	1.1463	0.0000	48.0522
Unrefrigerated Warehouse-No Rail	177.72	36.0756	2.1320	0.0000	89.3757
Unrefrigerated Warehouse-Rail	79.84	16.2068	0.9578	0.0000	40.1517
User Defined Industrial	120.32	24.4239	1.4434	0.0000	60.5091
Total		**203.7704**	**12.0425**	**0.0000**	**504.8327**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	132.06	26.8070	1.5843	0.0000	66.4132
General Office Building	37.665	7.6457	0.4519	0.0000	18.9418
Industrial Park	95.48	19.3816	1.1454	0.0000	48.0170
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000

Regional Shopping Center	47.775	9.6979	0.5731	0.0000	24.0261
Unrefrigerated Warehouse-No	88.86	18.0378	1.0660	0.0000	44.6878
Unrefrigerated Warehouse-Rail	39.92	8.1034	0.4789	0.0000	20.0758
User Defined Industrial	60.16	12.2119	0.7217	0.0000	30.2546
Total		**101.8852**	**6.0213**	**0.0000**	**252.4163**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Buildout Operations

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
Unrefrigerated Warehouse-No Rail	189.06	1000sqft	12.79	189,060.00	0
Unrefrigerated Warehouse-Rail	84.94	1000sqft	5.74	84,940.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	210	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 was adjusted based PG&E's reported intensity for 2017 from the PG&E Corporate Responsibility and Sustainability Report (2019)

Land Use - Land uses and acreage based on Project Description for Buildout. Warehouse split into w/o rail and w/ rail in order to estimate trucks separate from employees

Construction Phase - Modeling operations only

Off-road Equipment - Modeling operations only

Trips and VMT - Modeling operations only

Grading - Modeling operations only

Architectural Coating - Modeling operations only

Vehicle Trips - Adjusted trip rates based on TIS. Adjusted Saturday and Sunday trip rates proportionally to weekday. Increased the trip lengths for all trips based on rural location and project VMT.

Energy Use - Adjusted energy demand to account for 2019 Title 24. For the Airport Storage (User Defined Industrial), matched the electricity usage for the warehouse. Assumed negligible HVAC for the hangar.

Water And Wastewater - Defaults. For Airport Storage, assumed same factor (gals/year/sf) as for Warehouse

Solid Waste - For Airport Storage, applied the solid waste generation rate of the Warehouse use. Default assumptions for all other uses.

Construction Off-road Equipment Mitigation -

Water Mitigation - 20% indoor/outdoor water reduction per CALGreen

Waste Mitigation - 50% reduction in waste based on compliance with AB 939

Fleet Mix - Adjusted fleetmix of warehouse based on SCAQMD High Cube study (69% passenger vehicles and 31% trucks). Other uses are based on CalEEMod defaults

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	470,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,411,500.00	0.00
tblArchitecturalCoating	ConstArea_Parking	62,274.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	1.48	1.32
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	2.76	2.46
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.00	0.29
tblEnergyUse	T24NG	19.71	19.51
tblEnergyUse	T24NG	16.31	16.15

tblEnergyUse	T24NG	16.31	16.15
tblEnergyUse	T24NG	2.37	2.35
tblEnergyUse	T24NG	3.40	3.37
tblEnergyUse	T24NG	3.40	3.37
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.60
tblFleetMix	LDA	0.61	0.73
tblFleetMix	LDA	0.61	0.00
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.22
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD1	0.01	0.16
tblFleetMix	LHD2	4.8470e-003	0.00
tblFleetMix	LHD2	4.8470e-003	0.06
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.18
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	1.86	1.78

tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	4.34	12.79
tblLandUse	LotAcreage	1.95	5.74
tblLandUse	LotAcreage	0.00	4.16
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	120.32
tblTripsAndVMT	WorkerTripNumber	163.00	0.00
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TTP	0.00	28.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	40.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TTP	0.00	13.00

tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	2.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	77.00	81.00
tblVehicleTrips	PR_TP	79.00	81.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	0.00	95.00
tblVehicleTrips	ST_TR	1.32	0.77
tblVehicleTrips	ST_TR	2.46	2.38
tblVehicleTrips	ST_TR	2.49	2.96
tblVehicleTrips	ST_TR	49.97	72.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	0.00	2.96
tblVehicleTrips	SU_TR	0.68	0.40

tblVehicleTrips	SU_TR	1.05	1.02
tblVehicleTrips	SU_TR	0.73	2.96
tblVehicleTrips	SU_TR	25.24	36.62
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	0.00	2.96
tblVehicleTrips	WD_TR	6.97	4.06
tblVehicleTrips	WD_TR	11.03	10.68
tblVehicleTrips	WD_TR	6.83	2.96
tblVehicleTrips	WD_TR	42.70	61.96
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	0.00	2.96
tblWater	IndoorWaterUseRate	0.00	29,600,000.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Energy	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
Mobile	14.0915	68.5714	193.8771	0.9602	99.1010	0.5834	99.6844	26.5337	0.5438	27.0774		97,621.9609	97,621.9609	2.5116		97,684.7517
Total	**37.7335**	**71.4048**	**196.4543**	**0.9772**	**99.1010**	**0.7993**	**99.9003**	**26.5337**	**0.7597**	**27.2933**		**101,020.3250**	**101,020.3250**	**2.5779**	**0.0623**	**101,103.3358**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Energy	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
Mobile	14.0915	68.5714	193.8771	0.9602	99.1010	0.5834	99.6844	26.5337	0.5438	27.0774		97,621.9609	97,621.9609	2.5116		97,684.7517
Total	**37.7335**	**71.4048**	**196.4543**	**0.9772**	**99.1010**	**0.7993**	**99.9003**	**26.5337**	**0.7597**	**27.2933**		**101,020.3250**	**101,020.3250**	**2.5779**	**0.0623**	**101,103.3358**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2019	4/15/2019	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 23.65

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	0	0.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.0915	68.5714	193.8771	0.9602	99.1010	0.5834	99.6844	26.5337	0.5438	27.0774		97,621.9609	97,621.9609	2.5116		97,684.7517
Unmitigated	14.0915	68.5714	193.8771	0.9602	99.1010	0.5834	99.6844	26.5337	0.5438	27.0774		97,621.9609	97,621.9609	2.5116		97,684.7517

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	864.78	164.01	85.20	4,289,838	4,289,838
General Office Building	865.08	192.78	82.62	3,492,960	3,492,960

Industrial Park	455.84	455.84	455.84	2,666,694	2,666,694
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	5,638.36	6,598.41	3332.42	22,885,696	22,885,696
Unrefrigerated Warehouse-No Rail	285.48	285.48	285.48	2,071,175	2,071,175
Unrefrigerated Warehouse-Rail	128.26	128.26	128.26	1,299,001	1,299,001
User Defined Industrial	378.88	378.88	378.88	2,487,878	2,487,878
Total	8,616.68	8,203.66	4,748.70	39,193,242	39,193,242

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-C	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0
General Office Building	21.20	12.98	20.00	33.00	48.00	19.00	81	19	0
Industrial Park	21.20	12.98	20.00	59.00	28.00	13.00	81	19	0
Other Asphalt Surfaces	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Parking Lot	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	21.20	12.98	20.00	16.30	64.70	19.00	65	35	0
Unrefrigerated Warehouse-No	21.20	12.98	20.00	59.00	0.00	41.00	95	5	0
Unrefrigerated Warehouse-Rail	21.20	12.98	40.00	59.00	0.00	41.00	95	5	0
User Defined Industrial	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.733898	0.042552	0.223550	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Unrefrigerated Warehouse-Rail	0.000000	0.000000	0.000000	0.000000	0.160000	0.060000	0.180000	0.600000	0.000000	0.000000	0.000000	0.000000	0.000000
User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
NaturalGas Unmitigated	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15277.6	0.1648	1.4978	1.2582	8.9900e-003		0.1138	0.1138		0.1138	0.1138		1,797.3699	1,797.3699	0.0345	0.0330	1,808.0507
General Office Building	3597.29	0.0388	0.3527	0.2963	2.1200e-003		0.0268	0.0268		0.0268	0.0268		423.2103	423.2103	8.1100e-003	7.7600e-003	425.7252
Industrial Park	6839.29	0.0738	0.6705	0.5632	4.0200e-003		0.0510	0.0510		0.0510	0.0510		804.6221	804.6221	0.0154	0.0148	809.4036
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	585.89	6.3200e-003	0.0574	0.0483	3.4000e-004		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003		68.9283	68.9283	1.3200e-003	1.2600e-003	69.3379
Unrefrigerated Warehouse-No Rail	1781.83	0.0192	0.1747	0.1467	1.0500e-003		0.0133	0.0133		0.0133	0.0133		209.6266	209.6266	4.0200e-003	3.8400e-003	210.8723
Unrefrigerated Warehouse-Rail	800.53	8.6300e-003	0.0785	0.0659	4.7000e-004		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003		94.1801	94.1801	1.8100e-003	1.7300e-003	94.7397

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3115**	**2.8316**	**2.3786**	**0.0170**		**0.2152**	**0.2152**		**0.2152**	**0.2152**		**3,397.9371**	**3,397.9371**	**0.0651**	**0.0623**	**3,418.1294**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15.2776	0.1648	1.4978	1.2582	8.9900e-003		0.1138	0.1138		0.1138	0.1138		1,797.3699	1,797.3699	0.0345	0.0330	1,808.0507
General Office Building	3.59729	0.0388	0.3527	0.2963	2.1200e-003		0.0268	0.0268		0.0268	0.0268		423.2103	423.2103	8.1100e-003	7.7600e-003	425.7252
Industrial Park	6.83929	0.0738	0.6705	0.5632	4.0200e-003		0.0510	0.0510		0.0510	0.0510		804.6221	804.6221	0.0154	0.0148	809.4036
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.58589	6.3200e-003	0.0574	0.0483	3.4000e-004		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003		68.9283	68.9283	1.3200e-003	1.2600e-003	69.3379
Unrefrigerated Warehouse-No Rail	1.78183	0.0192	0.1747	0.1467	1.0500e-003		0.0133	0.0133		0.0133	0.0133		209.6266	209.6266	4.0200e-003	3.8400e-003	210.8723
Unrefrigerated Warehouse-Rail	0.80053	8.6300e-003	0.0785	0.0659	4.7000e-004		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003		94.1801	94.1801	1.8100e-003	1.7300e-003	94.7397
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3115**	**2.8316**	**2.3786**	**0.0170**		**0.2152**	**0.2152**		**0.2152**	**0.2152**		**3,397.9371**	**3,397.9371**	**0.0651**	**0.0623**	**3,418.1294**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Unmitigated	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	20.5050					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0183	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Total	**23.3306**	**1.8000e-003**	**0.1987**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**		**0.4269**	**0.4269**	**1.1100e-003**		**0.4547**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	20.5050					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0183	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547

Total	**23.3306**	**1.8000e-003**	**0.1987**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**		**0.4269**	**0.4269**	**1.1100e-003**		**0.4547**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Byron Airport - Buildout Operations - Contra Costa County, Winter

Byron Airport - Buildout Operations

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	81.00	1000sqft	1.78	81,000.00	0
General Light Industry	213.00	1000sqft	12.08	213,000.00	0
Industrial Park	154.00	1000sqft	4.75	154,000.00	0
Unrefrigerated Warehouse-No Rail	189.06	1000sqft	12.79	189,060.00	0
Unrefrigerated Warehouse-Rail	84.94	1000sqft	5.74	84,940.00	0
User Defined Industrial	128.00	User Defined Unit	4.16	128,000.00	0
Other Asphalt Surfaces	14.69	Acre	14.69	639,896.40	0
Parking Lot	995.00	Space	8.96	398,000.00	0
Regional Shopping Center	91.00	1000sqft	5.35	91,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2029
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	210	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 was adjusted based PG&E's reported intensity for 2017 from the PG&E Corporate Responsibility and Sustainability Report (2019)

Land Use - Land uses and acreage based on Project Description for Buildout. Warehouse split into w/o rail and w/ rail in order to estimate trucks separate from employees

Construction Phase - Modeling operations only

Off-road Equipment - Modeling operations only

Trips and VMT - Modeling operations only

Grading - Modeling operations only

Architectural Coating - Modeling operations only

Vehicle Trips - Adjusted trip rates based on TIS. Adjusted Saturday and Sunday trip rates proportionally to weekday. Increased the trip lengths for all trips based on rural location and project VMT.

Energy Use - Adjusted energy demand to account for 2019 Title 24. For the Airport Storage (User Defined Industrial), matched the electricity usage for the warehouse. Assumed negligible HVAC for the hangar.

Water And Wastewater - Defaults. For Airport Storage, assumed same factor (gals/year/sf) as for Warehouse

Solid Waste - For Airport Storage, applied the solid waste generation rate of the Warehouse use. Default assumptions for all other uses.

Construction Off-road Equipment Mitigation -

Water Mitigation - 20% indoor/outdoor water reduction per CALGreen

Waste Mitigation - 50% reduction in waste based on compliance with AB 939

Fleet Mix - Adjusted fleetmix of warehouse based on SCAQMD High Cube study (69% passenger vehicles and 31% trucks). Other uses are based on CalEEMod defaults

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	470,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,411,500.00	0.00
tblArchitecturalCoating	ConstArea_Parking	62,274.00	0.00
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblEnergyUse	T24E	1.48	1.32
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	6.11	5.46
tblEnergyUse	T24E	2.76	2.46
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.32	0.29
tblEnergyUse	T24E	0.00	0.29
tblEnergyUse	T24NG	19.71	19.51
tblEnergyUse	T24NG	16.31	16.15

tblEnergyUse	T24NG	16.31	16.15
tblEnergyUse	T24NG	2.37	2.35
tblEnergyUse	T24NG	3.40	3.37
tblEnergyUse	T24NG	3.40	3.37
tblFleetMix	HHD	0.03	0.00
tblFleetMix	HHD	0.03	0.60
tblFleetMix	LDA	0.61	0.73
tblFleetMix	LDA	0.61	0.00
tblFleetMix	LDT1	0.04	0.04
tblFleetMix	LDT1	0.04	0.00
tblFleetMix	LDT2	0.18	0.22
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD1	0.01	0.16
tblFleetMix	LHD2	4.8470e-003	0.00
tblFleetMix	LHD2	4.8470e-003	0.06
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MCY	5.1280e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MH	6.7200e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	MHD	0.01	0.18
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	OBUS	1.6590e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	SBUS	2.6640e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblFleetMix	UBUS	1.5580e-003	0.00
tblLandUse	LandUseSquareFeet	0.00	128,000.00
tblLandUse	LotAcreage	1.86	1.78

tblLandUse	LotAcreage	4.89	12.08
tblLandUse	LotAcreage	3.54	4.75
tblLandUse	LotAcreage	4.34	12.79
tblLandUse	LotAcreage	1.95	5.74
tblLandUse	LotAcreage	0.00	4.16
tblLandUse	LotAcreage	2.09	5.35
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSolidWaste	SolidWasteGenerationRate	0.00	120.32
tblTripsAndVMT	WorkerTripNumber	163.00	0.00
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TL	6.60	12.98
tblVehicleTrips	CC_TTP	0.00	28.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TL	6.60	40.00
tblVehicleTrips	CNW_TL	6.60	20.00
tblVehicleTrips	CNW_TTP	0.00	13.00

tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TL	14.70	21.20
tblVehicleTrips	CW_TTP	0.00	59.00
tblVehicleTrips	DV_TP	0.00	5.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	4.00	0.00
tblVehicleTrips	PB_TP	2.00	0.00
tblVehicleTrips	PB_TP	11.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	77.00	81.00
tblVehicleTrips	PR_TP	79.00	81.00
tblVehicleTrips	PR_TP	54.00	65.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	92.00	95.00
tblVehicleTrips	PR_TP	0.00	95.00
tblVehicleTrips	ST_TR	1.32	0.77
tblVehicleTrips	ST_TR	2.46	2.38
tblVehicleTrips	ST_TR	2.49	2.96
tblVehicleTrips	ST_TR	49.97	72.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	1.68	1.51
tblVehicleTrips	ST_TR	0.00	2.96
tblVehicleTrips	SU_TR	0.68	0.40

tblVehicleTrips	SU_TR	1.05	1.02
tblVehicleTrips	SU_TR	0.73	2.96
tblVehicleTrips	SU_TR	25.24	36.62
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	1.68	1.51
tblVehicleTrips	SU_TR	0.00	2.96
tblVehicleTrips	WD_TR	6.97	4.06
tblVehicleTrips	WD_TR	11.03	10.68
tblVehicleTrips	WD_TR	6.83	2.96
tblVehicleTrips	WD_TR	42.70	61.96
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	1.68	1.51
tblVehicleTrips	WD_TR	0.00	2.96
tblWater	IndoorWaterUseRate	0.00	29,600,000.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Energy	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
Mobile	12.0058	72.2094	180.0189	0.8946	99.1010	0.5846	99.6856	26.5337	0.5449	27.0785		91,042.7252	91,042.7252	2.5020		91,105.2748
Total	**35.6478**	**75.0428**	**182.5961**	**0.9116**	**99.1010**	**0.8005**	**99.9015**	**26.5337**	**0.7608**	**27.2945**		**94,441.0892**	**94,441.0892**	**2.5682**	**0.0623**	**94,523.8589**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Energy	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
Mobile	12.0058	72.2094	180.0189	0.8946	99.1010	0.5846	99.6856	26.5337	0.5449	27.0785		91,042.7252	91,042.7252	2.5020		91,105.2748
Total	**35.6478**	**75.0428**	**182.5961**	**0.9116**	**99.1010**	**0.8005**	**99.9015**	**26.5337**	**0.7608**	**27.2945**		**94,441.0892**	**94,441.0892**	**2.5682**	**0.0623**	**94,523.8589**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Architectural Coating	Architectural Coating	1/1/2019	4/15/2019	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 23.65

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	0	0.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Architectural Coating	0	0.00	0.00	0.00	10.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	12.0058	72.2094	180.0189	0.8946	99.1010	0.5846	99.6856	26.5337	0.5449	27.0785		91,042.7252	91,042.7252	2.5020		91,105.2748
Unmitigated	12.0058	72.2094	180.0189	0.8946	99.1010	0.5846	99.6856	26.5337	0.5449	27.0785		91,042.7252	91,042.7252	2.5020		91,105.2748

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	864.78	164.01	85.20	4,289,838	4,289,838
General Office Building	865.08	192.78	82.62	3,492,960	3,492,960

Industrial Park	455.84	455.84	455.84	2,666,694	2,666,694
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	5,638.36	6,598.41	3332.42	22,885,696	22,885,696
Unrefrigerated Warehouse-No Rail	285.48	285.48	285.48	2,071,175	2,071,175
Unrefrigerated Warehouse-Rail	128.26	128.26	128.26	1,299,001	1,299,001
User Defined Industrial	378.88	378.88	378.88	2,487,878	2,487,878
Total	8,616.68	8,203.66	4,748.70	39,193,242	39,193,242

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-C	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0
General Office Building	21.20	12.98	20.00	33.00	48.00	19.00	81	19	0
Industrial Park	21.20	12.98	20.00	59.00	28.00	13.00	81	19	0
Other Asphalt Surfaces	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Parking Lot	21.20	12.98	20.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	21.20	12.98	20.00	16.30	64.70	19.00	65	35	0
Unrefrigerated Warehouse-No	21.20	12.98	20.00	59.00	0.00	41.00	95	5	0
Unrefrigerated Warehouse-Rail	21.20	12.98	40.00	59.00	0.00	41.00	95	5	0
User Defined Industrial	21.20	12.98	20.00	59.00	28.00	13.00	95	5	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
General Office Building	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Industrial Park	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Other Asphalt Surfaces	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Parking Lot	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Regional Shopping Center	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672
Unrefrigerated Warehouse-No Rail	0.733898	0.042552	0.223550	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Unrefrigerated Warehouse-Rail	0.000000	0.000000	0.000000	0.000000	0.160000	0.060000	0.180000	0.600000	0.000000	0.000000	0.000000	0.000000	0.000000
User Defined Industrial	0.605339	0.035098	0.184390	0.109343	0.012453	0.004847	0.010836	0.026012	0.001659	0.001558	0.005128	0.002664	0.000672

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294
NaturalGas Unmitigated	0.3115	2.8316	2.3786	0.0170		0.2152	0.2152		0.2152	0.2152		3,397.9372	3,397.9372	0.0651	0.0623	3,418.1294

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15277.6	0.1648	1.4978	1.2582	8.9900e-003		0.1138	0.1138		0.1138	0.1138		1,797.3699	1,797.3699	0.0345	0.0330	1,808.0507
General Office Building	3597.29	0.0388	0.3527	0.2963	2.1200e-003		0.0268	0.0268		0.0268	0.0268		423.2103	423.2103	8.1100e-003	7.7600e-003	425.7252
Industrial Park	6839.29	0.0738	0.6705	0.5632	4.0200e-003		0.0510	0.0510		0.0510	0.0510		804.6221	804.6221	0.0154	0.0148	809.4036
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	585.89	6.3200e-003	0.0574	0.0483	3.4000e-004		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003		68.9283	68.9283	1.3200e-003	1.2600e-003	69.3379
Unrefrigerated Warehouse-No Rail	1781.83	0.0192	0.1747	0.1467	1.0500e-003		0.0133	0.0133		0.0133	0.0133		209.6266	209.6266	4.0200e-003	3.8400e-003	210.8723
Unrefrigerated Warehouse-Rail	800.53	8.6300e-003	0.0785	0.0659	4.7000e-004		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003		94.1801	94.1801	1.8100e-003	1.7300e-003	94.7397

User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3115**	**2.8316**	**2.3786**	**0.0170**		**0.2152**	**0.2152**		**0.2152**	**0.2152**		**3,397.9371**	**3,397.9371**	**0.0651**	**0.0623**	**3,418.1294**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Light Industry	15.2776	0.1648	1.4978	1.2582	8.9900e-003		0.1138	0.1138		0.1138	0.1138		1,797.3699	1,797.3699	0.0345	0.0330	1,808.0507
General Office Building	3.59729	0.0388	0.3527	0.2963	2.1200e-003		0.0268	0.0268		0.0268	0.0268		423.2103	423.2103	8.1100e-003	7.7600e-003	425.7252
Industrial Park	6.83929	0.0738	0.6705	0.5632	4.0200e-003		0.0510	0.0510		0.0510	0.0510		804.6221	804.6221	0.0154	0.0148	809.4036
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.58589	6.3200e-003	0.0574	0.0483	3.4000e-004		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003		68.9283	68.9283	1.3200e-003	1.2600e-003	69.3379
Unrefrigerated Warehouse-No Rail	1.78183	0.0192	0.1747	0.1467	1.0500e-003		0.0133	0.0133		0.0133	0.0133		209.6266	209.6266	4.0200e-003	3.8400e-003	210.8723
Unrefrigerated Warehouse-Rail	0.80053	8.6300e-003	0.0785	0.0659	4.7000e-004		5.9600e-003	5.9600e-003		5.9600e-003	5.9600e-003		94.1801	94.1801	1.8100e-003	1.7300e-003	94.7397
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3115**	**2.8316**	**2.3786**	**0.0170**		**0.2152**	**0.2152**		**0.2152**	**0.2152**		**3,397.9371**	**3,397.9371**	**0.0651**	**0.0623**	**3,418.1294**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Unmitigated	23.3306	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	20.5050					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0183	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547
Total	**23.3306**	**1.8000e-003**	**0.1987**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**		**0.4269**	**0.4269**	**1.1100e-003**		**0.4547**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8072					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	20.5050					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0183	1.8000e-003	0.1987	1.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004		0.4269	0.4269	1.1100e-003		0.4547

Total	**23.3306**	**1.8000e-003**	**0.1987**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**		**0.4269**	**0.4269**	**1.1100e-003**		**0.4547**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

CalEEMod Version: CalEEMod.2016.3.2

Date: 12/4/2020 3:01 PM

Byron Airport - Buildout Operations

Contra Costa County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												

Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00		
No	Water Exposed Area	PM10 Reduction	55.00	PM2.5 Reduction	55.00	Frequency (per day)	2.00
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	15.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00	19.98	20.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.17	0.43		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			

No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			
No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	20.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	50.00

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Byron Airport - Roadway Improvement

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.31	10.69	14.45	1.35	0.63	0.72	0.71	0.56	0.15	0.02	2,282.17	0.59	0.05	2,311.42
Grading/Excavation	6.58	50.47	74.98	4.05	3.33	0.72	3.17	3.02	0.15	0.10	9,960.03	2.88	0.13	10,070.15
Drainage/Utilities/Sub-Grade	4.02	32.63	44.91	2.92	2.20	0.72	2.10	1.95	0.15	0.09	8,826.53	1.23	0.56	9,023.21
Paving	1.95	19.10	23.08	1.30	1.30	0.00	1.08	1.08	0.00	0.06	5,963.79	0.76	0.53	6,141.13
Maximum (pounds/day)	6.58	50.47	74.98	4.05	3.33	0.72	3.17	3.02	0.15	0.10	9,960.03	2.88	0.56	10,070.15
Total (tons/construction project)	0.04	0.28	0.40	0.02	0.02	0.00	0.02	0.02	0.00	0.00	63.55	0.01	0.00	64.61

Notes:

Project Start Year ->	2019
Project Length (months) ->	1
Total Project Area (acres) ->	1
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	280	40
Grading/Excavation	0	0	0	0	880	40
Drainage/Utilities/Sub-Grade	0	290	0	760	600	40
Paving	0	290	0	760	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Byron Airport - Roadway Improvement

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	0.00	0.00	1.61
Grading/Excavation	0.02	0.17	0.26	0.01	0.01	0.00	0.01	0.01	0.00	0.00	34.51	0.01	0.00	31.65
Drainage/Utilities/Sub-Grade	0.01	0.08	0.10	0.01	0.01	0.00	0.00	0.00	0.00	0.00	20.39	0.00	0.00	18.91
Paving	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.89	0.00	0.00	6.43
Maximum (tons/phase)	0.02	0.17	0.26	0.01	0.01	0.00	0.01	0.01	0.00	0.00	34.51	0.01	0.00	31.65
Total (tons/construction project)	0.04	0.28	0.40	0.02	0.02	0.00	0.02	0.02	0.00	0.00	63.55	0.01	0.00	58.61

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Byron Airport - Roadway Improvement	
Construction Start Year	2019	Enter a Year between 2014 and 2040 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	0.70	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	0.89	miles
Total Project Area	1.08	acres
Maximum Area Disturbed/Day	0.07	acres
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	16.00		
	Grading/Excavation	16.00		
	Drainage/Utilities/Sub-Grade	16.00		
	Paving	16.00		
Asphalt	Grubbing/Land Clearing	16.00		
	Grading/Excavation	16.00		
	Drainage/Utilities/Sub-Grade	16.00	290.12	
	Paving	16.00	290.12	

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		0.07		1/1/2019
Grading/Excavation		0.32		1/4/2019
Drainage/Utilities/Sub-Grade		0.21		1/14/2019
Paving		0.11		1/21/2019
Totals (Months)	1			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	40.00	30.00		0	0.00
Miles/round trip: Grading/Excavation	40.00	30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	40.00	30.00		19	760.00
Miles/round trip: Paving	40.00	30.00		19	760.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.07	0.70	5.04	0.19	0.08	0.03	3,009.18	0.00	0.47	3,150.22
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	6.95	0.00	0.00	7.28
Pounds per day - Paving	0.07	0.70	5.04	0.19	0.08	0.03	3,009.18	0.00	0.47	3,150.22
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	3.48	0.00	0.00	3.64
Total tons per construction project	0.00	0.00	0.02	0.00	0.00	0.00	10.43	0.00	0.00	10.92

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated	Calculated
One-way trips/day		2	Daily Trips	Daily VMT
No. of employees: Grubbing/Land Clearing		7	14	280.00
No. of employees: Grading/Excavation		22	44	880.00
No. of employees: Drainage/Utilities/Sub-Grade		15	30	600.00
No. of employees: Paving		12	24	480.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grading/Excavation (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Paving (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grubbing/Land Clearing (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Grading/Excavation (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Draining/Utilities/Sub-Grade (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Paving (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.06	0.94	0.09	0.03	0.01	0.00	225.63	0.01	0.01	227.98
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.18
Pounds per day - Grading/Excavation	0.18	2.96	0.29	0.09	0.04	0.01	709.13	0.02	0.02	716.51
Tons per const. Period - Grading/Excavation	0.00	0.01	0.00	0.00	0.00	0.00	2.46	0.00	0.00	2.48
Pounds per day - Drainage/Utilities/Sub-Grade	0.13	2.02	0.20	0.06	0.03	0.00	483.50	0.01	0.02	488.53
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.00	1.13
Pounds per day - Paving	0.10	1.61	0.16	0.05	0.02	0.00	386.80	0.01	0.01	390.82
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.45
Total tons per construction project	0.00	0.02	0.00	0.00	0.00	0.00	4.19	0.00	0.00	4.24

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of	Program Estimate of	User Override of Truck	Default Values	Calculated	User Override of	Default Values	Calculated
User Input	Default # Water Trucks	Number of Water Trucks	Round Trips/Vehicle/Day	Round Trips/Vehicle/Day	Trips/day	Miles/Round Trip	Miles/Round Trip	Daily VMT
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.13
Pounds per day - Grading/Excavation	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00	0.57
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00	0.38
Pounds per day - Paving	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.19
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	1.22	0.00	0.00	1.28

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0.07	0.72	0.00	0.15	0.00
Fugitive Dust - Grading/Excavation		0.07	0.72	0.00	0.15	0.00
Fugitive Dust - Drainage/Utilities/Subgrade		0.07	0.72	0.00	0.15	0.00

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
	Program-estimate			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Crawler Tractors	0.61	2.58	7.99	0.30	0.28	0.01	777.28	0.25	0.01	785.48
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Excavators	0.52	6.53	5.36	0.26	0.24	0.01	1,022.25	0.32	0.01	1,033.03
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	1.25	9.71	14.08	0.59	0.54	0.02	1,898.16	0.58	0.02	1,917.64
Grubbing/Land Clearing	tons per phase	0.00	0.01	0.01	0.00	0.00	0.00	1.46	0.00	0.00	1.48

Grading/Excavation	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.61	2.58	7.99	0.30	0.28	0.01	777.28	0.25	0.01	785.48
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Excavators	0.78	9.79	8.05	0.39	0.36	0.02	1,533.38	0.49	0.01	1,549.55
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	0.97	3.68	13.16	0.42	0.39	0.01	1,315.26	0.42	0.01	1,329.11
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.45	3.81	4.48	0.29	0.27	0.01	519.37	0.16	0.00	524.84
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rubber Tired Loaders	0.40	1.68	4.83	0.16	0.15	0.01	618.81	0.20	0.01	625.34
	2		Model Default Tier	Scrapers	2.13	16.12	25.83	1.01	0.93	0.03	2,999.63	0.95	0.03	3,031.27
	2		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Tractors/Loaders/Backhoes	0.93	9.21	9.35	0.62	0.57	0.01	1,230.17	0.39	0.01	1,243.12
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	6.39	47.47	74.40	3.23	2.98	0.09	9,092.52	2.86	0.08	9,187.84
Grading/Excavation	tons per phase	0.02	0.16	0.26	0.01	0.01	0.00	31.51	0.01	0.00	31.84

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of	Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.36	2.46	2.45	0.17	0.17	0.00	375.26	0.03	0.00	376.90
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.44	3.72	3.78	0.23	0.23	0.01	623.04	0.04	0.00	625.42
	1		Model Default Tier	Graders	0.49	1.84	6.58	0.21	0.19	0.01	657.63	0.21	0.01	664.55
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.47	3.78	3.83	0.24	0.24	0.01	623.04	0.04	0.00	625.47
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.14	2.30	1.85	0.08	0.08	0.00	340.97	0.11	0.00	344.56
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.07	8.06	12.91	0.51	0.47	0.02	1,499.82	0.47	0.01	1,515.63
	2		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.70	6.91	7.01	0.47	0.43	0.01	922.63	0.29	0.01	932.34
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day		3.82	29.88	39.38	1.94	1.84	0.05	5,175.48	1.21	0.04	5,218.66
Drainage/Utilities/Sub-Grade	tons per phase		0.01	0.07	0.09	0.00	0.00	0.00	11.96	0.00	0.00	12.06

Paving	Default Number of Vehicles	Override of	Mitigation Option Default		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pavers	0.29	2.90	3.12	0.15	0.14	0.00	465.50	0.15	0.00	470.41
	1		Model Default Tier	Paving Equipment	0.21	2.52	2.26	0.11	0.10	0.00	403.32	0.13	0.00	407.58
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.45	3.81	4.48	0.29	0.27	0.01	519.37	0.16	0.00	524.84
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Signal Boards	0.11	0.60	0.72	0.03	0.03	0.00	98.63	0.01	0.00	99.13
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.70	6.91	7.01	0.47	0.43	0.01	922.63	0.29	0.01	932.34
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	1.77	16.75	17.59	1.06	0.97	0.02	2,409.44	0.74	0.02	2,434.30
Paving	tons per phase	0.00	0.02	0.02	0.00	0.00	0.00	2.78	0.00	0.00	2.81
Total Emissions all Phases (tons per construction period) =>		0.03	0.26	0.38	0.02	0.02	0.00	47.71	0.01	0.00	48.18

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Byron Airport - Water Infrastructure

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.63	13.04	19.41	10.83	0.83	10.00	2.76	0.68	2.08	0.05	4,699.50	0.61	0.38	4,827.94
Grading/Excavation	6.90	52.82	79.93	13.54	3.54	10.00	5.22	3.14	2.08	0.12	12,377.36	2.91	0.46	12,586.66
Drainage/Utilities/Sub-Grade	4.70	36.89	48.47	12.50	2.50	10.00	4.34	2.26	2.08	0.09	8,410.16	1.36	0.39	8,561.07
Paving	2.19	20.72	22.72	1.31	1.31	0.00	1.11	1.11	0.00	0.05	5,213.57	0.78	0.36	5,341.63
Maximum (pounds/day)	6.90	52.82	79.93	13.54	3.54	10.00	5.22	3.14	2.08	0.12	12,377.36	2.91	0.46	12,586.66
Total (tons/construction project)	0.08	0.65	0.90	0.19	0.04	0.15	0.07	0.04	0.03	0.00	154.00	0.03	0.01	156.86

Notes:

Project Start Year ->	2019
Project Length (months) ->	2
Total Project Area (acres) ->	2
Maximum Area Disturbed/Day (acres) ->	1
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	198	0	520	480	40
Grading/Excavation	0	198	0	520	1,080	40
Drainage/Utilities/Sub-Grade	0	183	0	480	800	40
Paving	0	183	0	480	680	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Byron Airport - Water Infrastructure

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.02	0.03	0.02	0.00	0.02	0.00	0.00	0.00	0.00	8.27	0.00	0.00	7.71
Grading/Excavation	0.04	0.28	0.42	0.07	0.02	0.05	0.03	0.02	0.01	0.00	65.35	0.02	0.00	60.29
Drainage/Utilities/Sub-Grade	0.04	0.29	0.38	0.10	0.02	0.08	0.03	0.02	0.02	0.00	66.61	0.01	0.00	61.51
Paving	0.01	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.76	0.00	0.00	12.79
Maximum (tons/phase)	0.04	0.29	0.42	0.10	0.02	0.08	0.03	0.02	0.02	0.00	66.61	0.02	0.00	61.51
Total (tons/construction project)	0.08	0.65	0.90	0.19	0.04	0.15	0.07	0.04	0.03	0.00	154.00	0.03	0.01	142.30

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model
Data Entry Worksheet

Version 9.0.0

Note: Required data input sections have a yellow background.
Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.
The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types.
Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

Input Type

Project Name	Byron Airport - Water Infrastructure	
Construction Start Year	2019	Enter a Year between 2014 and 2040 (inclusive)
Project Type	2	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction
Project Construction Time	1.59	months
Working Days per Month	22.00	days (assume 22 if unknown)
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the Ione formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)
Project Length	2.60	miles
Total Project Area	1.58	acres
Maximum Area Disturbed/Day	1.00	acre
Water Trucks Used?	1	1. Yes 2. No

Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Material Hauling Quantity Input

Material Type	Phase	Haul Truck Capacity (yd^3) (assume 20 if unknown)	Import Volume (yd^3/day)	Export Volume (yd^3/day)
Soil	Grubbing/Land Clearing	16.00		
	Grading/Excavation	16.00		
	Drainage/Utilities/Sub-Grade	16.00		
	Paving	16.00		
Asphalt	Grubbing/Land Clearing	16.00		198.26
	Grading/Excavation	16.00		198.26
	Drainage/Utilities/Sub-Grade	16.00	183.14	
	Paving	16.00	183.14	

Mitigation Options

On-road Fleet Emissions Mitigation		Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer
Off-road Equipment Emissions Mitigation		Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/Mitigation). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.16	0.16		1/1/2019
Grading/Excavation	0.48	0.72		1/6/2019
Drainage/Utilities/Sub-Grade	0.72	0.48		1/21/2019
Paving	0.24	0.24		2/12/2019
Totals (Months)	2			

Please note: You have entered a different number of months than the project length shown in cell D16.
Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	40.00	30.00		0	0.00
Miles/round trip: Grading/Excavation	40.00	30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade	40.00	30.00		0	0.00
Miles/round trip: Paving	40.00	30.00		0	0.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Asphalt Hauling emission default values can be overridden in cells D91 through D94, and F91 through F94.

Asphalt Hauling Emissions User Input	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
Miles/round trip: Grubbing/Land Clearing	40.00	30.00		13	520.00
Miles/round trip: Grading/Excavation	40.00	30.00		13	520.00
Miles/round trip: Drainage/Utilities/Sub-Grade	40.00	30.00		12	480.00
Miles/round trip: Paving	40.00	30.00		12	480.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.05	0.48	3.45	0.13	0.06	0.02	2,058.91	0.00	0.32	2,155.41
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	3.62	0.00	0.00	3.79
Pounds per day - Grading/Excavation	0.05	0.48	3.45	0.13	0.06	0.02	2,058.91	0.00	0.32	2,155.41
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	10.87	0.00	0.00	11.38
Pounds per day - Drainage/Utilities/Sub-Grade	0.05	0.44	3.18	0.12	0.05	0.02	1,900.53	0.00	0.30	1,989.61
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.03	0.00	0.00	0.00	15.05	0.00	0.00	15.76
Pounds per day - Paving	0.05	0.44	3.18	0.12	0.05	0.02	1,900.53	0.00	0.30	1,989.61
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	5.02	0.00	0.00	5.25
Total tons per construction project	0.00	0.01	0.06	0.00	0.00	0.00	34.56	0.00	0.01	36.18

Note: Worker commute default values can be overridden in cells D121 through D126.

Worker Commute Emissions	User Override of Worker Commute Default Values	Default Values		
User Input				
Miles/ one-way trip		20	Calculated Daily Trips	Calculated Daily VMT
One-way trips/day		2		
No. of employees: Grubbing/Land Clearing		12	24	480.00
No. of employees: Grading/Excavation		27	54	1,080.00
No. of employees: Drainage/Utilities/Sub-Grade		20	40	800.00
No. of employees: Paving		17	34	680.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grading/Excavation (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Draining/Utilities/Sub-Grade (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Paving (grams/mile)	0.03	1.37	0.13	0.05	0.02	0.00	361.65	0.01	0.01	364.76
Grubbing/Land Clearing (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Grading/Excavation (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Draining/Utilities/Sub-Grade (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Paving (grams/trip)	1.34	3.17	0.41	0.00	0.00	0.00	77.30	0.10	0.04	91.28
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.10	1.61	0.16	0.05	0.02	0.00	386.80	0.01	0.01	390.82
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.69
Pounds per day - Grading/Excavation	0.23	3.63	0.36	0.11	0.05	0.01	870.30	0.03	0.03	879.35
Tons per const. Period - Grading/Excavation	0.00	0.02	0.00	0.00	0.00	0.00	4.60	0.00	0.00	4.64
Pounds per day - Drainage/Utilities/Sub-Grade	0.17	2.69	0.27	0.08	0.03	0.01	644.67	0.02	0.02	651.37
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.02	0.00	0.00	0.00	0.00	5.11	0.00	0.00	5.16
Pounds per day - Paving	0.14	2.29	0.23	0.07	0.03	0.01	547.97	0.02	0.02	553.66
Tons per const. Period - Paving	0.00	0.01	0.00	0.00	0.00	0.00	1.45	0.00	0.00	1.46
Total tons per construction project	0.00	0.05	0.00	0.00	0.00	0.00	11.83	0.00	0.00	11.95

Note: Water Truck default values can be overridden in cells D153 through D156, I153 through I156, and F153 through F156.

Water Truck Emissions	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Round Trips/Vehicle/Day	Default Values Round Trips/Vehicle/Day	Calculated Trips/day	User Override of Miles/Round Trip	Default Values Miles/Round Trip	Calculated Daily VMT
User Input								
Grubbing/Land Clearing - Exhaust		1		5	5		8.00	40.00
Grading/Excavation - Exhaust		1		5	5		8.00	40.00
Drainage/Utilities/Subgrade		1		5	5		8.00	40.00
Paving		1		5	5		8.00	40.00

Emission Rates	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Grubbing/Land Clearing (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grading/Excavation (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Draining/Utilities/Sub-Grade (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Paving (grams/mile)	0.04	0.42	2.95	0.11	0.05	0.02	1,795.97	0.00	0.28	1,880.15
Grubbing/Land Clearing (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Draining/Utilities/Sub-Grade (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving (grams/trip)	0.00	0.00	2.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Emissions	**ROG**	**CO**	**NOx**	**PM10**	**PM2.5**	**SOx**	**CO2**	**CH4**	**N2O**	**CO2e**
Pounds per day - Grubbing/Land Clearing	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.29
Pounds per day - Grading/Excavation	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.88
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	1.31
Pounds per day - Paving	0.00	0.04	0.28	0.01	0.00	0.00	158.38	0.00	0.02	165.80
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.44
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	2.79	0.00	0.00	2.92

Note: Fugitive dust default values can be overridden in cells D183 through D185.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00	10.00	0.02	2.08	0.00
Fugitive Dust - Grading/Excavation		1.00	10.00	0.05	2.08	0.01
Fugitive Dust - Drainage/Utilities/Subgrade		1.00	10.00	0.08	2.08	0.02

Off-Road Equipment Emissions

Grubbing/Land Clearing	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
	Program-estimate			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Crawler Tractors	0.61	2.58	7.99	0.30	0.28	0.01	777.28	0.25	0.01	785.48
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Excavators	0.52	6.53	5.36	0.26	0.24	0.01	1,022.25	0.32	0.01	1,033.03
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6			Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grubbing/Land Clearing	pounds per day	1.48	10.91	15.51	0.64	0.60	0.02	2,095.42	0.60	0.02	2,115.90
Grubbing/Land Clearing	tons per phase	0.00	0.02	0.03	0.00	0.00	0.00	3.69	0.00	0.00	3.72

Grading/Excavation	Default Number of Vehicles	Mitigation Option: Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Crawler Tractors	0.61	2.58	7.99	0.30	0.28	0.01	777.28	0.25	0.01	785.48
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Excavators	0.78	9.79	8.05	0.39	0.36	0.02	1,533.38	0.49	0.01	1,549.55
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Graders	0.97	3.68	13.16	0.42	0.39	0.01	1,315.26	0.42	0.01	1,329.11
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2		Model Default Tier	Rollers	0.45	3.81	4.48	0.29	0.27	0.01	519.37	0.16	0.00	524.84
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rubber Tired Loaders	0.40	1.68	4.83	0.16	0.15	0.01	618.81	0.20	0.01	625.34
	2		Model Default Tier	Scrapers	2.13	16.12	25.83	1.01	0.93	0.03	2,999.63	0.95	0.03	3,031.27
	6		Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4		Model Default Tier	Tractors/Loaders/Backhoes	0.93	9.21	9.35	0.62	0.57	0.01	1,230.17	0.39	0.01	1,243.12
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation	pounds per day	6.62	48.68	75.84	3.29	3.03	0.10	9,289.77	2.88	0.08	9,386.10
Grading/Excavation	tons per phase	0.03	0.26	0.40	0.02	0.02	0.00	49.05	0.02	0.00	49.56

Drainage/Utilities/Subgrade	Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	*Program-estimate*		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Air Compressors	0.36	2.46	2.45	0.17	0.17	0.00	375.26	0.03	0.00	376.90
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Generator Sets	0.44	3.72	3.78	0.23	0.23	0.01	623.04	0.04	0.00	625.42
	1		Model Default Tier	Graders	0.49	1.84	6.58	0.21	0.19	0.01	657.63	0.21	0.01	664.55
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	34.65
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Pumps	0.47	3.78	3.83	0.24	0.24	0.01	623.04	0.04	0.00	625.47
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Rough Terrain Forklifts	0.14	2.30	1.85	0.08	0.08	0.00	340.97	0.11	0.00	344.56
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Model Default Tier	Scrapers	1.07	8.06	12.91	0.51	0.47	0.02	1,499.82	0.47	0.01	1,515.63
	6		Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3		Model Default Tier	Tractors/Loaders/Backhoes	0.70	6.91	7.01	0.47	0.43	0.01	922.63	0.29	0.01	932.34
1.00			Model Default Tier	Trenchers	0.43	2.64	3.92	0.30	0.27	0.00	333.85	0.11	0.00	337.37
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Drainage/Utilities/Sub-Grade	pounds per day		4.48	33.72	44.74	2.29	2.17	0.06	5,706.58	1.34	0.05	5,754.29
Drainage/Utilities/Sub-Grade	tons per phase		0.04	0.27	0.35	0.02	0.02	0.00	45.20	0.01	0.00	45.57

Paving	Default Number of Vehicles	Override of Default Number of Vehicles	Mitigation Option: Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
	Program-estimate														
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipm	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Pavers	0.29	2.90	3.12	0.15	0.14	0.00	465.50	0.15	0.00	470.41
	1			Model Default Tier	Paving Equipment	0.21	2.52	2.26	0.11	0.10	0.00	403.32	0.13	0.00	407.58
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Rollers	0.45	3.81	4.48	0.29	0.27	0.01	519.37	0.16	0.00	524.84
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6			Model Default Tier	Signal Boards	0.34	1.81	2.16	0.08	0.08	0.00	295.88	0.03	0.00	297.39
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3			Model Default Tier	Tractors/Loaders/Backhoes	0.70	6.91	7.01	0.47	0.43	0.01	922.63	0.29	0.01	932.34
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	Equipment Tier	Type		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Paving	pounds per day	2.00	17.95	19.03	1.11	1.03	0.03	2,606.69	0.76	0.02	2,632.55
Paving	tons per phase	0.01	0.05	0.05	0.00	0.00	0.00	6.88	0.00	0.00	6.95
Total Emissions all Phases (tons per construction period) =>		0.08	0.59	0.83	0.04	0.04	0.00	104.82	0.03	0.00	105.81

Equipment default values for horsepower and hours/day can be overridden in cells D403 through D436 and F403 through F436.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		221		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		231		8
Crawler Tractors		212		8
Crushing/Proc. Equipment		85		8
Excavators		158		8
Forklifts		89		8
Generator Sets		84		8
Graders		187		8
Off-Highway Tractors		124		8
Off-Highway Trucks		402		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		168		8
Pavers		130		8
Paving Equipment		132		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		80		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		247		8
Rubber Tired Loaders		203		8
Scrapers		367		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		263		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		97		8
Trenchers		78		8
Welders		46		8

END OF DATA ENTRY SHEET

Byron Airport Project - Construction Schedule

Airport Related Uses

Project Description	*CalEEMod Use*	*Size*	*Units*	*Available Acres*	*Minus Parking Area Acres*
Logistics/Warehous	Unrefrigerated Wareh	274	1000sqft	21.0	18.53
Light Industry/Busi	General Light Industri	213	1000sqft	14.0	12.08
Office	General Office	81	1000sqft	4.7	1.78
Commercial	Shopping Center	91	1000sqft	7.0	5.35
Parking Lot	Parking Lot	995	Spaces		8.96
			Totals	46.7	46.7

CalEEMod Default Schedule Based on Land Uses

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysW	NumDays	PhaseDescription
1	Site Preparation	Site Prepar	2019/01/01	2019/01/22	5	16	3.06%
2	Grading	Grading	2019/01/23	2019/03/20	5	41	7.84%
3	Building Construction	Building Cc	2019/03/21	2020/10/12	5	408	78.01%
4	Paving	Paving	2020/10/12	2020/11/19	5	29	5.54%
5	Architectural Coating	Architectu	2020/11/20	2020/12/30	5	29	5.54%
							100.00%

Adjusted CalEEMod Schedule (5 years, 2019-2023) 1304 total days

							weeks	months
1	Site Preparation	Site Prepar	2019/01/01	2019/02/25	5	40	8	2
2	Grading	Grading	2019/02/26	2019/07/17	5	102	20	5
3	Building Construction	Building Cc	2019/07/18	2023/06/09	5	1017	203	47
4	Paving	Paving	2023/06/10	2023/09/19	5	72	14	3
5	Architectural Coating	Architectu	2023/09/20	2023/12/29	5	73	15	3
						1304		

Aviation Related Uses

Project Description	*CalEEMod Use*	*Size*	*Units*	*Available Acres*	*Minus Parking Area Acres*
Airport Storage	User Defined Industria	128	1000sqft	11.8	4.16
Aviation	Industrial Park	154	1000sqft	11.8	4.75
Paved Area	Other Asphalt Surfaces				14.69
			Totals	23.6	23.6

CalEEMod Default Schedule Based on Land Uses

PhaseNumber	PhaseName	PhaseType	PhaseStartDate	PhaseEndDate	NumDaysW	NumDays	PhaseDescription
1	Site Preparation	Site Prepar	2024/01/01	2024/01/12	5	10	2.20%
2	Grading	Grading	2024/01/13	2024/03/01	5	35	7.69%
3	Building Construction	Building Co	2024/03/02	2025/08/01	5	370	81.32%
4	Paving	Paving	2025/08/02	2025/08/29	5	20	4.40%
5	Architectural Coating	Architectu	2025/08/30	2025/09/26	5	20	4.40%
							100.00%

Adjusted CalEEMod Schedule (5 years, 2024-2028)

1305 total days

							weeks	months
1	Site Preparation	Site Prepar	2024/01/01	2024/02/08	5	29	6	1
2	Grading	Grading	2024/02/09	2024/06/27	5	100	20	5
3	Building Construction	Building Co	2024/06/28	2028/07/21	5	1061	212	49
4	Paving	Paving	2028/07/22	2028/10/10	5	57	11	3
5	Architectural Coating	Architectu	2028/10/11	2028/12/29	5	58	12	3
						1305		

Byron Airport Project - Roadway Widening & Water Infrastructure

Roadway Widening

Assumtions:	0.89	mile length	
	4,700	feet length	
	10	feet width	
	47,000	square feet area	
	1.08	acre area	
Material Import:	1.166667	foot depth of aggregate base and asphalt mixture	
	54,833	cubic feet	
	145	pounds per cubic foot asphalt mix	
Weight =	3,975.4	tons of asphalt	
Density of asphalt?	145	lbs/ft3	
	3,915.00	lbs/yd3	
Haulage	2,030.86	CY of asphalt mix	290.1235 CY per day if
16 CY truck	127.00	truck roundtrips	assumed import during sub-grade and
	254	truck one-way trips	paving phases

Schedule and Hauling

Total Duration Assumed =	15	days		
Grubbing/Land Clearing	0.07	months	=	2 days
Grading/Excavation	0.28	months	=	6 days
Drainage/Utilities/Sub-Grade	0.245	months	=	5 days
Paving	0.105	months	=	2 days
Total	0.7	months	=	15 days

Water Line/Trenching/Paving

Assumptions	2.6	mile length	
	13,728	feet length	
	5	feet width	
	68,640	square feet area	
	1.58	acre area	
	10	feet long per segment	
	1,373	pipeline segments	
	1.5	foot diameter of pipe	
Convert to yards	3.048	yards long per segment	
	0.4572	yard diameter of pipe	
	2.7432	yards width (6 pipe segments)	
	1.913584	yards tall	
	4.185442	pipe segment stack	
	25	pipe segments per 16 CY truck	880 "CY" import of pipes
	55	truck roundtrips	
	110	truck one-way trips	
Paving Import:	1.166667	foot depth of aggregate base and asphalt mixture	
	80,080	cubic feet	
	145	pounds per cubic foot asphalt mix	
Weight =	5,805.8	tons of asphalt	
Density of asphalt?	145	lbs/ft3	
	3,915.00	lbs/yd3	
Haulage	2,965.93	CY of asphalt mix	183.1393 CY per day if
16 CY truck	185.00	truck roundtrips	assumed import during sub-grade and
	370	truck one-way trips	paving phases

Material Export - Demolition:

depth	14	inches	=	0.388889	yd
area	1.58	ac	=	7,647.14	sq yd

Debris =	2,973.89	yd3	198.2592 off haul per day
			in grubbing/grading phases
	186.00	16 CY truck roundtrips	
	372.00	truck one-way trips	

Schedule and Hauling

Total Duration Assumed =	35	days		
Grubbing/Land Clearing	0.16	months	=	4 days
Grading/Excavation	0.48	months	=	11 days
Drainage/Utilities/Sub-Grade	0.72	months	=	16 days
Paving	0.24	months	=	5 days
Total	1.6	months	=	35 days

Byron Airport Project - 2019 Title 24 Energy Adjustments

CalEEMod Default

EnergyUseLandUseSubType	T24E	NT24E	LightingEle	T24NG	NT24NG
General Light Industry	1.48	3.7	3.08	19.71	6.67
General Office Building	6.11	7.84	3.88	16.31	0.06
Industrial Park	6.11	7.84	3.88	16.31	0.06
Other Asphalt Surfaces	0	0	0	0	0
Parking Lot	0	0	0.35	0	0
Regional Shopping Center	2.76	2.68	5.25	2.37	0
Unrefrigerated Warehouse-No Rail	0.32	1.07	2.14	3.4	0.07
Unrefrigerated Warehouse-Rail	0.32	1.07	2.14	3.4	0.07
User Defined Industrial	0.32	1.07	2.14	0	0

Adjusted

	10.7%			1.0%	
EnergyUseLandUseSubType	**T24E**	**NT24E**	**LightingEle**	**T24NG**	**NT24NG**
General Light Industry	1.32	3.7	3.08	19.51	6.67
General Office Building	5.46	7.84	3.88	16.15	0.06
Industrial Park	5.46	7.84	3.88	16.15	0.06
Other Asphalt Surfaces	0	0	0	0	0
Parking Lot	0	0	0.35	0	0
Regional Shopping Center	2.46	2.68	5.25	2.35	0
Unrefrigerated Warehouse-No Rail	0.29	1.07	2.14	3.37	0.07
Unrefrigerated Warehouse-Rail	0.29	1.07	2.14	3.37	0.07
User Defined Industrial	0.29	1.07	2.14	0	0

NOTES

Per the CEC Impact Analysis for the 2019 Update to the California Energy Efficiency

Title 24 Definition

CalEEMod default values for Non-Title 24 and Lighting. Adjustments to Title 24 values to reflect 2019 Title 24 compliance.

Byron Airport Project - Daily Traffic Trips - Updated December 2020

Proposed Project - Land Use/Trip Gen - Assume Year 2029 Based on Development

Project Description	*TIS Land Use*	*CalEEMod Land Use*	*Size*	*Units*	*TIS Trip Ra*	*Daily Trips*
Logistics/Warehouse/Distribution - Employ	Mini-Warehouse	Unrefrigerated Warehouse - No Rail	189.06	1000sqft	1.51	285
Logistics/Warehouse/Distribution - Trucks	Mini-Warehouse	Unrefrigerated Warehouse - Rail	84.94	1000sqft	1.51	128
Light Industry/Business Park	General Light Industrial	General Light Industrial	213	1000sqft	4.06	865
Office	General Office	General Office	81	1000sqft	10.68	865
Commercial	Shopping Center	Regional Shopping Center	91	1000sqft	61.96	5,639
Parking Lot	Parking Lot	Parking Lot	995	Spaces	0	0
Airport Storage	User-Defined Industrial	User-Defined Industrial	128	1000sqft	2.96	379
Aviation	Aviation Uses	Industrial Park	154	1000sqft	2.96	456
Paved Area	Other Asphalt Surfaces	Other Asphalt Surfaces	14.69	Acres	0	0
					Total	8,617

CalEEMod Trip Rate Adjustments for Saturday and Sunday

Default Weekday	*Default Saturday*	*Default Sunday*	*Adj Saturday*	*Adj Sunday*
1.68	1.68	1.68	1.51	1.51
1.68	1.68	1.68	1.51	1.51
6.97	1.32	0.68	0.77	0.40
11.03	2.46	1.05	2.38	1.02
42.7	49.97	25.24	72.51	36.62
0	0	0	0.00	0.00
1.68	1.68	1.68	2.96	2.96
1.68	1.68	1.68	2.96	2.96
0	0	0	0.00	0.00

*For warehouse, passenger cars (employees) assumed to be 69% of trips while truck trips would account for 31%

APPENDIX D

Bio Constraints Report- Byron Airport

DUDEK

853 LINCOLN WAY, SUITE #208
AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 16, 2019 9269

Mr. William Nelson
Contra Costa County Department of Conservation and Development
30 Muir Road
Martinez, CA 94553

Subject: ***Biological Resources Assessment for the Byron Airport Project in Byron, Contra Costa County, California***

Dear Mr. Nelson:

This biological resources assessment describes the existing conditions for the proposed Byron Airport Project site and surrounding lands in the community of Byron, California (study area; Figure 1). Two biological surveys were performed to complete a preliminary assessment of biological resources observed or potentially present at the study area, potential constraints associated with development of three development areas within the airport boundary (proposed development footprint), and related regulatory requirements. The majority of the study area was surveyed during the first survey on January 21, 2016. The second survey occurred on November 28, 2018, and included an additional 11.7 acres at a private parcel in the northeastern corner of the site.

The County's long-term goal for Byron Airport is for it to reach its aviation potential and achieve economic self-sufficiency through full implementation of the Master Plan. However, the current General Plan policies and zoning regulations for the Airport do not allow for establishment of most of the uses necessary to attain this goal. Therefore, the County intends to amend its General Plan and zoning as necessary to allow full implementation of the Master Plan. Specifically, the General Plan Land Use Element would be amended to include policies that update and clarify the range of aviation, aviation-related, and non-aviation uses and activities intended for the Airport property, similar to those already adopted for the County's other general aviation airport, Buchanan Field. Refer to Section 2. Project Description for further details of the proposed development footprint.

1. SITE LOCATION AND DESCRIPTION

The approximately 1,319-acre study area is located at 500 Eagle Court, approximately 2.5 miles south of the community of Byron, California. Approximately 814 acres of the property are reserved for habitat management. The project is located in Section 22, Township 1 South, and

Range 3 East of the U.S. Geological Survey (USGS) Byron Hot Springs 7.5' quadrangle. The approximate center of the site corresponds to 37°49'52" North latitude and 121°37'34" West longitude (Figure 2).

The airport is located on the western edge of the flat Sacramento-San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. The Clifton Court Forebay is located less than two miles east of the site, Bethany Reservoir is approximately three miles to the south, while the Los Vaqueros Reservoir is five miles to the west. The site is mostly flat and the elevation of the airport property is 30 to 80 feet above mean sea level (AMSL).

Byron Hot Springs, a now abandoned resort and former World War II POW camp, is located west of the airport. Rural residential uses surround the airport on all sides.

The study area is characterized as open grassland combined with developed/disturbed areas. A large portion of site is developed with buildings, runways, storage areas, and paved parking areas (Figure 3). Vegetation surrounding the site consists of ruderal ornamental landscaping, ruderal grassland adjacent to runways, annual grassland with scattered vernal pools and seasonal wetlands, and alkali grasslands (Figure 4).

According to the Natural Resources Conservation Service (USDA 2016), eleven soil types are mapped within the site and include: Altamont clay, 9-15% slopes; Altamont clay 15-30% slopes; Fontana-Altamont complex; Linne clay loam, 5-15% slopes; Linne clay loam, 15-30% slopes; Pescadero clay loam; Rincon clay loam, 0-2% slopes MLRA 14; Rincon clay loam, 2-9% slopes MLRA 14; San Ysidro loam; Solano loam; and Solano loam, strongly alkali (Figure 5). The Altamont clays and Fontana-Altamont complex are typically well-drained, non-saline soils found on hillsides and are residuum weathered from sandstone and shale. Linne clay loam soils are well-drained, non-saline to slightly saline soils found on hillsides and are residuum weathered from calcareous sandstone and shale. Pescadero clay loam is poorly-drained, strongly saline soil derived from sedimentary rock. Rincon clay loams are well-drained soils found on alluvial fans and terraces derived from sedimentary rock. San Ysidro loam is found on valley floors and alluvial fans and is moderately well-drained and non-saline to slightly saline. Solano loam (including strongly alkali) is found on basin floors and rims and is somewhat poorly drained and strongly saline, derived from sedimentary rock.

The study area is located within the service area of the East Contra Costa Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) and the County is a co-permittee. The HCP/NCCP was adopted in August 2007 and offers a framework for regional conservation and development, providing for the protection of natural resources while streamlining the permitting process for take of State- and federally-listed species and for mitigating impacts on sensitive

habitats and resources. The expansion of Byron Airport (up to approximately 300 acres) is a covered activity under the HCP/NCCP. Permits issued in 1992 and 1993 by the USFWS and the CDFW, respectively, authorized take of San Joaquin kit fox resulting from construction of the Byron Airport (HCP/NCCP 2006). These permits covered approximately 200 acres of impacts to natural land cover types. Approximately 112 acres of land was developed at that time and approximately 88 acres of take coverage for San Joaquin kit fox remains for the airport under these earlier permits.

2. PROJECT DESCRIPTION

The Master Plan identifies three development areas within the airport boundary (Figure 3). A total of 23.5-acres is designated as the aviation reserve area, located adjacent to the taxiways and runway that support the operation of the airport. The aviation reserve area is adjacent to a developed 10.5-acre aircraft storage area and 9.7-acre aircraft parking area south of the main runway. Proposed land uses in the reserve area include airport infrastructure (such as control tower, terminals), hangars, fixed-base operators, and businesses that directly support aviation and travel, (such as aircraft service and fuel, rental car facilities, pilots lounge, meeting facilities, etc.), and businesses that rely on aviation (agricultural aviation, aerial surveys and photography, air charter businesses, air cargo, just-in-time delivery, etc.). Approximately 51.6 areas of the airport are designated for Airport-related uses. This includes 39.9 acres on the existing airport, and 11.7 acres in the adjacent parcel. The 51.6 acres would support commercial and light-industrial uses that are compatible with airport operations and would benefit from being located at an airport, with access to Highway 4, Interstate 205, and Interstate 580. A variety of retail, service, warehouse and distribution, and light manufacturing uses would be allowed.. The areas adjacent to the ends of the primary runway and within the “no build” area adjacent to the runway, approximately 31 acres, are designated as low intensity use. No structures would be allowed within this area.

The majority of the county-owned property at Byron Airport, approximately 814acres, is owned and managed by the County as habitat, consistent with the East Contra Costa County Habitat Conservation Plan. The proposed project would not affect these lands.

3. PRELIMINARY SITE EVALUATION

Information regarding biological and jurisdictional resources present within the property were obtained through a review of pertinent literature and field reconnaissance; both are described in detail below.

3.1 Special-Status Species

Special-status biological resources present or potentially present on the site were identified through a literature search using the following sources: U.S. Fish and Wildlife Service (USFWS) IPaC Trust Resource Report; California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB); the California Native Plant Society (CNPS) online Inventory of Rare and Endangered Vascular Plants; and the East Contra Costa County Habitat Conservation Plan and Natural Communities Conservation Plan (HCP; Jones & Stokes 2006). Historical aerial photography was used to determine areas of the site that could potentially contain jurisdictional Waters of the U.S. or Waters of the State.

A CNDDB records search was conducted for the Byron Hot Springs USGS 7.5-minute quadrangle and the surrounding eight quadrangles. Dudek also conducted a CNPS search for the Byron Hot Springs USGS 7.5-minute quadrangle and the surrounding eight quadrangles. Only California Rare Plant Rank (CRPR) 1 and 2 plant species were included in this search. An updated records search was performed prior to the November 28, 2018 biological survey.

Following review of these resources, Dudek determined the potential for each species to occur within the site based on a review of vegetation communities and available land cover types, habitat types, soils, and elevation preferences, as well as the known geographic range of each species (Appendix A). For example, if the site is within the elevation range of a particular plant species, but a specific soil type for the species was not present, the species had low potential to occur on the site. Also, species were not expected to occur when the site was clearly outside the known geographic range of the species.

4. FIELD RECONNAISSANCE AND METHODS

On January 21, 2016, Dudek wildlife biologist Lisa Achter and botanist Laura Burris performed a field assessment of the study area. Lisa Achter performed an additional assessment of an 11.7-acre property in the northeastern corner of the proposed development footprint on November 28, 2018. Both field assessments included mapping vegetation communities and land cover types present within the study area, an evaluation of potentially jurisdictional wetlands or waters, and an assessment of the potential for special-status species to occur within the study area.

4.1 Vegetation Community and Land Cover Types

The surveys were conducted on foot to visually cover the entire site. An aerial photograph (Google Earth 2015, 2018) with an overlay of the property boundary, along with a mobile georeferenced map was utilized to map the vegetation communities and record any special-status

or sensitive biological resources while in the field. For consistency, nomenclature for vegetation communities follows vegetation communities outlined in the HCP/NCCP (Jones & Stokes 2006).

4.2 Flora

All plant species encountered during the field surveys were identified to the lowest taxonomic group possible and recorded directly into a field notebook. Common and scientific names for plant species with a California Rare Plant Rank (CRPR, formerly CNPS List) follow the CNPS On-Line Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2018). Nomenclature for all other plant species observed on the site follow *The Jepson Manual, Vascular Plants of California, Second Edition* (Baldwin, ed 2012). Species observed on the site are described in Section 5.

4.3 Fauna

Wildlife species detected during the field surveys by sight, calls, tracks, scat, or other signs were recorded directly into a field notebook. The site was scanned with and without binoculars to aid in the identification of wildlife. In addition to species actually detected during the surveys, expected wildlife use of the site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area.

4.4 Jurisdictional Wetlands

Dudek conducted a constraints-level analysis for potentially jurisdictional waters and wetlands on the property based on criteria provided by the following agencies:

- Waters of the U.S., including wetlands, under the jurisdiction of the U.S. Army Corps of Engineers (ACOE) pursuant to Section 404 of the federal Clean Water Act.
- Wetlands under the jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean Water Act and the Porter-Cologne Act.
- Wetlands under the jurisdiction of CDFW, pursuant to Section 1602 of the California Fish and Game Code.

Pursuant to the federal Clean Water Act (CWA), ACOE- and RWQCB-jurisdictional areas include those supporting all three wetlands criteria described in the ACOE manual: hydric soils, hydrology, and hydrophytic vegetation. Areas regulated by the RWQCB are generally coincident with the ACOE, but may also include isolated features that have evidence of surface water inundation pursuant to the state Porter Cologne Act. These areas generally support at least one of the three ACOE wetlands indicators but are considered isolated through the lack of surface water

hydrology/connectivity downstream. The extent of CDFW-regulated areas typically include areas supporting a predominance of hydrophytic vegetation (i.e., 50% cover or greater) where associated with a stream channel.

Specifically, Dudek reviewed current and historical aerial photography, and then identified potentially jurisdictional features based on aerial signatures and field observations.

5. RESULTS

The quantification of biological resources described below pertains to habitats and species present within the study area only. No off-site areas are included in this analysis since these areas were not evaluated as part of the assessment. Representative site photographs are provided in Figure 6.

5.1 Vegetation Communities and Land Cover Types

Seven vegetation communities and land cover types, four terrestrial and three aquatic, exist in the study area. The proposed development footprint contains primarily annual and ruderal grassland habitat with urban areas that include the buildings, paved areas and ornamental landscaping associated with operation of the airport (Figure 4). The remaining study areas consists of annual and alkali grasslands interspersed with seasonal and alkali wetlands. These vegetation communities and land cover types are presented in Table 1 and described in detail below.

Table 3.3-1
Vegetation Communities and Land Cover Types within the Study Area
and Proposed Development Footprint

Macrogroup	Vegetation Community/Land Cover Type[1]	Acres					
		Airport Related	Airport Reserve	Development Reserve	Low Intensity Use	No Impact	Total
Terrestrial							
Grassland	Annual Grassland	39.12	16.42	51.94	29.87	40.13	177.48
	Alkali Grassland	–	0.29	1.16	–	–	1.45
	Ruderal Grassland	–	6.31	10.35	–	–	16.66
Wetland	Seasonal Wetland	–	–	1.54	0.79	2.35	4.69
	Alkali Wetland	–	–	2.05	–	16.28	18.33
Developed	Urban	–	–	1.37	0.28	0.96	2.61
	Subtotal	**39.12**	**23.02**	**68.42**	**30.94**	**59.73**	**221.23**

Table 3.3-1
Vegetation Communities and Land Cover Types within the Study Area and Proposed Development Footprint

Macrogroup	Vegetation Community/Land Cover Type[1]	Acres					
		Airport Related	Airport Reserve	Development Reserve	Low Intensity Use	No Impact	Total
Terrestrial							
Aquatic							
Stream	Intermittent Stream – Brushy Creek	0.34	—	—	0.35	5.68	6.37
	Intermittent Stream – Tributary to Brushy Creek	—	—	0.50	0.59	7.93	9.02
	Subtotal	**0.34**	**—**	**0.50**	**0.94**	**13.61**	**15.39**
	Total	**39.46**	**23.02**	**68.92**	**31.88**	**73.34**	**236.62**

[1] Vegetation communities and land cover types coincide with those described in the Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) (Jones & Stokes 2006).

Grasslands

Annual Grasslands. Annual grassland is the predominant vegetation community mapped during the surveys and is present throughout the site. Annual grassland within the site is dominated by a dense to sparse cover of annual, non-native grasses and forbs. Common species include brome grass (*Bromus hordeaceous* and *B. diandrus*), wild oat (*Avena fatua*), barley (*Hordeum murinum*), filarees (*Erodium* spp.), and others. However, native species are also present in this grassland, including bulbs (*Dichelostemma* spp. and *Brodiaea* spp.), legumes such lupines (*Lupinus nanus* and *L. succulentus*), and some grasses, such as blue wildrye (*Elymus glaucus*). Ruderal species are also often present in grasslands, especially along the margins of grasslands and in areas that have been historically disturbed.

Dominant species observed on-site within the grassland community included: slender oat (*Avena barbata*), ripgut brome (*Bromus diandrus*) and soft brome (*Bromus hordeaceus*). Several ruderal and other non-native species were also present, including curly dock (*Rumex crispus*) and garden vetch (*Vicia sativa*).

Alkali Grasslands. Alkali grasslands were similar in species composition to annual grasslands except for the decreased cover of nonnative grasses and increased cover of species with an affinity for alkaline soils. Species adapted for greater alkalinity observed in alkali grasslands on-

site included saltgrass (*Distichlis spicata*), alkali heath (*Frankenia salina*), wild barley (*Hordeum* spp.), and a few scattered stands iodine bushes (*Allenrolfea occidentalis*).

Ruderal Grasslands. Ruderal grasslands were mapped in association with the airport facilities. These areas appear to be maintained on an annual or semi-annual basis to control wildlife and weeds within the airport enclosure. Dominant species in the ruderal grassland are similar to those of annual grassland; however, the occurrence of native grasses and forbs is much reduced. Wild mustard (*Brassica nigra* and *B. rapa*), wild radish (*Raphanus sativa*), Russian thistle (*Salsola tragus*) were common amongst the wild oats in this habitat type.

Developed

Urban. Urban areas are those dominated by manmade structures. In the study area, urban areas consist of roadways, runways, hangars, a shop, and other airport buildings. Vegetation in these areas is sparse to absent, consisting primarily of cultivated plants in planters.

Wetlands

Seasonal Wetlands. Seasonal wetlands were prevalent in the annual grassland in the northwestern and western areas of the study area. Species commonly noted within the seasonal wetlands included Italian rye grass (*Festuca perennis*), barley (*Hordeum marinum*), small fescue (*Festuca macrostachys*), and perennial pepperweed (*Lepidium latifolium*). Several small stands of red willow (*Salix laevigata*) were also noted along the margins of the seasonal wetlands in the western portion of the study area.

Alkali Wetlands. Alkali wetlands consisted of seasonal wetlands within alkali grassland. The alkali wetlands generally consisted of barren areas where water remains inundated for prolonged periods of time during the growing season. Species similar to those found in seasonal wetlands occur along the margins of the alkali wetlands in addition to saltgrass, silverscale saltbush (*Atriplex argentea*), and spikeweed (*Centromadia* ssp.).

Streams

Intermittent Stream. Several drainages cross through the study area. These drainages appear to be intermittent in nature, carrying water only during the wet season. The banks of the drainages are generally dominated by nonnative grasses similar to those described in annual grassland, above. The top of banks are dominated by black mustard (*Brassica nigra*) and Italian thistle (*Carduus pycnocephalus*).

Brushy creek travels through the study area from the southwest and exits the site at the northern end of the study area. This feature holds more water than the other drainages; however, it is considered intermittent because it appears to be dry during dry periods based on vegetation typical of seasonally saturated conditions present in the channel.

5.2 Potentially Jurisdictional Aquatic Habitat, Wetlands and Waters

The study area is located in the Lower Sacramento River watershed, within the San Joaquin Delta hydrologic unit (HUC 1804003). Aquatic features within the site include numerous seasonal wetlands, alkali wetlands, swales, and drainages that are scattered throughout the study area. Brushy Creek passes through the site from the southwest and exits the site at the northern extent where it eventually flows into Italian Slough, which in turn flows into Old River and the San Joaquin River Delta to the northeast of the study area. Most of these features occur in the northern and western portions of the study area, with only a portion of Brushy Creek and an unnamed intermittent stream occurring in the proposed development footprint (Figure 4). Based on historic aerial photography and visual inspection during the site surveys, these features are only periodically inundated and tend to remain inundated for short periods, depending on the amount of rainfall in a given year.

A wetland delineation was performed for the airport property at the time of its construction in the early 1990's; however, an updated wetland delineation documenting current conditions in the study area has not been completed. Based on the site assessments, several potentially jurisdictional areas are present in the study area, including drainages and wetlands as discussed in the previous section. These features are most likely considered waters of the United States and the State of California, and would therefore require permits from CDFW, ACOE and RWQCB if impacts to these features from development of the property are unavoidable.

5.3 Plants and Wildlife

A total of 33 species of vascular plants were recorded during the site surveys. Of these 33 species, 13 are native to California. The remainders are non-native species which have become adapted to annual grasslands in California. It should be noted that the first site survey was conducted very early in the growing season, at a time when most plants are not evident and identifiable, and the second survey was performed in winter; as such, floristic surveys conducted at the appropriate time of the growing season would likely yield a greater number of identifiable species.

Seventeen wildlife species or sign were observed during the field survey: red-winged blackbird (*Agelaius phoeniceus*), tricolored blackbird (*Agelaius tricolor*), western meadowlark (*Sturnella neglecta*), Say's phoebe (*Sayornis saya*), house finch (*Haemorhous mexicanus*), vesper sparrow

(*Pooecetes gramineus*), mourning dove (*Zenaida macroura*), American crow (*Corvus brachyrhynchos*), loggerhead shrike (*Lanius ludovicianus*), Swainson's hawk (*Buteo swainsoni*), northern harrier (*Circus cyaneus*), golden eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), California ground squirrel (*Otospermophilus beecheyi*), black-tailed jackrabbit (*Lepus californicus*), meadow vole (*Microtus pennsylvanicus*) burrows, and coyote (*Canis latrans*) tracks.

5.4 Special-Status Species and Sensitive Resources

A search of the CNDDB (CDFW 2016, 2018), IPaC report (USFWS 2016, 2018) and the CNPS Inventory of Rare and Endangered Plants (CNPS 2016, 2018) was conducted for the Byron Hot Springs USGS 7.5 minute quadrangle and the surrounding eight quadrangles in 2016 and again in 2018.

5.5 Special-Status Wildlife

Results of the CNDDB and USFWS searches revealed 25 listed or special-status wildlife species, or species proposed for listing as rare, threatened, or endangered by either the CDFW or the USFWS. Of these, 14 were removed from consideration due to lack of suitable habitat within or adjacent to the project area, or the study area is outside of the species' known range. These were delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleicthys*), eulachon (*Thaleichthys pacificus*), steelhead (*Oncorhynchus mykiss irideus*), bald eagle (*Haliaeetus leucocephalus*), California black rail (*Laterallus jamaicensis coturniculus*), least Bell's vireo (*Vireo bellii pusillus*), riparian brush rabbit (*Sylvilagus bachmani riparius*), San Joaquin kit fox (*Vulpes macrotis mutica*), Alameda whipsnake (*Pekania pennanti*), foothill yellow-legged frog (*Rana boylii*), peregrine falcon (*Falco peregrinus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and giant gartersnake *(Thamnophis gigas*).

No suitable aquatic habitat exists for anadromous fish species on the site or foothill yellow-legged frog. No suitable riparian habitat exists for least Bell's vireo or riparian brush rabbit in the study area, and no suitable wetlands, agricultural ditches, low gradient streams or rice fields exist on the site for giant gartersnake. Furthermore, the study area lacks large mature trees that would be suitable for bald eagle nests and no suitable scrub habitat is found on or adjacent to the study area for Alameda whipsnake. There is an extremely low possibility of California black rail to utilize the wetlands in the study area due to their exposed nature and small size. Peregrine falcon is not expected to utilize the study area for nesting due to the lack of tall structures or cliffs that would be necessary for nesting by the species. Townsend's big-eared bat are not expected to occur due to the high level of disturbance within the study area, and there is no suitable roosting habitat for Townsend's big-eared bat. San Joaquin kit fox historically utilized the area around the

airport and there are multiple documented occurrences within and adjacent to the study area; however, the likelihood this species occurs in the proposed development areas of the airport are low due to continued anthropogenic disturbance (CDFW 2018). Additionally, Dudek biologists did not observe suitable burrows for San Joaquin kit fox within the study area during the biological surveys.

Of the 11 remaining species, three were observed during the field visit. These were loggerhead shrike (*Lanius ludovicianus*), golden eagle (*Aquila chrysaetos*), and tricolored blackbird (*Agelaius tricolor*). Suitable nesting and foraging habitat exists for these species on or adjacent to the site. The eight remaining species have a moderate to high potential to occur on the site due to the availability of suitable habitat on the site or the site occurs within the species known range. These include California red-legged frog (*Rana draytonii*), California tiger salamander (*Ambystoma californiense*), longhorn fairy shrimp (*Branchinecta longiantenna*), vernal pool fairy shrimp (*Branchinecta lynchi*), conservancy fairy shrimp (*Branchinecta conservatio*), vernal pool tadpole shrimp (*Lepidurus packardi*), Swainson's hawk (*Buteo swainsoni*), and burrowing owl (*Athene cunicularia*).

California red-legged frog, California tiger salamander, longhorn fairy shrimp, vernal pool fairy shrimp, and burrowing owl have been previously documented at the Byron Airport Habitat Management Lands, which are directly adjacent to the proposed development footprint (CDFW 2018). Vernal pools within the protected lands adjacent to the development areas likely continue to support these species. Suitable burrows for burrowing owl are present within the annual grassland in the proposed development footprint; however, Dudek biologists observed no evidence of occupation (whitewash, pellets, feathers) in this habitat during the site surveys.

All raptor species found in California are protected by California Fish and Game Code 3503.5 and may use the site for nesting or foraging. Several raptors were observed on or flying over the site during the surveys. Although raptor species have the potential to nest on the site and forage adjacent to the site, the site does not provide substantially important habitat, due to its small size, that would affect raptor species from continuing to exist within the area.

5.6 Special-Status Plants

Results of the CNDDB and CNPS searches revealed 44 special-status plant species that have potential to occur in the vicinity of the study area (CDFW 2018; CNPS 2018). Of these, 27 were removed from consideration due to lack of suitable habitat within or adjacent to the project area, or the study area is outside of the species' known range (refer to Appendix A). Eight special-status plant species have low potential to occur at the study area due to lack of

appropriate soil substrates, or no documented occurrences in the vicinity. Nine special-status plant species have moderate to high potential to occur at the study area. These include alkali milk-vetch (*Astragalus tener* var. *tener*), brittlescale (*Atriplex depressa*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*), recurved larkspur (*Delphinium recurvatum*), spiny-sepaled button-celery (*Eryngium spinosepalum*), diamond-petaled poppy (*Eschscholzia rhombipetala*), and Contra Costa goldfields (*Lasthenia conjugens*). Round-leaved filaree is no longer considered special-status by the CNPS or CDFW (CNPS 2018). However, as it is a covered species in the HCP/NCCP, it will be analyzed herein as a special-status species.

Spiny-sepaled button-celery, recurved larkspur, brittlescale, San Joaquin spearscale, and alkali milk-vetch have been previously documented at the Byron Airport Habitat Management Lands which are directly adjacent to the proposed development area. There is a high level of continuity between the wetlands where these species have been previously documented and the wetlands present in the study area; thus, it there is a high likelihood these special-status plant species occur within suitable habitat on the study area. No special-status plants were observed during the field survey; however, the site surveys were conducted at a time when special-status plants would not be evident and identifiable.

5.7 Sensitive Resources and/or Habitats

Five sensitive resources or habitats occur within the site, including vernal pools, seasonal wetlands, alkali wetlands, alkali grassland, and drainages, all of which are described above in Section 5.2. The location and extent of these resources are depicted in Figure 4. The site is located directly adjacent to the Byron Airport Habitat Management Lands, which are an approximately 814-acre conservation easement managed by the County under the HCP/NCCP. Numerous sensitive resources have been documented within the Byron Airport Habitat Management Lands.

Within the proposed development footprint, Dudek biologists documented one patch of alkali grassland dominated by saltgrass (refer to Figure 4). Additionally, alkali wetlands occur directly adjacent and west of the access road to the airport.

5.8 Wildlife Corridors and Habitat Linkages

Wildlife corridors are landscape features, usually linear in shape, that facilitate the movement of animals (or plants) over time between two or more patches of otherwise disjunct habitat. Corridors can be small and even man made (e.g., highway underpasses, culverts, bridges), narrow linear habitat areas (e.g., riparian strips, hedgerows), or wider landscape-level extensions of habitat that ultimately connect even larger core habitat areas. Depending on the size and

extent, wildlife corridors can be used during animal migration, foraging events, and juvenile dispersal, and ultimately serve to facilitate genetic exchange between core populations, provide avenues for plant seed dispersal, enable increased biodiversity and maintenance of ecosystem integrity within habitat patches, and help offset the negative impacts of habitat fragmentation (Hilty et al. 2006).

Although the study area is a non-linear feature, the conservation lands have value as a potential wildlife corridor or habitat linkage between surrounding areas of open grassland and agricultural habitat. Brushy Creek flows from the uplands west of the site to Little River and the Delta to the northeast of site. Adjacent conservation lands have interconnected vernal pool and wetland complexes that extend onto the study area and the HCP/NCCP discusses this area as part of a critical habitat linkage between Alameda and Contra Costa Counties (Jones & Stokes 2006).

6. POTENTIAL CONSTRAINTS TO DEVELOPMENT

This section addresses potential impacts to sensitive biological resources that would result from development and modernizing practices on the site.

6.1 Vegetation

Potential impacts from the proposed project would occur to all land covers types present in the proposed development site as described in Section 5.1. Most areas directly adjacent to the existing airport and the north and east of the existing runway consist of nonnative annual grassland, which is not a sensitive vegetation community. However, one alkali grassland occurs within the proposed development site and would require either avoidance or other mitigation if proposed development results in impacts. All natural vegetation communities potentially provide suitable habitat for a variety of special-status plant and animal species, as discussed below.

6.2 Jurisdictional Waters of the U.S.

All of the seasonal wetlands, swales, drainages and vernal pools in the study area are likely under the joint regulation of the ACOE, RWQCB, and CDFW. No vernal pool, seasonal wetland, or alkali wetland was documented within the proposed development footprint. Approximately 6.37 acres of Brushy Creek in the northern portion, as well as 9.02 acres of the unnamed intermittent drainage in the eastern portion of the proposed development footprint have the potential for direct impacts as a result of project activities. Dudek recommends a detailed jurisdictional delineation be performed by a qualified biologist or wetland scientist and verified by the appropriate regulatory agencies (e.g., ACOE and CDFW) prior to any permanent plans for development of this property.

Impacts to potentially jurisdictional features will require authorization from the resource agencies listed above in the form of wetland permits (e.g., 404 Nationwide Permit, 401 Water Quality Certification, and 1602 Streambed Alteration Agreement respectively).

Such permits typically include measures to avoid and minimize or mitigate impacts. Where avoidance of jurisdictional wetlands or waters is not feasible, replacement of resources is required in the form of restoration or creation. The project shall seek coverage under the Habitat Conservation Plan (HCP)/Natural Community Conservation Plan (NCCP) for impacts to jurisdictional waters or wetlands. If neither avoidance nor coverage under the HCP/NCCP is feasible, the County will comply with the requirements of the 404 permit coverage for on or off-site mitigation, at a replacement ration of no less than 1:1. Permit processing can take six to nine months for minor impacts less than one half-acre in size, and up to 2 years for impacts greater than one half-acre with special status species impacts (Individual Permit). If the jurisdictional impacts exceed 300 feet, the project would technically require an Individual Permit, unless a waiver is granted to allow for issuance of a Nationwide Permit authorization.

6.3 Special-Status Plants

No special-status plant species were observed within the study area during the surveys; however, the site surveys were conducted when the plants were not evident or identifiable. There is suitable habitat for special-status plant species within the study area, and four special-status plant species have been previously documented on the adjacent Byron Airport Habitat Management Lands. However, the habitat types within the proposed development footprint do not provide suitable habitat for special-status plant species that occur in wetlands and vernal pools. The following special-status plant species may be present in grassland habitat within the proposed development footprint: San Joaquin spearscale, big tarplant, Congdon's tarplant, and recurved larkspur.

Dudek recommends surveys be conducted for special-status plant species that may be present in grassland habitat within the proposed development footprint at a time when they are evident and identifiable to determine if they are present in suitable habitat. The surveys should be conducted by a qualified biologist knowledgeable of the plant species in the region and should be floristic in nature.

If any special-status plant species are observed during surveys, the project applicant shall notify the HCP/NCCP Implementing Entity of the construction schedule so as to allow the HCP/NCCP Implementing Entity the option to salvage the population(s) in accordance with HCP/NCCP Conservation Measure 3.10 (Plant Salvage when Impacts are Unavoidable) described below.

Additionally, the project applicant shall confirm with the HCP/NCCP Implementing Entity that the take limits of the HCP/NCCP for the species identified have not been reached.

The following special-status plant species with potential to occur on the project site are covered by the HCP/NCCP: brittlescale, big tarplant, round-leaved filaree, and recurved larkspur. Alkali milk-vetch, diamond-petaled poppy, and Contra Costa goldfields are analyzed in the HCP/NCCP but are "no take" species, and avoidance is the only acceptable mitigation measure.

Congdon's tarplant and spiny-sepaled button-celery are not addressed in the HCP/NCCP. For these plants, mitigation shall consist of, in order of preference, (1) avoidance, (2) salvage and transplant as described below, or (3) off-site habitat enhancement or restoration in consultation with CDFW.

6.4 Special-Status Animals

Three special-status species were detected during this survey as discussed in Section 5.5. Several other special-status species have the potential to utilize the site for nesting, foraging, cover and/or local migration routes. All native birds in California are protected by the federal Migratory Bird Treaty Act (MBTA) and Section 3503.5 of the California Fish and Game Code, which specifically protects raptors. The study area has suitable nesting habitat for several common raptor species found in California, such as northern harrier (*Circus cyaneus*) and red-tailed hawk (*Buteo jamaicensis*), and also common passerine species such as western meadowlark (*Sturnella neglecta*).

Prior to any ground disturbance related to covered activities that occurs during the nesting season (March 15–September 15), a qualified biologist should conduct a preconstruction survey no more than 1 month prior to construction to establish whether Swainson's hawk nests within 1,000 feet of the project site are occupied. If potentially occupied nests within 1,000 feet are off the project site, then their occupancy will be determined by observation from public roads or by observations of Swainson's hawk activity (e.g., foraging) near the project site. If nests are occupied, minimization measures and construction monitoring will be required per the HCP/NCCP.

Prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)/California Department of Fish and Wildlife (CDFW)-approved biologist should conduct a preconstruction survey in areas identified in the planning surveys as having potential burrowing owl habitat. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFG 1995). Avoidance and Minimization measures per the HCP/NCCP shall be implemented. Focused surveys for California red-legged frog and California tiger salamander

should be performed before initiation of any construction activities. If either of these species is detected during surveys, minimization measures per the HCP/NCCP should be implemented.

Prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)/California Department of Fish and Wildlife (CDFW)-approved biologist should conduct a preconstruction survey in areas identified in the planning surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (USFWS 1999).Preconstruction surveys will be conducted within 30 days of ground disturbance. On the parcel where the activity is proposed, the biologist will survey the proposed disturbance footprint and a 250-foot radius from the perimeter of the proposed footprint to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership will not be surveyed. The status of all dens will be determined and mapped. Written results of preconstruction surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance. Concurrence is not required prior to initiation of covered activities. If San Joaquin kit foxes and/or suitable dens are identified in the survey area, avoidance, mitigation, and monitoring measures described in the HCP/NCCP should be implemented.Prior to any ground disturbance related to covered activities, a U.S. Fish and Wildlife Service (USFWS)-approved biologist should conduct a preconstruction survey in areas identified in the planning surveys as having suitable shrimp habitat. The surveys will establish the presence or absence of covered shrimp and/or habitat features and evaluate use by listed shrimp in accordance with modified USFWS survey guidelines (USFWS 2015). project proponents are required to conduct USFWS protocol surveys in one year (rather than two) to determine presence or absence of listed shrimp species. If covered shrimp are absent from the site, there are no further requirements related to covered shrimp. If covered shrimp are present, the avoidance and minimization and construction monitoring measures per the HCP/NCCP should be implemented.

6.5 Sensitive Resources and/or Habitats

Sensitive resources and habitats include seasonal wetlands, alkali wetlands, and drainages, all of which are potentially jurisdictional features are regulated by CDFW, USFWS and ACOE as discussed in 6.2 above. Dudek recommends avoidance of potentially jurisdictional resources to the extent feasible through the establishment of avoidance buffers prior to construction. If avoidance is not feasible, further study, including a wetland delineation, and wetland permitting would be required prior to initiation of construction activities.

Alkali grassland onsite is considered a sensitive natural community and should be avoided, if feasible. If avoidance is not feasible, efforts to transplant or otherwise salvage the populations of native plants in the alkali grassland should be made in conjunction with CDFW.

If you have any questions regarding this report, please contact me at lburris@dudek.com.

Sincerely,

Laura Burris
Wildlife Biologist

Att.: Appendix A, Special-Status Species with Known or Potential Occurrence in the Vicinity of the Project in Byron, California

REFERENCES CITED

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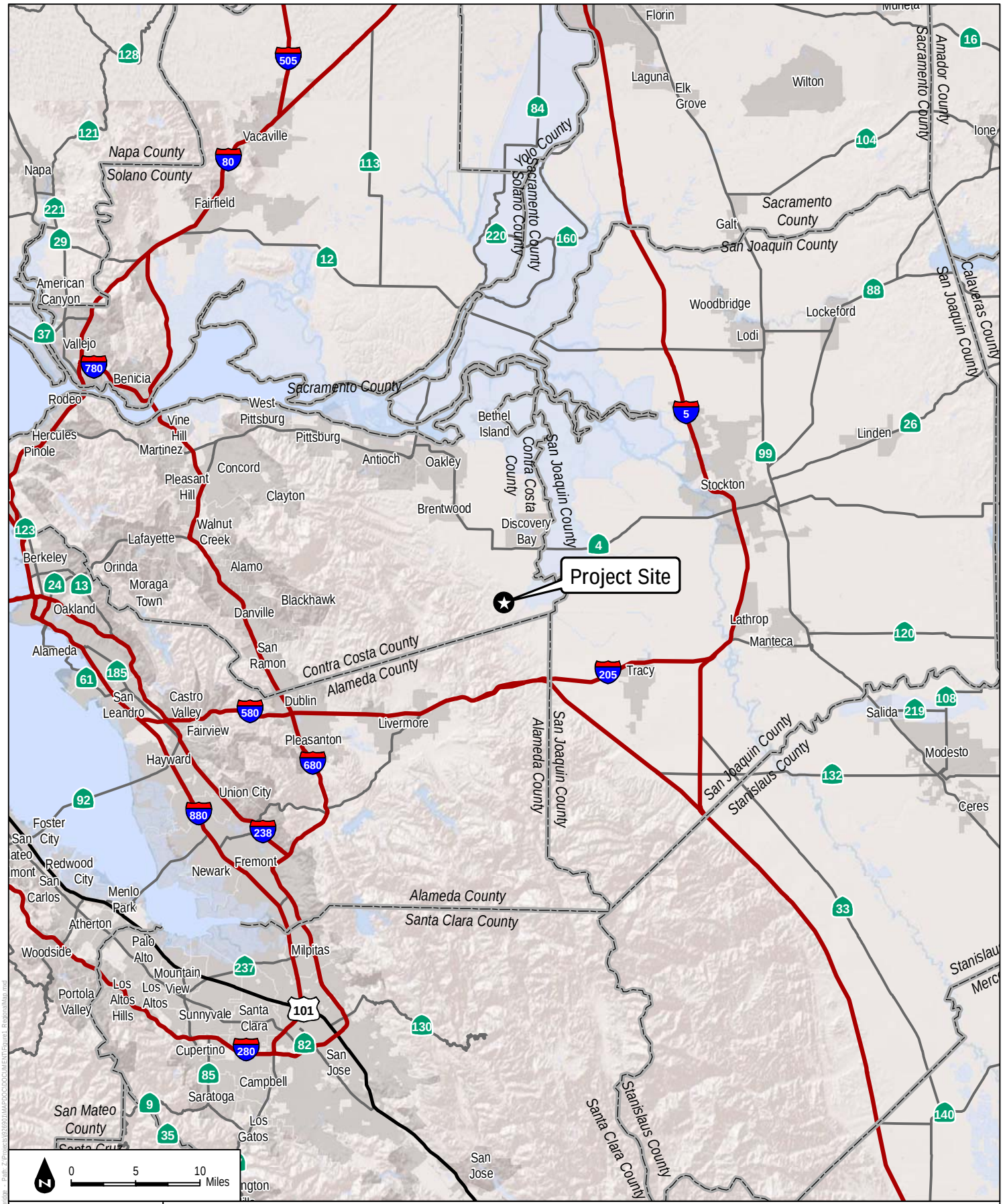

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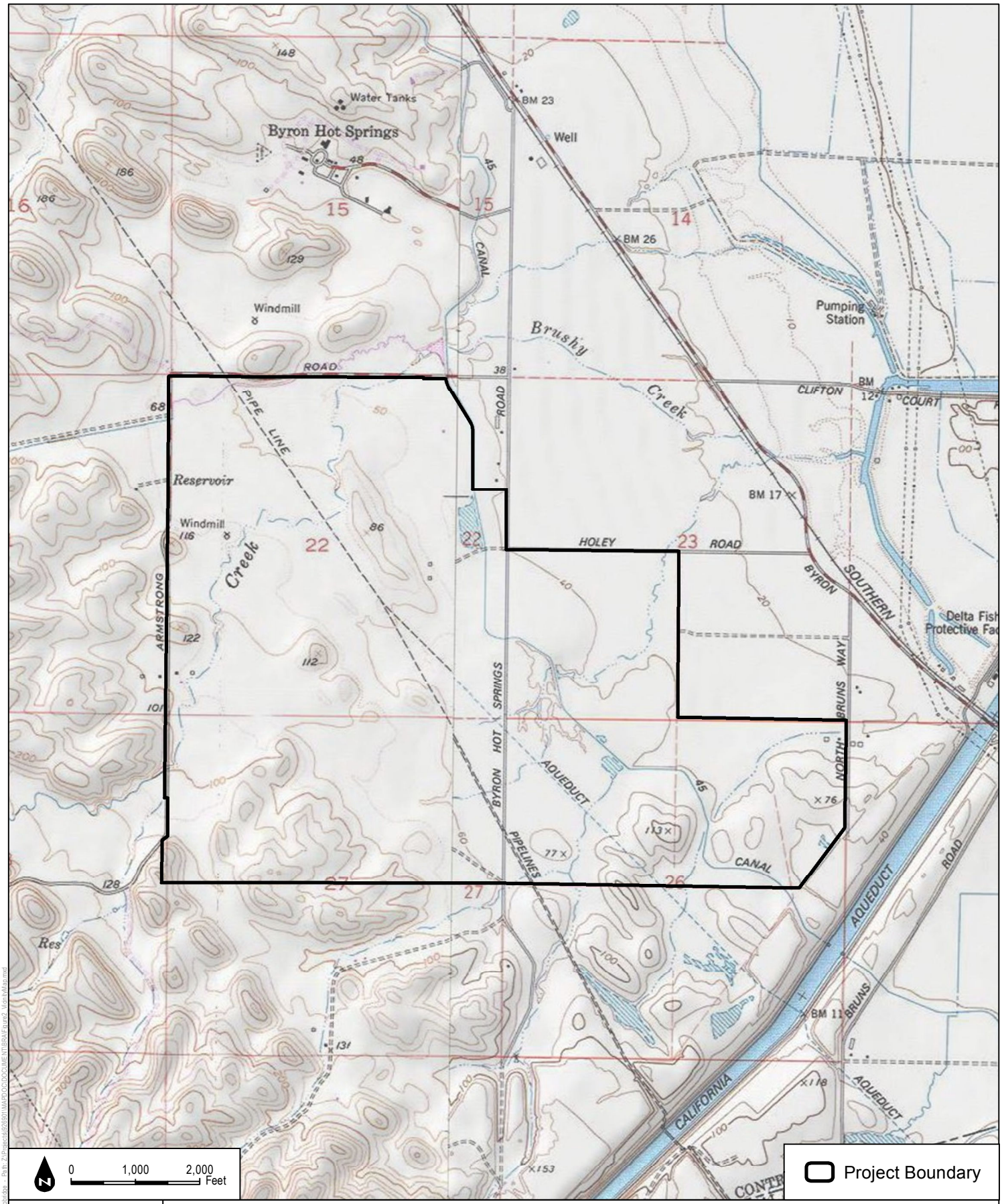
FIGURE 1

Regional Map

Byron Airport Biological Resources Assessment



SOURCE: USGS 7.5-Minute Series Byron Hot Springs & Clifton Court Forebay Quadrangles

FIGURE 2

Vicinity Map

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Byron Airport Biological Resources Assessment

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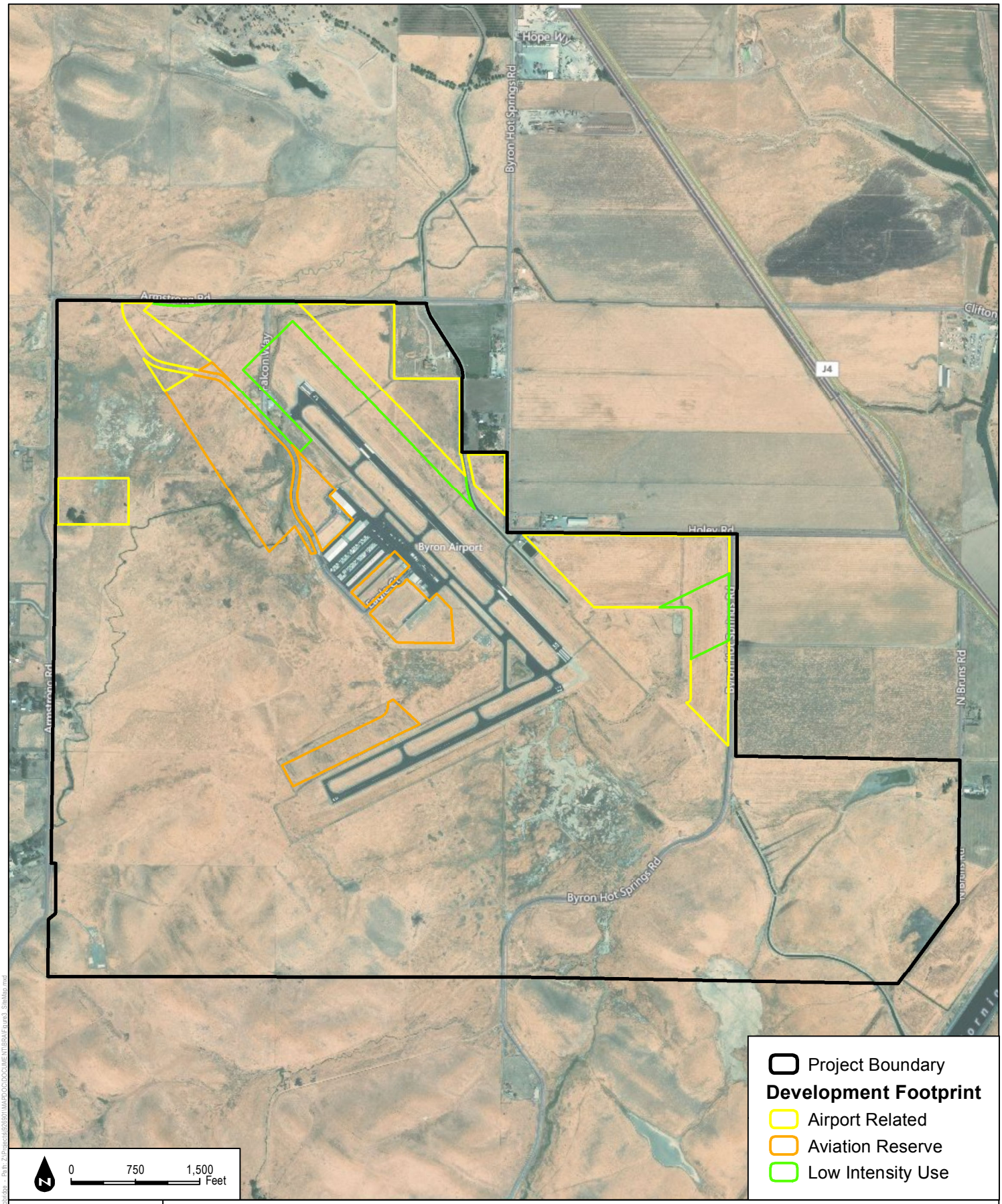

SOURCE: Bing Maps (Accessed 2016), Mead & Hunt (2015)

FIGURE 3
Site Map

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Byron Airport Biological Resources Assessment

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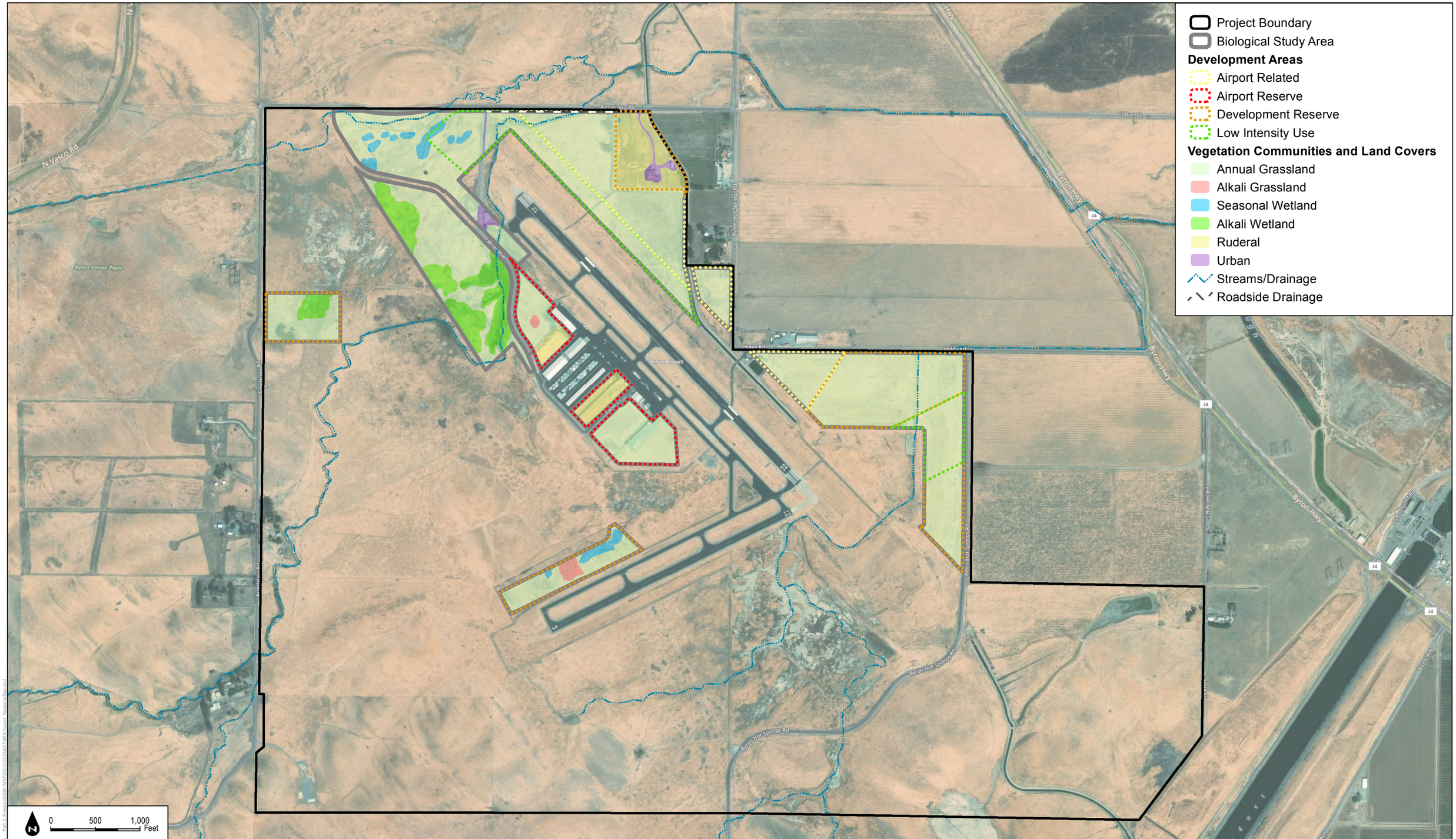

SOURCE: Bing Maps (Accessed 2016), Mead & Hunt (2015)

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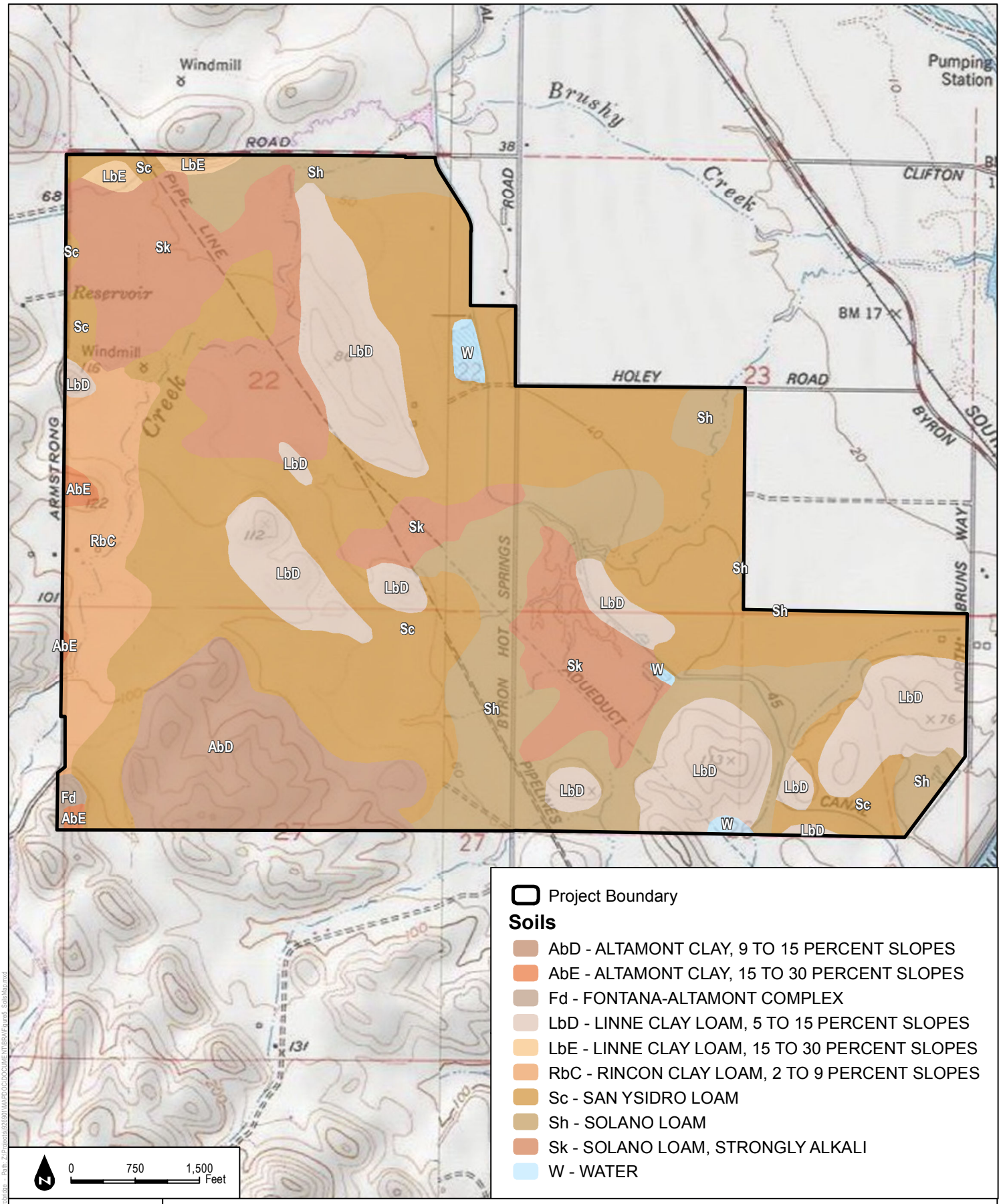
FIGURE 4

Field-Verified Land Cover Map

Byron Airport Biological Resources Assessment



SOURCE: USGS 7.5-Minute Series Byron Hot Springs & CLifton Court Forebay Quadrangles, USDA NRCS (2007)

FIGURE 5

Soils Map

DUDEK

Byron Airport Biological Resources Assessment

Date: 12/4/2018 – Last saved by: ctitterington – Path: Z:\Projects\09660011\MAPDOC\DOCUMENT\BRAVEfigure5_SoilsMap.mxd



Photo 1: Annual grassland habitat



Photo 2: Ground squirrel burrows



Photo 3: Looking east from southern end of the site



Photo 4: Looking north at alkali wetlands in northwestern portion of site



Photo 5: Looking north from Falcon Way



Photo 6: Looking northeast at Byron Airport

Date: 3/3/2016 - Last saved by: rshindelar - Path: Z:\Projects\9269\01\MAP\DOC\DOCUMENT\BRA\Figure6-A PhotoMap.mxd



Photo 7: Looking south from Byron Airport



Photo 8: Suitable size burrow for San Joaquin kit fox



Photo 9: Seasonal wetland west of Osprey Drive



Photo 10: Looking south from Osprey Drive at hangars



Photo 11: Vernal pool complex on northern end of site

Date: 3/3/2016 - Last saved by: rshindler - Path: Z:\Projects\9269\01\MAPDOC\DOCUMENT\BRA\Figure6-B_PhotoMap.mxd

APPENDIX A

Special-Status Species with Known or Potential Occurrence in the Vicinity of the ±142-Acre Parcel in Livermore, California

Appendix A. Special-Status Species with Known or Potential Occurrence in the Vicinity of the Proposed Byron Airport Project in Contra Costa County, California.

Common Name	Scientific Name	Federal Status	State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Area
Invertebrates						
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	None	Conservancy fairy shrimp are restricted to approximately ten disjunct localities in California's central valley from Tehama county south to Merced county.	Conservancy fairy shrimp is adapted to seasonally inundated features and occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. Typically the majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.	Moderate potential to occur. Vernal pool complex is present on and adjacent to the project site.
longhorn fairy shrimp	*Branchinecta longiantenna*	Endangered	None	Longhorn fairy shrimp have been found in a limited number of vernal pools in Contra Costa, Alameda, Merced, and San Luis Obispo counties.	Although longhorn fairy shrimp is only known from a few locations, these sites contain very different types of vernal pool habitats. Longhorn fairy shrimp in the Livermore Vernal Pool Region in Contra Costa and Alameda Counties live in small, clear, sandstone outcrop vernal pools. Longhorn fairy shrimp have been found at elevations ranging from 23 meters (75.5 feet) in the San Joaquin Vernal Pool Region to 880 meters (2,887 feet) in the Carrizo Vernal Pool Region.	Moderate potential to occur. Vernal pool complex is present on and adjacent to the project site.
vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	None	Vernal pool fairy shrimp is found throughout the central valley and at a number of locations in Monterey and San Luis Obispo counties, and the San Francisco Bay area.	Vernal pool fairy shrimp is adapted to seasonally inundated features and occur primarily in vernal pools, seasonal wetlands that fill with water during fall and winter rains and dry up in spring and summer. Typically the majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.	Moderate potential to occur. Vernal pool complex is present on and adjacent to the project site.
vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	None	The vernal pool tadpole shrimp has a patchy distribution across the Central Valley of California, from Shasta County southward to northwestern Tulare County, with isolated occurrences in Alameda and Contra Costa Counties	This species is associated with low-alkalinity seasonal pools in unplowed grasslands. Vernal pool tadpole shrimp is found only in ephemeral freshwater habitats, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands in California. Suitable vernal pools and seasonal swales are generally underlain by hardpan or sandstone. This species inhabits freshwater habitats containing clear to highly turbid water, with water temperatures ranging from 50 to 84 degrees Fahrenheit and pH ranging from 6.2 to 8.5.	Moderate potential to occur. Vernal pool complex is present on and adjacent to the project site.
Fish						
delta smelt	*Hypomesus transpacificus*	Threatened	Endangered	Estuarine waters within the Sacramento Delta.	Delta smelt are a euryhaline species (tolerant of a wide salinity range). They have been collected from estuarine waters up to 14 ppt (parts per thousand) salinity. For a large part of their one-year life span, delta smelt live along the freshwater edge of the mixing zone (saltwater-freshwater interface), where the salinity is approximately 2 ppt. Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. They spawn in shallow, fresh or slightly brackish water upstream of the mixing zone. Most spawning happens in tidally influenced backwater sloughs and channel edgewaters.	Not expected to occur due to a lack of suitable aquatic habitat.

Common Name	Scientific Name	Federal Status	State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Area
longfin smelt	*Spirinchus thaleicthys*	Threatened	SSC	Most longfin smelt in the San Francisco Bay are believed to breed in the lower reaches of the Sacramento and San Joaquin Rivers.	The longfin smelt is a pelagic estuarine fish. Longfin smelt generally spawn in freshwater and then move downstream to brackish water to mature. The life cycle of most longfin smelt generally requires estuarine conditions. Juvenile and adult longfin smelt have been found throughout the year in salinities ranging from pure freshwater to pure seawater, although once past the juvenile stage, they are typically collected in waters with salinities ranging from 14 to 28 parts per thousand. Longfin smelt are thought to be restricted by high water temperatures, generally greater than 22 degrees Celsius (°C).	Not expected to occur due to a lack of suitable aquatic habitat.
eulachon	*Thaleichthys pacificus*	Threatened	None	Eulachon are an anadromous species endemic to the northeastern Pacific Ocean; they range from northern California to southwest and south-central Alaska and into the southeastern Bering Sea. The southern DPS of eulachon is comprised of fish that spawn in rivers south of the Nass River in British Columbia to, and including, the Mad River in California.	Adult eulachon typically spawn between the age of 2 and 5 in the lower portions of rivers. Many rivers within the range of eulachon have consistent yearly spawning runs; however, eulachon may appear in other rivers on an irregular or occasional basis. Migration usually occurs between December and June.	Not expected to occur due to a lack of suitable aquatic habitat.
steelhead – central California coast DPS (NMFS)	*Oncorhynchus mykiss irideus*	Threatened	None	Central California coast steelhead (and their progeny) spawns in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). They also occur in drainages of San Francisco and San Pablo Bays.	Regardless of life history strategy, for the first year or two of life rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant.	Not expected to occur due to a lack of suitable aquatic habitat.
Amphibians						
California red-legged frog	*Rana draytonii*	Threatened	None	The current range of California red-legged frog occurs along the coast from Marin County to Ventura County and in several isolated locations in the foothill region of the west slopes of the Sierra Nevada.	Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. These frogs also breed in artificial impoundments including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.) are preferred, although the absence of vegetation at an aquatic site does not rule out the possibility of occupancy. Adult frogs prefer dense, shrubby or emergent riparian vegetation near deep [≥2 to 3 feet (0.6 to 0.9 m)], still or slow moving water, especially where dense stands of overhanging willow and an intermixed fringe of cattail (*Typha* sp.) occur adjacent to open water.	Moderate potential to occur. Suitable habitat occurs on and adjacent to the project site and there are occurrences within 2 miles of the site.
California tiger salamander	*Ambystoma californiense*	Threatened	Threatened	California Tiger Salamander is found throughout the western part of Central California at low and medium elevations.	California tiger salamander (CTS) may be found in riparian and wet meadow habitats, but is more common in grasslands. CTS spends most of its life cycle underground in adjacent valley oak woodland or grassland habitat, primarily in rodent burrows. Breeding takes place following the first heavy winter rains. Temporary or permanent freshwater pools or slowly flowing streams are required for egg-laying and larval development. They appear to be absent in waters containing predatory game fish.	Moderate potential to occur. Suitable habitat occurs on and adjacent to the project site and there are occurrences within 2 miles of the site.
foothill yellow-legged frog	*Rana boylii*	None	Candidate Threatened, SSC	Foothill yellow-legged frog is found	Frequents rocky streams and rivers with rocky substrate and open, sunny banks, in forests, chaparral, and woodlands. Sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	Not expected to occur. Suitable habitat for this species is not present within or adjacent to the project area.
Reptiles						

Common Name	Scientific Name	Federal Status	State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Area
Alameda whipsnake	*Masticophis lateralis euryxanthus*	Threatened	Threatened	Alameda whipsnake can be found in Contra Costa, Alameda, San Joaquin and Santa Clara Counties	Alameda whipsnake is occurs in areas that support scrub communities, including mixed chaparral, chamise-redshank chaparral, coastal scrub, and annual grassland and oak woodlands that lie adjacent to scrub habitats. In addition Alameda whipsnake may be found in grasslands and various oak woodlands that are linked to scrub habitats by substantial rock outcrops or river corridors. Other habitat features that provide a source of cover for the whipsnake during dispersal or are near scrub habitats and contain habitat features (e.g., rock outcrops) that support adequate prey populations.	Not expected to occur. Suitable scrub habitat or rock outcroppings do not exist on or adjacent to the project site.
giant gartersnake	*Thamnophis gigas*	Threatened	Threatened	Giant gartersnake is found throughout the northern Central Valley of California and in western Kern county.	Giant gartersnake is found in isolated populations restricted to the Central Valley of California. It occurs in freshwater marshes and wetlands, irrigation ditches, low gradient streams and rice fields containing emergent vegetation. Adjacent upland habitat is necessary for cover and aestivation.	Not expected to occur. The project site is outside of the species range and lacks suitable aquatic habitat.
Birds						
bald eagle	*Haliaeetus leucocephalus*	Delisted	Endangered/Fully Protected/BAGEPA	Bald eagle is found in winter throughout western California and along the Colorado river and year round primarily in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties.	Bald eagle requires large bodies of water or free flowing rivers with abundant fish, occasionally takes injured water birds, scavenges dead fish, birds and mammals. Nests in large old growth or dominant live trees with open branchwork, most frequently in in stands with less than 40% canopy. Nests are located 50-200 feet above-ground. Nest sites are typically within one mile of water.	Not expected to occur due to lack of suitable foraging habitat.
burrowing owl	*Athene cunicularia*	None	SSC	Burrowing owl is found throughout California in open areas and grasslands.	The burrowing owl utilizes abandoned ground squirrel burrows in open habitats and grasslands, also disturbed areas. Diet consists of insects, small mammals, reptiles and amphibians. Commonly uses burrows on levees or mounds where there are unobstructed views of predators such as raptors or foxes.	High potential to occur. Suitable habitat exists on and adjacent to the project site and there are several occurrences of burrowing owl within one mile of the project site near Clifton Court Forebay.
California black rail	*Laterallus jamaicensis coturniculus*	None	Threatened	Black Rail is found in limited local areas around the San Francisco Bay Area, California Coast, Lower Colorado River and Salton Sea.	Black Rail is a yearlong resident of saline, brackish and fresh emergent wetlands. Black Rail is carnivorous and gleans isopods, insects, and other arthropods from surface of mud and vegetation. Occurs most commonly in tidal emergent wetlands dominated by pickleweed, or in brackish marshes supporting bulrushes in association with pickleweed. In freshwater, usually found in bulrushes, cattails, and saltgrass. Usually found in immediate vicinity of tidal sloughs.	Extremely low potential to occur. The project site contains low quality wetlands that are likely too small and open for California black rail to utilize.
golden eagle	*Aquila chrysaetos*	None	Fully Protected, BAGEPA	Golden eagle is found throughout California generally excluding the central valley.	Golden eagle Ranges from sea level up to 3833 m (0-11,500 feet). Habitat typically comprises rolling foothills, mountain areas, sage-juniper flats and desert. Eats mostly lagomorphs and rodents; also takes other mammals, birds, reptiles, and some carrion. Diet most varied in nonbreeding season. Needs open terrain for hunting; grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats. Uses secluded cliffs with overhanging ledges and large trees for cover. Nests on cliffs of all heights and in large trees in open areas.	Observed during the field survey.
least Bell's vireo	*Vireo bellii pusillus*	Endangered	Endangered	Least Bell's Vireo is found in riparian areas throughout central and southern California	Least Bell's vireo was formerly a common and widespread summer resident below approximately 600 meters (2,000 feet) above mean sea level (amsl) elevation in the western Sierra Nevada, throughout the Sacramento and San Joaquin Valleys, and in the coastal valleys and foothills from Santa Clara County south. Least Bell's vireos primarily occupy riverine riparian habitats along water, including dry portions of intermittent streams that typically provide dense cover within 1 to 2 meters (3.3 to 6.6 feet) off the ground, often adjacent to a complex, stratified canopy.	Not expected to occur due to lack of suitable habitat.

Common Name	Scientific Name	Federal Status	State Status	California Distribution/Range	Habitat Associations	Potential to Occur in the Project Area
loggerhead shrike	*Lanius ludovicianus*	None	SSC	Loggerhead shrike is found throughout most of California, except the high Sierras.	Loggerhead shrike is a year-round resident in most areas of California that contain grasslands, open areas, orchards and areas with scattered trees. Feeds on small vertebrates and invertebrates, impales prey on thorns or barbed wire.	**Observed** during the field survey.
peregrine falcon	*Falco peregrinus*	None	Fully Protected	Peregrine Falcon is found in appropriate habitat throughout California.	Found in open country, cliffs (mountains to coast); sometimes cities. Over its wide range, found in wide variety of open habitats, from tundra to desert mountains. Often near water, especially along coast, and migrants may fly far out to sea. Limited by availability of nest sites and prey; thus, it often moves into cities, nesting on building ledges and feeding on pigeons.	**Low potential to occur** due to lack of suitable nesting habitat on or adjacent to the project site.
Swainson's hawk	*Buteo swainsoni*	None	Threatened	Swainson's hawk is found throughout the Central Valley of California in open habitats, especially agricultural areas.	Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Diet consists of small mammals and reptiles.	**Moderate potential to occur.** Suitable foraging habitat is present on and immediately adjacent to the project site and isolated trees occur adjacent to the site that could be used for nesting.
tricolored blackbird	*Agelaius tricolor*	None	Candidate Threatened/SSC	Tri-colored blackbird is found in riparian habitats at low to moderate elevations throughout California.	Breeds near fresh water, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats. Diet consists primarily of invertebrates including insects and spiders, as well as seeds and cultivated grains. Seeks cover in emergent wetland vegetation, especially cattails and tules; also in trees and shrubs. Roosts in large flocks in emergent wetland or in trees.	**Observed** during the field survey.
Mammals						
riparian brush rabbit	*Sylvilagus bachmani riparius*	Endangered	Endangered	Riparian brush rabbit is restricted to San Joaquin County.	Riparian brush rabbits live in the brushy understory of Valley riparian forests. Forest with a closed canopy, however, generally lacks sufficient understory of shrubs for their needs. Where mats of low growing wild roses, wild grape (*Vitis californica*), and blackberries are found in savanna-like settings, brush rabbits live in tunnels through the vines and shrubs. Sites inhabited by riparian brush rabbits usually have a mix of roses, blackberries, marsh baccharis, and grape vines, with high volumes of roses and coyote bushes. Riparian brush rabbits frequent small clearings where they feed on a variety of herbaceous vegetation, including grasses, sedges, clover, forbs, shoots, and leaves. Grasses and other herbs are the most important food for brush rabbits. Riparian brush rabbit is dependent on dense brushy cover and leaps into dense cover if pursued.	**Not expected to occur** due to lack of suitable riparian habitat.
San Joaquin kit fox	*Vulpes macrotis mutica*	Endangered	Threatened	San Joaquin Kit Fox is found in areas throughout the San Joaquin Valley and portions of eastern San Luis Obispo, Monterey and San Benito Counties.	San Joaquin Kit fox is known to inhabit semi-desert areas of the southern San Joaquin Valley and surrounding foothills with slopes less than 20%, and to the alkali sink and alkali flat habitat types in the southern range. The species predates primarily on kangaroo rat, ground squirrel, and hares. Most suitable habitat for San Joaquin kit fox is below 1,100 feet elevation.	**Low potential to occur.** Suitable habitat is present on and adjacent to the project site, however, the high level of disturbance on and around the airport likely precludes this species from utilizing the site.
Townsend's big-eared bat	*Corynorhinus townsendii*	None	Candidate Threatened	Townsend's big-eared bat is found throughout California, except in subalpine and alpine habitats.	Townsend's big-eared bat uses mesic habitats and habitat edges for foraging. Roosts in caves, mines, tunnels, buildings or other human-made structures. Forms colonies and is highly sensitive to roost disturbance.	**Low potential to occur.** Although there are occurrences of Townsend's big eared bat within 5 miles of the site, the site lacks suitable roosting habitat for this species. This species could potentially forage on the site.

SSC- California Species of Special Concern
BAGEPA- Bald and Golden Eagle Protection Act of 1940

The preceding list of wildlife potentially occurring in the project area was generated from the following resources:

- USFWS IPaC Trust Resources Report (Sacramento Fish and Wildlife Office, Accessed January 26, 2016)
- CDFW CNDDB Rarefind5 (Accessed January 26, 2016)

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U.S. Fish and Wildlife Service 2007. 5-Year Review Summary and Evaluation for Vernal Pool Fairy Shrimp

Office of the Federal Register 2000: Final Determination of critical habitat for the Alameda Whipsnake https://www.federalregister.gov/articles/2000/10/03/00-24763/endangered-and-threatened-wildlife-and-plants-final-determination-of-critical-habitat-for-the.(Accessed February 4, 2016)

Office of the Federal Register DATE. 5 Year Review for the San Joaquin Kit Fox. https://ecos.fws.gov/docs/five_year_review/doc3222.pdf (Accessed February 4th, 2016)

U.S. Fish and Wildlife Service. 2006. 5-Year Review for Least Bell's Vireo.

US Fish and Wildlife Service. 1998. Draft Recovery Plan for Least Bell's Vireo

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Amsinckia grandiflora	large-flowered fiddleneck	FE/ CE/ 1B.1	Cismontane woodland, Valley and foothill grassland/ annual herb/ Apr-May/ 902-1,804	**Not expected to occur.** The site is outside of the species' known elevation range.
Amsinckia lunaris	bent-flowered fiddleneck	None/ None/ 1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland/ annual herb/ Mar-Jun/ 10-1,640	**Low potential to occur.** Although the grassland onsite may provide potentially suitable habitat for this species, the nearest previously documented occurrence of this species is located in the hill southwest of the project site in dissimilar habitat.
Arctostaphylos auriculata	Mt. Diablo manzanita	None/ None/ 1B.3	Chaparral (sandstone), Cismontane woodland/ perennial evergreen shrub/ Jan-Mar/ 443-2,133	**Not expected to occur.** The site is outside of the species' known elevation range and there is no suitable chaparral or woodland habitat present.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	None/ None/ 1B.2	Chaparral (rocky)/ perennial evergreen shrub/ Jan-Mar (Apr)/ 1,640-3,609	**Not expected to occur.** The site is outside of the species' known elevation range and there is no suitable chaparral habitat present.
Astragalus tener var. *tener*	alkali milk-vetch	None/ None/ 1B.2	Playas, Valley and foothill grassland (adobe clay), Vernal pools/alkaline/ annual herb/ Mar-Jun/ 3-197	**High potential to occur**. The site provides suitable grassland and vernal pool habitat and this species was previously documented at the northern end of the site in 2002.
Atriplex cordulata var. *cordulata*	heartscale	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy)/saline or alkaline/ annual herb/ Apr-Oct/ 0-1837	**Low potential to occur.** Although the grasslands onsite may provide suitable habitat for this species, it has not been previously documented in the vicinity.
Atriplex coronata var. *vallicola*	Lost Hills crownscale	None/ None/ 1B.2	Chenopod scrub, Valley and foothill grassland, Vernal pools/alkaline/ annual herb/ Apr-Aug/ 164-2,083	**Not expected to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in Contra Costa County.

Atriplex depressa	brittlescale	None/ None/ 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools/alkaline, clay/ annual herb/ Apr-Oct/ 3-1,050	**High potential to occur.** The site provides suitable alkaline vernal pool and grassland habitat. This species was previously documented in the adjacent Byron Airport Habitat Management Lands in 2008.
Atriplex minuscula	lesser saltscale	None/ None/ 1B.1	Chenopod scrub, Playas, Valley and foothill grassland/alkaline, sandy/ annual herb/ May-Oct/ 49-6,56	**Low potential to occur.** Although the alkaline grasslands provide potentially suitable habitat, the site does not contain sandy soil substrates. The nearest documented occurrence of this species is located approximately 3 mile west of the project site, in dissimilar habitat.
Balsamorhiza macrolepis	big-scale balsamroot	None/ None/ 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/sometimes serpentinite/ perennial herb/ Mar-Jun/ 295-5,102	**Not expected to occur.** The site is outside of the species' known elevation range and does not provide suitable serpentinite soil substrates for this species.
Blepharizonia plumosa	big tarplant	None/ None/ 1B.1	Valley and foothill grassland/Usually clay./ annual herb/ Jul-Oct/ 98-1,657	**Moderate potential to occur.** The grasslands onsite provide suitable habitat for this species. This species has been previously documented in 1978 approximately 1.6 miles northwest of the project site.
California macrophylla	round-leaved filaree	None/ None/ 1B.1	Cismontane woodland, Valley and foothill grassland/clay/ annual herb/ Mar-May/ 49-3,937	**Moderate potential to occur.** The grasslands onsite provide suitable habitat for this species. This species has been previously documented in 2011 approximately 2 miles northeast of the project site.
Calochortus pulchellus	Mt. Diablo fairy-lantern	None/ None/ 1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland/ perennial bulbiferous herb/ Apr-Jun/ 98-2,756	**Not expected to occur.** This species is known only from occurrences located at Mt. Diablo.
Caulanthus lemmonii	Lemmon's jewelflower	None/ None/ 1B.2	Pinyon and juniper woodland, Valley and foothill grassland/ annual herb/ Mar-May/ 262-4,003	**Not expected to occur.** The site is outside of the species' known elevation range.

Centromadia parryi ssp. *congdonii*	Congdon's tarplant	None/ None/ 1B.1	Valley and foothill grassland (alkaline)/ annual herb/ May-Oct (Nov)/ 0-755	**Moderate potential to occur.** The alkaline grassland onsite provides suitable habitat for this species.
Chloropyron molle ssp. *hispidum*	hispid bird's-beak	None/ None/ 1B.1	Meadows and seeps, Playas, Valley and foothill grassland/alkaline/ annual herb (hemiparasitic)/ Jun-Sep/ 3-509	**Not expected to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in Contra Costa County.
Chloropyron palmatum	palmate-bracted bird's-beak	FE/ CE/ 1B.1	Chenopod scrub, Valley and foothill grassland/alkaline/ annual herb (hemiparasitic)/ May-Oct/ 16-509	**Not expected to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in Contra Costa County.
Cryptantha hooveri	Hoover's cryptantha	None/ None/ 1A	Inland dunes, Valley and foothill grassland (sandy)/ annual herb/ Apr-May/ 30-492	**Low potential to occur.** Although grasslands occurs onsite, there is no suitable sandy soils substrate present at the site. Additionally, this species is believed to be extirpated from its historic range, including the project site.
Deinandra bacigalupii	Livermore tarplant	None/ None/ 1B.2	Meadows and seeps (alkaline)/ annual herb/ Jun-Oct/ 492-607	**Not expected to occur.** The site is outside of the species' known elevation range and there is no suitable alkaline seep habitat present.
Delphinium californicum ssp. *interius*	Hospital Canyon larkspur	None/ None/ 1B.2	Chaparral (openings), Cismontane woodland (mesic), Coastal scrub/ perennial herb/ Apr-Jun/ 640-3,593	**Not expected to occur**. The site is outside of the species' known elevation range and there is no suitable chaparral, scrub, or woodland habitat present.
Delphinium recurvatum	recurved larkspur	None/ None/ 1B.2	Chenopod scrub, Cismontane woodland, Valley and foothill grassland/alkaline/ perennial herb/ Mar-Jun/ 10-2,592	**High potential to occur.** The alkaline grassland onsite provides potentially suitable habitat for this species. This species was previously documented at the site in 1993.
Eriogonum truncatum	Mt. Diablo buckwheat	None/ None/ 1B.1	Chaparral, Coastal scrub, Valley and foothill grassland/sandy/ annual herb/ Apr-Sep (Nov), (Dec)/ 10-1,148	**Not expected to occur.** This species is known from Mt. Diablo and there are no suitable sandy soil substrates for this species at the project site.

Eryngium racemosum	Delta button-celery	None/ CE/ 1B.1	Riparian scrub (vernally mesic clay depressions)/ annual / perennial herb/ Jun-Oct/ 10-98	**Not expected to occur.** No suitable riparian scrub habitat present.
Eryngium spinosepalum	spiny-sepaled button-celery	None/ None/ 1B.2	Valley and foothill grassland, Vernal pools/ annual / perennial herb/ Apr-May/ 262-2,034	**High potential to occur.** The site provides suitable grassland and vernal pool habitat and this species was previously documented at the project site in 2007.
Eschscholzia rhombipetala	diamond-petaled California poppy	None/ None/ 1B.1	Valley and foothill grassland (alkaline, clay)/ annual herb/ Mar-Apr/ 0-3,199	**Moderate potential to occur.** The alkaline grasslands onsite provide potentially suitable habitat for this species. This species has been previously documented in 2015 approximately 2.7 miles southeast of the site.
Helianthella castanea	Diablo helianthella	None/ None/ 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland/ perennial herb/ Mar-Jun/ 197-4,265	**Not expected to occur.** This species is known from the Diablo Range, Berkeley Hills, and San Bruno Mountain and the project site is out of the known geographic range.
Hesperolinon breweri	Brewer's western flax	None/ None/ 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/usually serpentinite/ annual herb/ May-Jul/ 98-3,100	**Not expected to occur.** The project site does not contain suitable serpentinite soil substrates for this species.
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	None/ None/ 1B.2	Marshes and swamps (freshwater)/Often in riprap on sides of levees./ perennial rhizomatous herb/ Jun-Sep/ 0-394	**Not expected to occur.** No suitable marsh or swamp habitat is present.
Lasthenia conjugens	Contra Costa goldfields	FE/ None/ 1B.1	Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools/mesic/ annual herb/ Mar-Jun/ 0-1,542	**Moderate potential to occur.** The grassland and vernal pools onsite provide potentially suitable habitat for this species. This species has been previously documented to occur in the Byron Hot Springs USGS quadrangle.
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	None/ None/ 1B.2	Marshes and swamps (freshwater and brackish)/ perennial herb/ May-Jul (Aug), (Sep)/ 0-16	**Not expected to occur.** There is no suitable marsh or swamp habitat is present.

Lilaeopsis masonii	Mason's lilaeopsis	None/ CR/ 1B.1	Marshes and swamps (brackish or freshwater), Riparian scrub/ perennial rhizomatous herb/ Apr-Nov/ 0-33	**Not expected to occur.** There is no suitable marsh, swamp, or riparian scrub habitat is present.
Limosella australis	Delta mudwort	None/ None/ 2B.1	Marshes and swamps (freshwater or brackish), Riparian scrub/Usually mud banks/ perennial stoloniferous herb/ May-Aug/ 0-10	**Not expected to occur.** There is no suitable marsh, swamp, or riparian scrub habitat is present.
Madia radiata	showy golden madia	None/ None/ 1B.1	Cismontane woodland, Valley and foothill grassland/ annual herb/ Mar-May/ 82-3,986	**Low potential to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in the vicinity of the project site.
Malacothamnus hallii	Hall's bush-mallow	None/ None/ 1B.2	Chaparral, Coastal scrub/ perennial evergreen shrub/ May-Sep (Oct)/ 33-2,493	**Not expected to occur.** No suitable chaparral or coastal scrub habitat is present.
Navarretia nigelliformis ssp. *radians*	shining navarretia	None/ None/ 1B.2	Cismontane woodland, Valley and foothill grassland, Vernal pools/Sometimes clay/ annual herb/ Apr-Jul/ 249-3,281	**Low potential to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in the vicinity of the project site.
Navarretia prostrata	prostrate vernal pool navarretia	None/ None/ 1B.1	Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools/Mesic/ annual herb/ Apr-Jul/ 49-3,970	**Not expected to occur.** Although the grassland and vernal pools onsite provide potentially suitable habitat for this species, it has not been previously documented in Contra Costa County.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	FE/ CE/ 1B.1	Inland dunes/ perennial herb/ Mar-Sep/ 0-98	**Not expected to occur.** The site is outside the known range for this species and there is no suitable dune habitat present.
Plagiobothrys glaber	hairless popcorn-flower	None/ None/ 1A	Meadows and seeps (alkaline), Marshes and swamps (coastal salt)/ annual herb/ Mar-May/ 49-591	**Not expected to occur.** No suitable seep or marsh habitat is present.

Scutellaria galericulata	marsh skullcap	None/ None/ 2B.2	Lower montane coniferous forest, Meadows and seeps (mesic), Marshes and swamps/ perennial rhizomatous herb/ Jun-Sep/ 0-6,890	**Not expected to occur.** No suitable forest, marsh, or seep habitat is present.
Senecio aphanactis	chaparral ragwort	None/ None/ 2B.2	Chaparral, Cismontane woodland, Coastal scrub/sometimes alkaline/ annual herb/ Jan-Apr/ 49-2,625	**Not expected to occur.** No suitable chaparral, scrub, or woodland habitat is present.
Symphyotrichum lentum	Suisun Marsh aster	None/ None/ 1B.2	Marshes and swamps (brackish and freshwater)/ perennial rhizomatous herb/ May-Nov/ 0-10	**Not expected to occur.** There is no suitable marsh or swamp habitat present.
Trifolium hydrophilum	saline clover	None/ None/ 1B.2	Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools/ annual herb/ Apr-Jun/ 0-984	**Low potential to occur.** Although the grassland onsite may provide potentially suitable habitat, this species has not been previously documented in the vicinity of the project site.
Tropidocarpum capparideum	caper-fruited tropidocarpum	None/ None/ 1B.1	Valley and foothill grassland (alkaline hills)/ annual herb/ Mar-Apr/ 3-1,493	**Low potential to occur.** Although the site contains suitable alkali grassland habitat, this species is believed to be extirpated from the region surrounding the project site.
Viburnum ellipticum	oval-leaved viburnum	None/ None/ 2B.3	Chaparral, Cismontane woodland, Lower montane coniferous forest/ perennial deciduous shrub/ May-Jun/ 705-4,593	**Not expected to occur.** The site is outside of the species' known elevation range and there is no suitable chaparral, woodland, or forest habitat present.

APPENDIX E

Byron Airport Cultural Inventory

CULTURAL RESOURCES INVENTORY REPORT
for the
BYRON AIRPORT DEVELOPMENT PROGRAM, CONTRA COSTA COUNTY, CALIFORNIA

Prepared for:

Contra Costa County Department of Conservation and Development
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MAY 2019

Printed on 30% post-consumer recycled material.

Cultural Resources Inventory Report for the Byron Airport Development Program, Contra Costa County

NATIONAL ARCHAEOLOGICAL DATABASE (NADB) INFORMATION

Authors: Adam Giacinto, MA, RPA, William Burns, MSc, RPA, and Angela Pham, MA, RPA

Firm: Dudek

Project Proponent: Contra Costa County Department of Conservation and Development

Report Date: March 2019

Report Title: Cultural Resources Inventory Report for the Byron Airport Development Program, Contra Costa County, California

Type of Study: Archaeological Inventory

Resources: P-29-2455-H; BA-KL-1

USGS Quads: Byron Hot Springs, California 1:24,000; T 1S, R 3E; Section 22

Acreage: Approximately 1,300

Keywords: Byron Airport USGS 7.5-Minute Quadrangle; Cultural resources inventory, Positive Intensive Pedestrian Survey; P-29-2455-H/CA-NEV-1538, Historic wooden corral, BA-KL-1

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MANAGEMENT SUMMARY

The Byron Airport Development Program (project) is located in the community of Byron, Contra Costa County, California. The airport is located on the western edge of the flat Sacramento- San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. The Clifton Court Forebay is located less than two miles east to the site, Bethany Reservoir is approximately three miles to the south, while the Los Vaqueros Reservoir is five miles to the west. The project site consists of the Byron Airport property south of Armstrong Road, approximately 1,307 acres, and the approximately 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. The airport also owns an additional 120 acres north of Armstrong Road that is not considered part of the project site. The area of direct impact (ADI), consisting of the area where direct impact may occur for development, access, or utilities, consists of 101 acres within this larger project boundary. The ADI includes 70 acres of future aviation and airport-related development, and 31 acres of low-intensity use (where structures are not allowed but ground disturbance could occur). The project area occurs within Section 22 of Township 1 South, Range 3 East on the Byron Hot Springs 7.5-minute USGS topographic quadrangle.

The County of Contra Costa proposed project at Byron Airport involves developing the airport facilities to support the operation forecasts in the Byron Airport Master Plan that was adopted by the County in 2005. Proposed developments include achieving economic self-sufficiency through the development of airport-related land uses, protecting current and future airport operations from incompatible land uses, and providing a planning framework for development consistent with the adopted Airport Land Use Compatibility Plan.

The County of Contra Costa is the Lead Agency for compliance with the California Environmental Quality Act (CEQA). The County contracted Dudek to perform a cultural resource inventory for the project, in compliance with CEQA.

A records search was completed for the current project for a half-mile radius around the project area by staff at the Northwest Information Center (NWIC) at Sonoma State University, California. The records search identified one cultural resource, P-07-002527 (Byron Bethany Irrigation District Main Canal No.9), within the project development area; four cultural resources (P-07-000320, P-07-000321, P-07- 002707, and P-07-002708) located within the Byron Airport parcel boundary; and an additional seven cultural resources occur within the half-mile search radius of the project A Native American Heritage Commission (NAHC) Sacred Lands File (SLF) search did not indicate the presence of any Native American cultural resources in or near the project area. Subsequent Native American outreach letters were sent to the NAHC-listed Tribal representatives. Wilton Rancheria responded requesting consultation to participate in land use

decisions and for the mitigation of potential project impacts to tribal cultural resources, under Senate Bill 18 and Assembly Bill 52. No other responses have been received to date.

Dudek conducted the intensive-level pedestrian survey on May 10, 2016. Steve Callahan, Byron Airport Lead Operations Specialist, was present during the field survey as an escort. One newly recorded historic resource, BA-KL-1, was identified during the current survey within the project development area. An additional survey was conducted on November 28, 2018 to examine the data potential of BA-KL-1 and to survey an additional 11.7 acre residential parcel adjacent to the airport added to the project. Dudek determined that data potential for BA-KL-1 has been exhausted through field-level recordation. The resource does not have the potential to further yield information locally, regionally, or nationally beyond field-level. BA-KL-1 is not eligible for listing on the CRHR or the Local Register, and is not significant under CEQA. No other new or previously recorded archaeological or built-environment resources were identified in the project site as a result of this study.

Based on available information and in consideration of the topography, no historical resources, as defined under CEQA and County guidelines, will be impacted by the project. However, due to the presence of cultural resources located within the eastern portion of the project area, Dudek recommends that a qualified archaeologist should be present at Byron Airport preconstruction meeting to discuss archaeological sensitivity within the project area and to work with the construction project manager and/or foreman to determine the duration and extent of monitoring for historical archaeological deposits that may be uncovered during project implementation.

1 INTRODUCTION

1.1 Project Location and Description

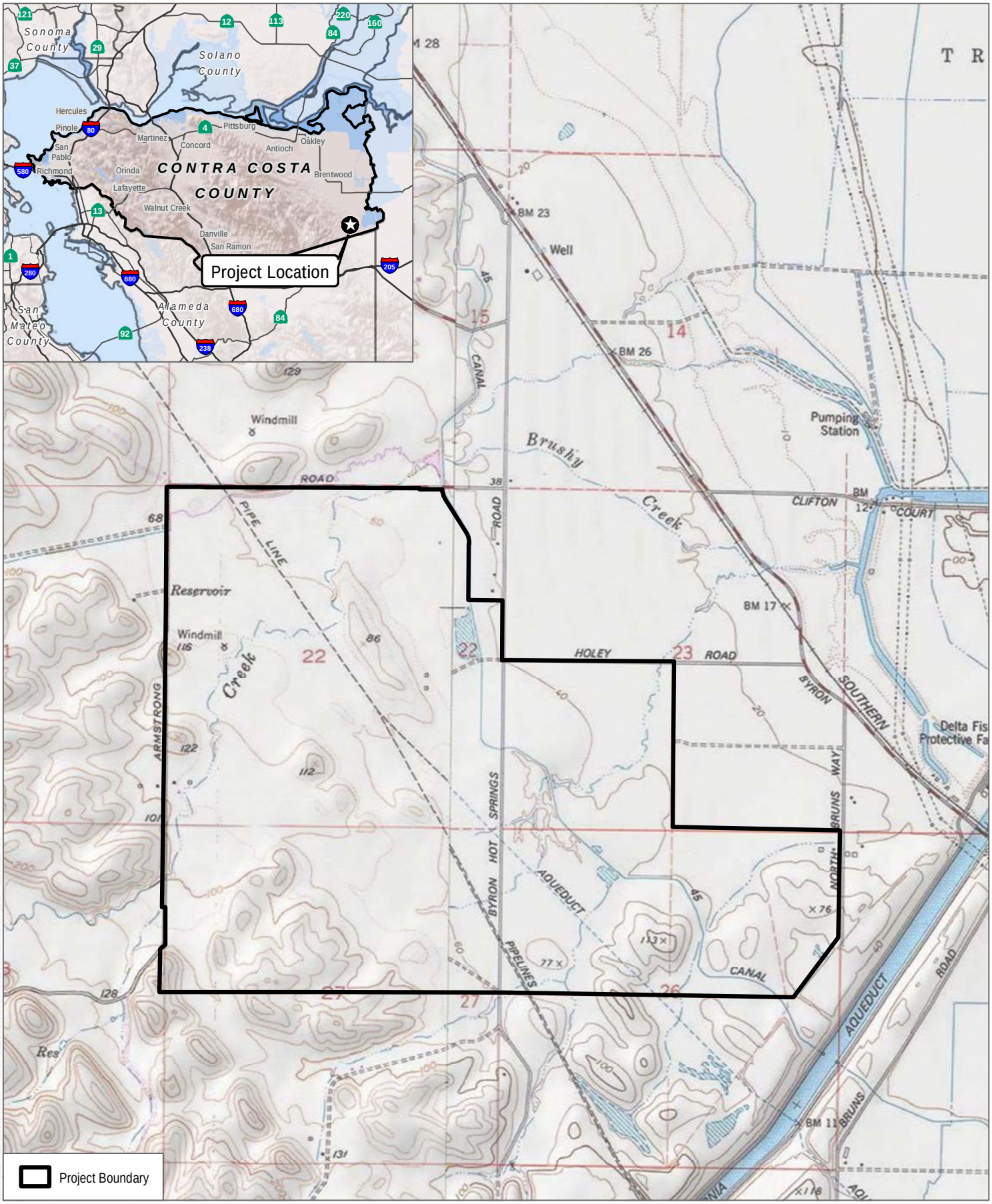
The Byron Airport Project (project) is located in the community of Byron, Contra Costa County, California (Figure 1 and Figure 2). The airport is located on the western edge of the flat Sacramento- San Joaquin Delta agricultural lands, giving way to rolling hills and grasslands west of the airport. The Clifton Court Forebay is located less than two miles east to the site, Bethany Reservoir is approximately three miles to the south, while the Los Vaqueros Reservoir is five miles to the west. The project site consists of the Byron Airport property south of Armstrong Road, approximately 1,307 acres, and the approximately 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. The airport also owns an additional 120 acres north of Armstrong Road that is not considered part of the project site. The area of direct impact (ADI), consisting of the area where direct impact may occur for development, access, or utilities, consists of 101 acres within this larger project boundary. The ADI includes 70 acres of future aviation and airport-related development, and 31 acres of low-intensity use (where structures are not allowed but ground disturbance could occur). The project area occurs within Section 22 of Township 1 South, Range 3 East on the Byron Hot Springs 7.5-minute USGS topographic quadrangle

The currently proposed project at Byron Airport involves developing the airport facilities to support the operation forecasts in the Byron Airport Master Plan that was adopted by the County in 2005. Proposed developments include achieving economic self-sufficiency through the development of airport-related land uses, protecting current and future airport operations from incompatible land uses, and providing a planning framework for development consistent with the adopted Airport Land Use Compatibility Plan.

The Master Plan identifies three development areas within the airport boundary (Figure 3). The aviation-reserve area, generally located west of the intersection of the two runways, is reserved for uses directly associated with the function of the Airport, such as a terminal, hangars, fixed base operator, aircraft maintenance, fueling facilities, airport administrative offices, etc. The airport-related area is generally located north and east of the runways. This area could be developed with certain aviation uses and airport compatible uses, such as light industry, warehouses, and commercial. This area could be leased to private entities, thereby providing a revenue stream for the Airport. The low intensity area, approximately 31-acres, is being reserved for infrastructure and/or protection of the airfield. The development program would develop the 23.5-acre aviation-reserve area west of the main runway, and 46.6 acres of airport-related uses east of the main runway (including an 11.7-acre agricultural/residential parcel that would be acquired by the County).

The Airport is currently served by limited utility infrastructure. A well is located in the reserved area and a septic field is located immediately west of the runway intersection. PG&E provides electrical service, but not natural gas. The Master Plan and subsequent Infrastructure Study for the Byron Airport identified the need to upgrade much of the utility infrastructure if full build-out of the Airport is to be realized.

The County's long-term goal for Byron Airport is for it to reach its aviation potential and achieve economic self-sufficiency through full implementation of the Master Plan. However, the current General Plan policies and zoning regulations for the Airport do not allow for establishment of most of the uses necessary to attain this goal. Therefore, the County intends to amend its General Plan and zoning as necessary to allow full implementation of the Master Plan. Specifically, the General Plan Land Use Element would be amended to include policies that update and clarify the range of aviation, airport-related, and non-aviation uses and activities intended for the Airport property, similar to those already adopted for the County's other general aviation airport, Buchanan Field. The Transportation and Circulation Element would be amended to acknowledge potential future alignments of proposed State Route 239 (aka TriLink), which if constructed would link East Contra Costa County to Interstate 580 and provide improved access to Byron Airport.



SOURCE: USGS 7.5-Minute Series Byron Hot Springs and Clifton Court Forebay Quadrangles
Township 1S / Range 3E / Section 21-23, 26-28

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0 1,000 2,000 Feet
0 250 500 Meters

FIGURE 1
Project Location
Byron Airport Project

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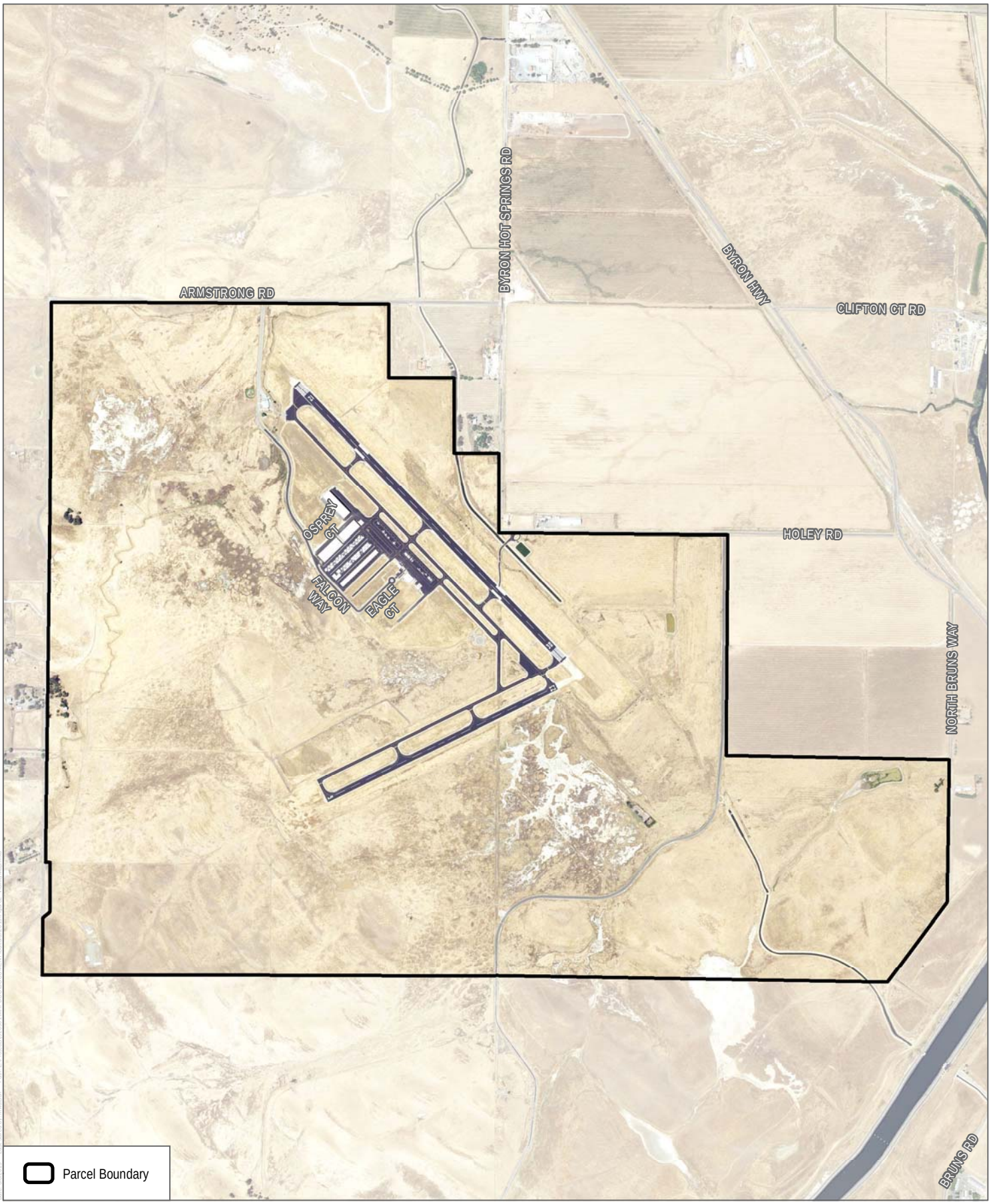

SOURCE: USDA 2016

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0 750 1,500 Feet
0 200 400 Meters
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FIGURE 2

Vicinity Map

Byron Airport Project

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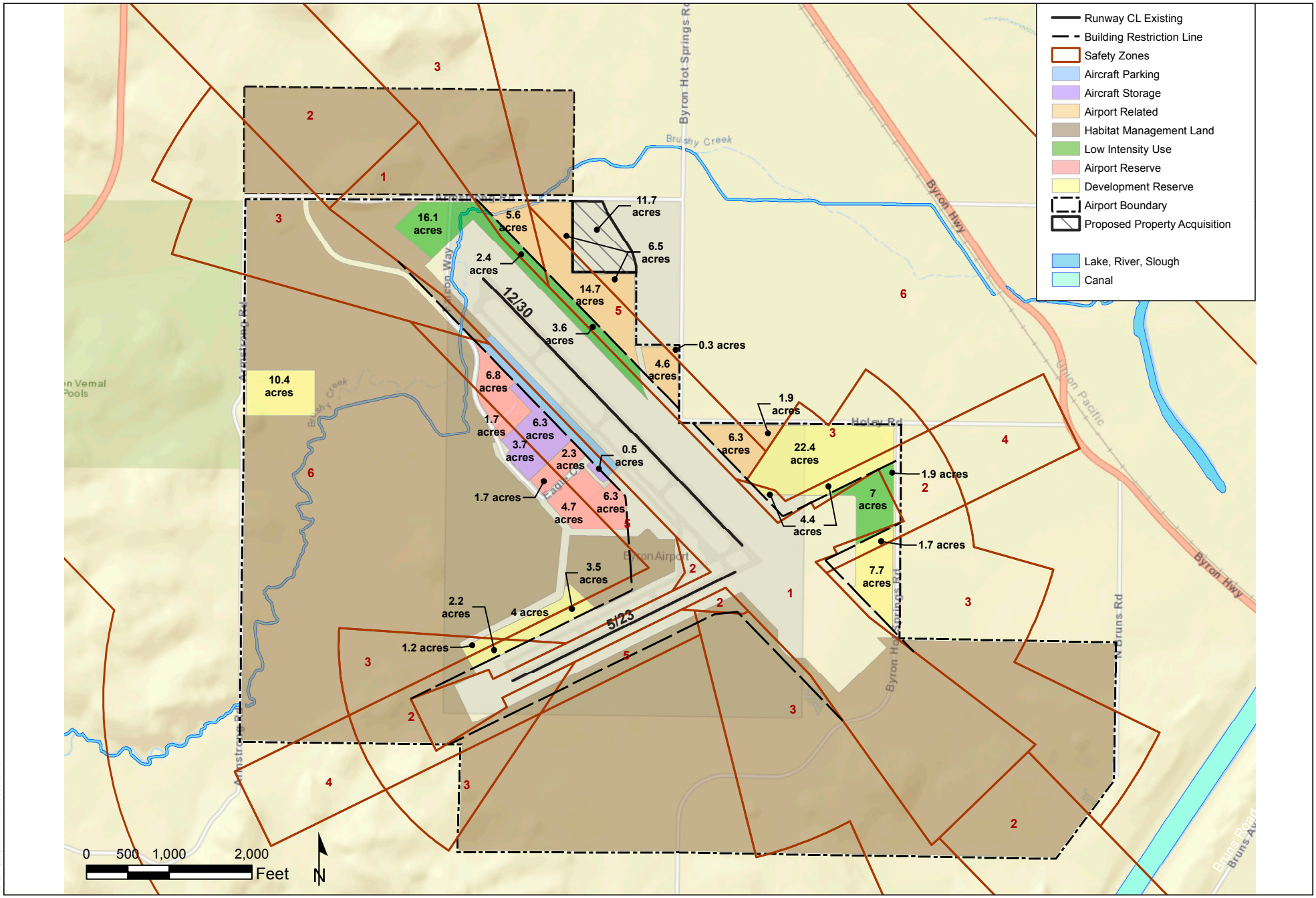

SOURCE: Mead & Hunt 2018

FIGURE 2-3

Development Area and Safety Zones

Byron Airport Development Program EIR

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1.3 Regulatory Context

The current cultural resources investigation was completed to satisfy CEQA.

1.3.1 California Register of Historic Resources (CRHR) and CEQA

In California, the term "historical resource" includes but is not limited to "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California." (PRC section 5020.1(j).) In 1992, the California legislature established the CRHR "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change." (PRC section 5024.1(a).) The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP), enumerated below. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than fifty years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see Cal. Code Regs., tit. 14, section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- PRC section 21083.2(g) defines "unique archaeological resource."
- PRC section 21084.1 and CEQA Guidelines section 15064.5(a) defines "historical resources." In addition, CEQA Guidelines section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource;" it also defines the circumstances when a project would materially impair the significance of an historical resource.

- PRC section 21074(a) defines "tribal cultural resources."

- PRC section 5097.98 and CEQA Guidelines section 15064.5(e): Set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.

PRC sections 21083.2(b)-(c) and CEQA Guidelines section 15126.4: Provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource." (PRC section 21084.1; CEQA Guidelines section 15064.5(b).) If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of PRC section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA. (PRC section 21084.1; CEQA Guidelines section 15064.5(a).) The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption. (PRC section 21084.1; CEQA Guidelines section 15064.5(a).)

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired." (CEQA Guidelines section 15064.5(b)(1); PRC section 5020.1(q).) In turn, the significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

(CEQA Guidelines section 15064.5(b)(2).) Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], [b], and [c]).

Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (PRC section 21083.2(a); CEQA Guidelines section 15064.5(c)(4).) However, if a non-unique archaeological resource qualifies as tribal cultural resource (PRC 21074(c); 21083.2(h)), further consideration of significant impacts is required.

CEQA Guidelines section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in PRC section 5097.98.

California Health and Safety Code

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (section 7050.5b). PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the California Native American Heritage Commission (NAHC) within 24 hours (section 7050.5c). The NAHC will notify the Most Likely Descendant. With the permission of the landowner, the Most Likely Descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the Most Likely Descendant by the NAHC. The Most Likely Descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

2 CULTURAL CONTEXT

2.1 Prehistoric

In general, as pointed out by Chatters and Fogerty (2004:4), the archaeology and prehistory of the Central Valley are not well understood. In addition, much of the archaeological material from the valley area has not been found in context, having been scavenged from the surface and placed in private collections. Early and widespread agricultural use of the valley floor has destroyed much of the bottomland archaeology, and siltation has most likely buried many resources well below the surface sediments. On the valley floor, in southern Central Valley, fluted projectile points were found at the Witt Site (Fenenga 1993; Riddell and Olsen 1969), suggesting possible Clovis occupation in the region earlier than 11,000 years ago, during the Pleistocene. More than two decades ago, a general chronological framework was provided by Moratto (1984) that encompasses the southern Central Valley. Since then, numerous additional studies have provided data to supplement and refine this framework. Building on this previous research, the following chronology contains four general time frames with associated periods, dates, and marker traits: Paleoindian (Paleoindian Period), Early Archaic (Early Period), Middle Archaic (Middle Period), and Late Archaic (Late Period). A description of each of these periods is presented below.

Paleoindian Period (ca. 12,000 to 9000 BP)

There is ample evidence of human habitation in Central Valley and adjacent areas dating to approximately 12,000 years ago. Occupation is known to date to at least 11,000 years ago (e.g., Fenenga 1993; Fredrickson and Grossman 1977; Riddell and Olsen 1969; Siefkin 1999; Wallace 1991; Wallace and Riddell 1988). Most of the evidence for a Paleoindian presence in the valley has been limited to surface finds of fluted projectile points (see below), that are typically regarded by North American archaeologists as late Pleistocene early Holocene time markers.

As noted above, the evidence for a Paleoindian occupation has been in the form of numerous fluted, concave base (Clovis or "Clovis-like") projectile points, along with other artifacts presumed to be Paleoindian in age (e.g., "humpies" and crescents; see Fredrickson and Grossman 1977; Sampson 1991). Unfortunately, most of these discoveries have been made by amateur collectors, many of whom were collecting illegally, so virtually no provenance has been provided for these artifacts. This has resulted in an enormous and irretrievable loss of data for understanding the Paleoindian Period in this region.

Early Period (ca. 9000 to 6000 BP)

Evidence for the Early Period is meager. During this period, however, it is believed that human subsistence was based largely on the hunting of large game and fishing (Sutton 1997:12). Grinding

implements, such as mortars, pestles, millingstones, and handstones, appear infrequently during this time in the archaeological record. Other types of artifacts in these assemblages include hand-molded baked clay net weights, Olivella and Haliotis shell beads and ornaments, charmstones, and stemmed projectile points. Bone artifacts are uncommon. Burials are typically fully extended, oriented to the west, and generally have associated artifacts (e.g., quartz crystals). Cremations are rare (Moratto 1984:181–182; Sutton 1997:12).

Middle Period (ca. 6000 to 3000 BP)

After about 6,000 years ago, the climate became generally warmer. This time period is characterized by a more generalized subsistence pattern (Moratto 1984:183; Sutton 1997:12). While hunting, fowling, and fishing continue to be the focus of subsistence activities, an increased emphasis on seed processing (particularly acorns) is evident. Artifacts include Olivella and Haliotis beads and other ornaments, distinctive spindle-shaped charmstones, cobble mortars, chisel-ended pestles, and large projectile points (inferring use of the atlatl) (Moratto 1984:183; Sutton 1997:12). Bone tools, such as awls, fish spear tips, saws, and flakers may be evidence of generalized subsistence, but preservation bias (i.e., the lack of these perishable tools in earlier components) may have affected the archaeological record. Burials are tightly flexed and have few associated artifacts. At the same time, there is a slight increase in the number of cremations. Evidence of violent death appears in the burial assemblage, as indicated by disarticulated skeletons with embedded weapon points (Moratto 1984:183).

Late Period (ca. 3000 to 150 BP)

The Late Period has been postulated to represent the occupation of the ethnographic Yokuts (e.g., Kroeber 1925; Gayton 1948; Latta 1977; Spier 1978a, 1978b; Wallace 1978), although this presumption is based on assemblage composition and must be conditioned by the recognition that artifacts cannot be equated with culture. This is especially true since it is increasingly understood that the high diversity of identified tribes in California may have been a relatively late phenomenon associated with the development of an individualized currency economy (Bettinger 2015).

The Late Period is divided into four phases with associated marker traits: (1) the Early Late Period (3000 to 1500 BP, intensification of acorns, large corner-notched points (Elko series); (2) Late Period Phase 1 (1500 to 700 BP), introduction of bow and arrow, Rose Spring series arrow points, acorn-based economies, extensive trade; (3) Late Period Phase 2 (700 to 300 BP), large middens, Desert series arrow points (Desert Side-notched and Cottonwood types); and (4) Late Period Phase 3 (300 to 150 BP), ethnographic groups, historic trade goods.

During the Late Period in general, subsistence began to focus on the processing of acorns and other costly to process plant foods, with a proportionate decrease in the contribution of hunting, fowling, and fishing (Moratto 1984:183; Sutton 1997:12). Typical artifacts of this period include Olivella beads, Haliotis ornaments, stone beads and cylinders, clamshell disk beads, tubular smoking pipes of schist and steatite, arrow shaft straighteners, flat-bottomed mortars, cylindrical pestles, and small side-notched projectile points for use with the bow and arrow. Burials are often in flexed positions and cremation is more common than during the Middle Period (Moratto 1984:183).

2.2 Ethnohistoric (post-AD 1750)

The history of Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century. The principal intent of these researchers was to record the pre-contact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Lightfoot 2005: 32) by recording languages and oral histories within the region.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Johnson and Lorenz 2006). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Golla 2007).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative "time depth" of the speaking populations (Golla 2007). A large amount of variation within the language of a group represents a greater time depth then a group's language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Golla has observed that the "absolute chronology of the internal diversification within a

language family" can be correlated with archaeological dates (2007). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

The project site falls primarily within the Northern Valley Yokuts traditional use area, although Miwok and Costanoan (Ohlone) populations documented during the ethnohistoric period. Costanoan, Miwok and Yokuts are subgroups of the Penutian linguistic group spoken by populations that moved south from Oregon, displacing Hokan speaking groups (Golla 2011). Miwok, Yokuts, and Costanoan represent three subfamilies of this initial Penutian linguistic flow; of which Costanoan and Miwok are a distinct sub-branch ("Utian") from Yokuts (Golla 2007). Golla has interpreted the split between Miwok and Costanoan populations based on archaeological evidence and the amount of internal diversity within these language-speaking communities to reflect a time depth of approximately 4,500-4,000 years (Golla 2007). This is considered consistent with the archaeologically documented emergence of the Early Middle Horizon Windmiller Pattern (Moratto 1984) within the Bay Area, which generally dates 4,500 to 2,500 BP. This information suggests a migration of Utian populations from the Sacramento–San Joaquin River Delta (Delta) region occurred during this period, displacing Hokan speaking populations. The Yokuts time depth is more difficult to reconstruct, the level of internal variation between San Joaquin Valley speaking groups indicating that it formed as a shared language within the last 1,500 years. This suggests that speaking communities representing the pre-curser to Yokuts came from elsewhere, most likely further north in the Central Valley or the Great Basin (Golla 2007; Golla 2011).

Northern Valley Yokuts

The region surrounding the project boundary would have been at the southern extend of Northern Valley Yokut tribal territory during the ethnohistoric period (Wallace 1978). This group inhabited the lower San Joaquin River watershed and its tributaries extending from Calaveras River in the north to approximately the large bend of the San Joaquin River eastward near Mendota. The lower San Joaquin River meanders through the territory making bends, sloughs, and marshes full of tule reeds as it meanders. Farther from the rivers and marshes, the valley floor would have been dry and sparely vegetated (Wallace 1978, Kroeber 1925).

Northern Valley Yokut habitation areas were most commonly situated in close proximity to the San Joaquin River and its major tributaries, more often on the east side of the river (Kroeber 1925). West of the river populations were much sparser and concentrated in the foothills on minor waterways. This focus on waterways can also be seen in their dietary resources which included various fish, waterfowl, antelope, elk, acorns, tule roots, and various seeds. In particular, and in contrast to their San Joaquin Valley Yokut neighbors, salmon was an abundant food during the fall

spawning and in springtime. The focus on fishing is also seen in the material culture consisting of net sinkers and harpoons, likely used from rafts constructed from tule reed bundles (Wallace 1978).

Traditional village were perched on top of low mounds on or near riverbanks. Northern Valley Yokut dwellings were constructed of tule reed woven mats places over a pole frame oval or round structure. They were usually 25 to 40 feet in diameter and would belong to a single family (Wallace 1978). This is in contrast to the larger multi-family dwellings erected sometimes by the Southern Yokuts. In addition to dwellings, earth covered ceremonial sweat lodges were constructed. There was a high level of sedentism due to abundant riverine resources, though there were times of seasonal disbandment for harvesting wild plant resources such as acorns and seeds (Gayton 1948; Kroeber 1925).

The Northern Valley Yokuts saw sharp and devastating decline from disease and relocation to coastal missions nearly immediately after Spanish contact (Osbourne 1992). This only increased with the large influx of cattle ranching and Anglos Americans after the gold rush (Osbourne 1992, Cook 1976).

2.3 The Historic Period

Spanish Period (1769–1822)

Gaspar de Portolá entered the San Francisco bay in 1769. Additional explorations of the san Francisco bay and the plains to the east were conducted by father Pedro Fages in 1772 and Juan Bautista De Anza in 1776 (Grunsky 1989). In 1808, Lieutenant Gabriel Moragain led the first Spanish expedition into the Sacramento Valley. This group traveled explored areas along the American, Calaveras, Cosumnes, Feather, Merced, Mokelumne, Sacramento, and Stanislaus river watersheds. The most recent Spanish expedition into this region was conducted by Luis Arguello in 1817. This group traveled up the Sacramento River to the mouth of the Feather River (Grunsky 1989).

Spanish missionization of Alta California was initiated in San Diego (1769). A total of 21 missions were constructed by the Dominican and Franciscan orders between 1769 and 1823. Missions in the region included San Francisco de Asís (1776), Santa Clara de Asís (1776), San José de Guadalupe (1797 in Alameda County), San Rafael Arcángel (1817 in Marin County), and San Francisco Solano (1823 in Sonoma County; Grunsky 1989)). While missionization had a detrimental effect on tribes throughout the region, there is no record of forcible transport of Nisenan communities by the Spanish to the missions (Wilson and Towne 1978).

Mexican Period (1822–1848)

Mexico's separation from the Spanish empire in 1821 and the secularization of the California missions in the 1830s caused further disruptions to native populations. Following the establishment of the Mexican republic, the government seized many of the lands belonging to Native Americans, providing them as parts of larger Land Grants to affluent Mexican citizens and rancheros. Captain John Sutter was granted the two largest areas of land in the Sacramento Valley area. Sutter founded New Helvetia, a trading and agricultural empire, in 1839. The headquarters was located within Valley Nisenan territory at the confluence of the Sacramento and American rivers. The 1833 Secularization Act passed by the Mexican Congress ordered half of all mission lands to be transferred to the Indians, and the other half to remain in trust and managed by an appointed administrator. These orders were never implemented due to several factors that conspired to prevent the Indians from regaining their patrimony. The area representing the project area was granted to Don Jose Noriega in 1835 (East Contra Costa Historical Society). Doctor John Marsh assumed ownership of this area as part of a purchase of 17,000 acres of land from Noriega in 1836 for $500.

American fur trappers and traders conducted a number of exploratory intrusions into west Sierra Nevada Mexican territory. Notably, in 1826, Jedediah Smith led a small party of trappers in an expedition along the Sierra Nevada range, eventually entering the Sacramento Valley in 1827. From these travels, maps of this inhospitable terrain were created and disseminated, providing for the waves of European prospectors, ranchers and settlers that would come in the following decades (Grunsky 1989).

American Period (Post 1848)

California has been inexorably shaped by the mining of precious metals and other minerals. The discovery of gold in January of 1848 at Sutter's Mill in Coloma, on the South Fork of the American River, led to extensive and enduring changes to California's physical and cultural landscapes. The California gold rush prompted by news of the find at Sutter's Mill led to what has been characterized as "the greatest mass migration in American history" (Costello and Marvin 2002:16). Within months of the initial discovery, gold was being collected in the gravel bars of the North, Middle, and South Forks of the American River, and extensive placer mining was occurring in nearly every adjacent gulch and ravine. The effects of these activities are still evident in the form of tailings, ditches, and other mining features scattered throughout these areas. Mining can also be credited for the location and names of most of the towns and communities in the region, the placement of early transportation and communication corridors between the western Sierra Nevada, Sacramento, and San Francisco, and the subsequent development of agriculture and ranching throughout the foothills and valley (Costello and Marvin 2002; Homer 1988).

As the allure of gold mining declined, agriculture and ranching in the Central Valley became more prominent and productive economic pursuits in the region (Davis 1975). Stockton, located approximately 20 miles from the project boundary, turned into the Valley's major agricultural shipping point. With the grain exporting opportunities of World War II, the city only accelerated in growth (Haslam, Johnson and Dawson 1993) to become the prominent urban center in the vicinity of the project area. In 1868, Orange Risdon Jr and Lewis Risdon Mead took initial steps to develop and market the Byron Hot Springs into a rural health resort. The town of Byron was founded in 1878, concurrently with the introduction of track laid through the area by the San Pablo and Tulare Railroad Company (East County Historical Society). A hotel, which remarkably for the time had hot and cold water, was constructed at the site of the hot springs in 1888. This initial hotel burned down in 1901 and, again, a re-built hotel burned in 1912 (Kyle 2002). The third hotel, having enjoyed decades of popularity, closed in 1938 following broader trends of diminished public interest in mineral springs as health destinations. In 1969, 2,200 acres of land were inundated next to the project area to create a temporary storage pool and regulating reservoir within the tidally influenced region of the Sacramento-San Joaquin Delta for the California Aqueduct, creating the Clifton Court Forebay (Kano 1990).

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3 BACKGROUND INFORMATION

This section presents the results of the records search and the field survey of the current study.

3.1 Records Search Results

A records search was completed for the current project for a half--mile radius around the project area by staff at the Northwest Information Center (NWIC) at California State University Sacramento on March 22, 2016. The records search identified one cultural resource, P-07-002527 (Byron Bethany Irrigation District Main Canal No.9), within the project development area; four cultural resources (P-07-000320, P-07-000321, P-07- 002707, and P-07-002708) are located within the Byron Airport parcel boundary; and an additional seven cultural resources occur within the half-mile search radius of the project (Table 1; Confidential Appendix A). Of the 12 previously recorded resources, one is a prehistoric artifact scatter, seven are historic-age canal/aqueducts, one historic railroad segment, one historic road segment, one historic rock foundation, and an unknown resource due to missing record. Two (P-07-002527 and P-07-000813) of the 12 cultural resources have been evaluated and were determined not eligible for NRHP and CRHP listing.

Table 1
Previously recorded cultural resources within half-mile of the Project boundary

Primary Number	Trinomial	Period	Description
Within the Project Boundary			
P-07-000320	CA-CCO-000550	Historic	Rock foundation and historic refuse
P-07-000321	CA-CCO-000551	Prehistoric	Artifact Scatter
P-07-002547	CA-CCO-000738	Historic	Byron Bethany Irrigation District Main Canal (No.9)
P-07-002707	-	Historic	Aqueduct pipe
P-07-002708	-	Historic	Byron Hot Springs Road (Segment)
Outside the Project Boundary			
P-07-000813	CA-CCO-000733	Historic	Old San Pablo & Tulare Railroad (Segment)
P-07-002552	CA-CCO-000743	Historic	--
P-07-002980	-	Historic	Canal/Aqueduct
P-07-002984	-	Historic	Canal/Aqueduct
P-07-002985	-	Historic	Canal/Aqueduct
P-07-003091	-	Historic	Intake Channel to Delta Pumping Plant Segment
P-07-004532	-	Historic	Road

P-07-000320/CA-CCO-550

This historic site was originally recorded by L.K. Napton and E.A. Greathouse in 1987 as part of the cultural resource investigation of the East Contra Costa County Airport Five-year Development Plan Project. The site consists of a rock foundation composed of 54 large sandstone rocks with associated historic refuse. The crew reported site disturbance and attributed the disturbances to rodent bioturbation activities. In 2005, Sean Dexter and Armando Cuellar revisited the site as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The crew observed that the site has been entirely destroyed by construction for the Byron Airport runway and taxiway. No evidence of the site remains.

P-07-000321/CA-CCO-551

This prehistoric site was originally recorded by L.K. Napton and E.A. Greathouse in 1987 as part of the cultural resource investigation of the East Contra Costa County Airport Five-year Development Plan Project. The site consists of a hammerstone, core, handstone fragment, and lithic flakes. The crew noted that the site has been disturbed by washes, drainage overflow, and possibly impacted from previous gas line construction for the airport. Miller, Crabtree, Oshins, and Chavez revisited the site in 1990. They did not relocate the original lithic flakes or core; however, the crew did observe a hammerstone fragment, possible handstone, and fire-affect rock fragments with charcoal. In 2005, Sean Dexter and Armando Cuellar revisited the site as part of the cultural resources reconnaissance for the Byron Airport Master Plan. It was observed that the site has been disturbed by the development of the Falcon Way road and by construction activities associated with the gas line found within the site boundary. Despite the disturbances, there is still the potential that site may still have an undisturbed component that could be considered significant. The archaeologists recommended archaeological testing for this site to determine if the site is eligible on the CRHR.

P-07-002547/CA-CCO-738

This historic resource was first recorded by Tracy Bakic and Cinder Baker in 2001. This resource consists of the Byron Bethany Irrigation District Main Canal No.9. This segment of the canal is located on the southeast side of the California Aqueduct. Baker, of Par Environmental, conducted an evaluation of the canal to determine if the historic resource was significant. The Byron Bethany Irrigation District was determined not eligible for listing on the CRHR or under CEQA criteria. Sean Dexter and Armando Cueller of conducted a cultural reconnaissance in 2001 for three segments of the canal located within Contra Costa County (APN 001-011-011, 001-031-014, 001-031-013, and 001-031-016) in 2005, as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The crew observed that Segment 2 appears to have been completely rebuilt

ca. 1990 for the construction of the main Byron Airport runway; Segment 3 is short segment that has been abounded since 1990; and Segment 4 showed evidence of being partially rebuilt in 1968 and around 1990 for the construction of the Byron Airport. The 2005 study determined that the three segments are not eligible for listing on the CRHR or under CEQA criteria.

P-07-002707

This historic feature was recorded by Sean Dexter and Armando Cueller in 2005, as part of the cultural resources reconnaissance for the Byron Airport Master Plan. The resource consists of an exposed 8 ½ inch diameter steel pipe aqueduct which is supported on concrete cradles. This aqueduct pipe may date back to the original 1917 Byron Bethany Irrigation District system as it is depicted as emerging from the Irrigation District Main Canal No.9 on the USGS topographic map. The archaeologists recommended archaeological investigations to determine if this resource is eligible on the CRHR.

P-07-002708

This historic resource was recorded in 2005 by Sean Dexter and Armando Cueller, as part of the cultural resources reconnaissance for the Byron Airport Master Plan. This resource consists of an abandoned segment of Byron Hot Springs Road. The crew observed that the road has been stripped of all pavement and was abandoned during the construction of the Byron Airport in the early 1990s. South of runway 5-23, within the airport fencing area, a remnant of the road is still visible. The archaeologists recommended archaeological investigations to determine if this resource is eligible on the CRHR.

Results of the cultural resources reconnaissance survey of the Byron Airport Master Plan are discussed in the following section.

Previously Conducted Studies

NWIC records indicate that fifty-five previous cultural resources technical investigations have been conducted within a half-mile of the proposed project boundary. Of these studies, nine cover the entire or a portion of the current project boundary (Table 2). Relevant studies to the project are discussed in the next section.

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
Within the Project Boundary			

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-008913	Miley Paul Holman Schroth	1986	*Report of Archaeological Reconnaissance of the Lopez Ranch, Altamont Pass, NE and SE 1/4 of Section 28, Byron Hot Springs U.S.G.S. Map, Contra Costa County, California (letter report)*
S-009230	L. Kyle Napton	1987	*Cultural Resource Investigation of the East Contra Costa County Airport, Byron, California: Five-Year Development Plan*
S-011826	Dorothea J. Theodoratus, Mary Pyle Peters, Clinton M. Blount, Pamela J. McGuire, Richard D. Ambro, Michael Crist, Billy J. Peck, and Myrna Saxe	1980	*Montezuma I and II Cultural Resources*
S-012275	Melinda Romano	1990	*Archaeological Survey and Cultural Resources Inventory, Brentwood Alternative, California, PGT-PG&E Pipeline Expansion Project*
S-012300	Michael J. Moratto, Thomas L. Jackson, Richard Pettigrew, Randall F. Schalk, David Chavez, Eric C. Gibson, Claudia B. Hemphill, Christian J. Miss, Barry A. Price, Melinda Romano, C. Kristina Roper, Brian P. Wickstrom, Michael S. Burney, Clayton G. Lebow,	1990	*Final Cultural Resources Assessment Report, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California, Phase 1: Survey, Inventory, and Preliminary Evaluation of Cultural Resources*
S-012800	Allan Bramlette, Mary Praetzellis, Adrian Praetzellis, Margaret Purser, and David A. Fredrickson	1990	*Archaeological and Historical Resources Inventory for the Vasco Road and Utility Relocation Project, Contra Costa and Alameda Counties*
S-013256	Allan G. Bramlette, Mary Praetzellis, Adrian Praetzellis, Katherine M. Dowdall, Patrick Brunmeier, and David A. Fredrickson	1991	*Archaeological Resources Inventory for Los Vaqueros Water Conveyance Alignments, Contra Costa County, California*
S-030921	Sean D. Dexter	2005	*Final Cultural Resources Reconnaissance Report for the Byron Airport Master Plan, Byron, Contra Costa County, California.*

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-023674	Michael J. Moratto, Richard M. Pettigrew, Barry A. Price, Lester A. Ross, Randall F. Schalk, Rick Atwell, Andrew Bailey, Gary Bowyer, Robert U. Bryson, Tim Canaday, Dianne Gardner, William Hildebrandt, Kurt T. Katsura, Clayton G. Lebow, Pat Mikkelsen, Sco	1992	*Archaeological Investigations, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California (Volume I , II, III, IV, V)*
Outside the Project Boundary			
S-000595	Ronald F. King	1974	*A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five Mile Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California*
S-000848	David A. Fredrickson	1977	*A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources*
S-001978	Anthony V. Aiello	1960	*The Islands of Contra Costa*
S-002458	Suzanne Marie Ramiller, Neil Ramiller, Roger Werner, and Suzanne Stewart	1981	*Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda*
S-005208	Gregory Greenway and William E. Soule	1977	*Sacramento-San Joaquin Delta Investigations: Cultural Resources Reconnaissance*
S-009462	Teresa Ann Miller	1977	*Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties*
S-006699	Miley Paul Holman	1984	*Archaeological Reconnaissance of Proposed 90 Unit, Windfarm, Souza Ranch (letter report)*
S-007679	Miley Paul Holman	1985	*A Report of Findings From an Archaeological Reconnaissance of Sections 19, 20, 21, and 24, Lands of Souza and Vaquero Farms, Altamont Pass, Contra Costa County*
S-008912	Miley Paul Holman	1986	*Archaeological Reconnaissance of Section 27, Southern Half, and Northeast Quarter of Section 34 in the Altamont Pass, Contra Costa County, California (letter report)*

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-010508	G. James West	1982	*Class II Archaeological Survey, Kellogg Unit Reformulation, Contra Costa County, California*
S-010509	Peter M. Jensen, Alfred Farber, and Neal Neuenschwander	1986	*Class III Intensive Archaeological Field Reconnaissance of the Kellogg Reformulation Unit, Highline Canal Alternative, Contra Costa and Alameda Counties*
S-010668	Suzanne Baker	1988	*Archaeological Reconnaissance of Subdivision MS 52-87, Near Byron, Contra Costa County, California*
S-012790	Kenneth N. Owens	1991	*Sacramento-San Joaquin Delta, California: Historical Resources Overview*
S-013839	Miley Paul Holman	1992	*Archeological Field Inspection of the Two Additional Quarry Areas for the Unimin Quarry Near Bryon Hot Springs, Contra Costa County, California (letter report)*
S-013453	Donna M. Garaventa, Sondra A. Jarvis, Steven J. Rossa, and Melody E. Tannam	1991	*Cultural Resources Assessment, McDonald Island Gas Storage Expansion Project, Alameda, Contra Costa and San Joaquin Counties, California*
S-016500	Lee Davis, Richard Hitchcock, Lisa Mertz, Randall Milliken, Beverly R. Ortiz, Suzanne B. Stewart, Lauren Teixeira, and David A. Fredrickson	1994	*Native American History of the Los Vaqueros Project Area, Alameda and Contra Costa Counties, California*
S-016660	Jeffrey B. Fentress	1992	*Prehistoric Rock Art of Alameda and Contra Costa Counties, California*
S-017835	Judy Myers Suchey	1975	*Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium*
S-017993	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project*

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-017993a	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix A - Native American Consultation*
S-017993b	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix B - Looping Segments - Class 1*
S-017993c	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix C - Monitoring and Emergency Discovery Plan*
S-017993d	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix D - General Construction Information*
S-017993e	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix E - Archaeological Site Records*
S-017993f	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix F - Historic Features Evaluation Forms*
S-017993g	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix G - Railroad Crossing Evaluation Forms*
S-017993h	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix H - Crossing Diagrams and Plan View Maps*
S-017993i	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix I - Railroad Depot NRHP Nomination Forms and Related Records*
S-017993j	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix J - Looping Segment and Compressor Station Site Records*
S-017993k	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix K - Historic Site Records / Isolate Forms*

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-017993l	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix L - Photodocumentation*
S-017993m	Brian Hatoff, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente	1995	*Proposed Mojave Northward Expansion Project: Appendix M - Curricula Citae of Key Preparers*
S-018217	Glenn Gmoser	1996	*Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report: April 1996*
S-018250	Jones & Stokes Associates Inc.	1992	*Evaluation, Request for Determination of Eligibility, and Effect for the Los Vaqueros Project, Alameda and Contra Costa Counties, California*
S-018250a	Steade R. Craig	1992	*BUR910227A2; Request for Determination of Eligibility and Effect for the Los Vaqueros Project, Contra Costa County (Cultural Resources) (Concurrence Correspondence)*
S-018867	Suzanne Baker	1997	*Cultural Resources Study of the Armstrong Road Reconstruction Project, Contra Costa County, California*
S-020016	David A. Fredrickson, Suzanne B. Stewart, Grace H. Ziesing, Catherine A. Callaghan, Jeffrey B. Fentress, Susan Lobo, Randall Milliken, and Beverly R. Ortiz	1997	*Native American History Studies for the Los Vaqueros Project: A Synthesis*
S-020395	Donna L. Gillette	1998	*PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?*
S-024271	James Bard	2001	*A Cultural Resource Assessment of the Proposed East Altamont Energy Center, Alameda, Contra Costa and San Joaquin Counties, California*
S-033545	-	1994	*Draft Comprehensive Management and Use Plan and Environmental Impact Statement, Juan Bautista de Anza National Historic Trail, Arizona and California*

Table 2
Previous technical studies within a half-mile radius of the Project boundary

Report Number	Authors	Date	Title
S-033643	Tang, Bai, Micahel Hogan, Josh Smallwood, Terry Jacquemain, and Laura Hensley Shaker	2006	*Historic Property Survey Report, Byron Highway Shoulder Improvement Project, Contra Costa County, California, EA 946100, STP-5928 (071)*
S-035238	Barb Siskin and Cassidy DeBaker	2007	*Cultural Resources Investigation for the Line 2 ILI Inspection-Sites 2 and 3 Project in Contra Costa and Alameda Counties (letter report)*
S-036028	Marc Greenberg	2008	*Archaeological Survey of the Sousa II Property, Contra Costa County (PL No. 2217-01) (Letter report)*
S-038896	Rebecca Gilbert and Tiffany Schmid	2011	*Department of Water Resources, Archaeological Survey Report, Skinner Fish Science Buildings.*
S-043312	-	2002	*Archeological Resource Management Report, East Altamont Energy Center*
S-043313	Dorothy Torres and Gary Reinoehl	2002	*Historic Resources Survey for East Altamont Energy Center*

S-030921

The most pertinent of these studies is the *Final Cultural Resources Reconnaissance Report for the Byron Airport Master Plan, Byron, Contra Costa County, California* (Dexter 2005). This study summarizes the results of the archaeological reconnaissance survey conducted by Condor Country Consulting and provides recommendations for the future treatment of potentially historic properties within the planned development areas as depicted in the proposed 2005 Byron Airport Master Plan document. Five cultural resources (P-07-320/CA-CCO-550, P-07-321/CA-CCO-551, P-07-2547/CA-CCO-738, P-07-2707, and P-07-2708) are discussed in this study:

The archaeological survey was conducted between October 11 and 16, 2005. The survey confirmed that CA-CCO-550 had been destroyed in 1990 during construction activities for the Byron Airport runway (Dexter 2005).

CA-CCO-551 is located on APN 001-011-009. This prehistoric site showed evidence of disturbances from the construction of the Falcon Way road and development activities that occurred along the existing gas pipeline found within the site location. The survey determined that there is still possibility that the site may still have undisturbed components that could be eligible

for listing on the CRHR. It was recommended that further archaeological investigations be conducted at the site prior to planned development (Dexter 2005).

CA-CCO-738 is the Byron Bethany Irrigation District Main Canal No.9. This canal was originally built in 1917-1919. The 2005 survey recorded three segments of the canal that were not previously recorded. The crew observed that Segment 2 appears to have been completely rebuilt ca. 1990 for the construction of the main Byron Airport runway; Segment 3 is short segment that has been abounded since 1990; and Segment 4 showed evidence of being partially rebuilt in 1968 and around 1990 for the construction of the Byron Airport. Condor Country Consulting evaluated the three sections and determined that the resource was not eligible for listing on CRHR (Dexter 2005).

P-07-2707 is a historic aqueduct pipeline that possibly dates back to the original 1917 Byron Bethany Irrigation District system as it is depicted as emerging from the Irrigation District Main Canal No.9 on the USGS topographic map. The pipeline possesses integrity of design, construction, and setting. It was recommended that further archaeological investigations be conducted at the site prior to planned development (Dexter 2005).

P-07-2708 is an abandoned segment of the Byron Hot Springs Road. The crew observed that the road has been stripped of all pavement and was abandoned during the construction of the Byron Airport in the early 1990s. South of runway 5-23, within the airport fencing area, a remnant of the road is still visible. Condor Country Consulting noted that the road is the same as it was in 1990, with no additional modifications. The 1990 segment of abandoned road most likely does not resemble the original Byron Hot Springs Road in the 1880s; however, it is in the same alignment as the original road. It was recommended that further archaeological investigations be conducted at the site prior to planned development (Dexter 2005).

Historic-Period Map Review

Historic aerial photographs of areas within the project boundary were available for the years 1949, 1959, 1966, 1968, 1979, 1993, 2005, 2009, 2010, and 2012 (NETR 2016). In 1949, the area consists of agricultural fields, the Byron Hot Springs road (north-south), a section of the Byron Bethany District Irrigation Main Canal No.9 (northwest-southeast), two agricultural structures located west of the canal (and within the present day Byron Airport runway location), and most likely an agricultural residence and corral located just to the east of the canal. Photographs from 1959 do not reveal changes to the project boundary. In 1966, grading activities for road/airport runways are located within the north western corner of the project boundary. The rest of the project boundary is unchanged. The 1968 photograph does not reveal changes to the project boundary or surrounding area. In 1979, the project area remains relatively unchanged; with the exception of an additional agricultural residence (located east of the Byron Bethany District Irrigation Main Canal

No.9 and north of the 1949 agricultural residence) and the airport runways located in the north western corner of the project boundary are paved, most likely the location of a smaller airport prior to the development of the present day Byron Airport. In 1993, a third agricultural residence is located just west of the Byron Bethany District Irrigation Main Canal No.9 and airplanes are located next to the north western runways. In 2005, the Byron Airport is seen in its present day location. The location of the smaller airport that was observed within the north western portion of the project boundary no longer exists. Sections of the canal and Byron Hot Springs road that were once located within the airport location, or within close proximity, have been graded or developed for the airport. The two agricultural structures that were located west of the Byron Bethany District Irrigation Main Canal No.9 no longer exist; replaced by the Byron Airport runway. Photographs from 2005, 2009, 2010, and 2012 do not reveal any changes to the ADI, areas within the project boundary, or surrounding areas. These photographs represent the condition of the project area to date; Byron Airport, with agricultural fields located to the north and east and open fields to the west (Byron Airport Habitat Reserve) and south of the airport.

3.2 NAHC Search

Dudek requested a NAHC search of their Sacred Lands File on February 22, 2016 for areas within and surrounding the project boundary. The NAHC results, received March 1, 2016, failed to indicate the presence of Native American cultural resources within the project area or surrounding area (Appendix B). Because the SLF search does not include an exhaustive list of Native American cultural resources, the NAHC suggested contacting Native American individuals and/or tribal organizations who may have direct knowledge of cultural resources in or near the project are. The NAHC provided the contact list along with the SLF search results.

3.3 Tribal Correspondence

As the lead agency under CEQA, the County is responsible for formal government-to-government consultation with the Tribes under California Assembly Bill AB 52. Following the NAHC response, letters were sent on April 8, 2016 to the listed tribal representatives with the intent of requesting information, opinions or concerns relating to the proposed project impacts (Appendix B). These letters contained a brief description of the planned Project, reference maps, and a summary of the NAHC SLF and NWIC search results. On August 25, 2017, Wilton Rancheria responded requesting consultation to participate in land use decisions and for the mitigation of potential project impacts to tribal cultural resources, under State Bill 18. No other responses to these outreach attempts have been received to date. The lead agency will be provided with any responses should they be received from tribal representatives.

4 FIELD METHODS AND RESULTS

4.1 Methods

Dudek archaeologist Kurt Lambert conducted the intensive-level pedestrian survey on May 10, 2016. Mr. Lambert was escorted by Steve Callahan, Byron Airport Lead Operations Specialist, during the field survey. In addition, Dudek archaeologist William Burns conducted a field survey of an added 11.7 acre residential parcel adjacent to the airport on November 28, 2018, adjacent to the historic canal P-07-002547. All field practices met the Secretary of Interior's standards and guidelines for a cultural resources inventory. All fieldwork was documented using field notes, digital photography, a Global Positioning System (GPS) receiver with sub-meter accuracy, iPad technology with close-scale field maps, and aerial photographs. Location-specific photographs were taken using an Apple 3rd Generation IPAD equipped with 8 MP resolution and georeferenced PDF maps of the project site. Accuracy of this device ranged between 3 meters and 10 meters. All field notes, photographs, and records related to the current study are on file at Dudek's Auburn, California office. The intensive-level survey methods consisted of a pedestrian survey conducted in parallel transects spaced no more than 15-meters apart over the entire ADI. Within each transect, the ground surface was examined for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), soil discoloration that might indicate the presence of a cultural midden, soil depressions, features indicative of the current or former presence of structures or buildings (e.g., standing exterior walls, post holes, foundations), and historic artifacts (e.g., metal, glass, ceramics, building materials). Ground disturbances such as burrows, cut banks, and drainages were also visually inspected for exposed subsurface materials.

4.2 Survey Results

The project boundary includes facilities associated with the Byron Airport (buildings, runways, storage areas, and paved parking areas) and open grasslands (ruderal ornamental landscaping, ruderal grassland adjacent to the runways, annual grasslands with scattered vernal pools and seasonal wetlands, and alkali grasslands) surrounding the airport. The majority of the ADI is comprised of open grasslands or are adjacent to, outside of, existing airport features. Visibility was poor (0-10%) as tall grasses and vegetation obscured the ground surface. In areas of less dense vegetation or consisted of cleared areas ground visibility was good (80-90%).

Previously recorded resource, P-07-002547 (Byron Bethany Irrigation District Main Canal No.9), was relocated on the eastern portion of the project area. Mr. Lambert observed that the canal remains in good condition with evidence of continuous maintenance. Mr. Lambert also confirmed that the previously recorded resource P-07-000321 has indeed been destroyed by construction of

the Byron Airport runway. A single piece of amethyst glass was observed east of Falcon Way on the east side of a ditch that parallels the road. It was evident that this glass fragment was not in situ and was likely moved there by natural causes.

One new cultural resource, BA-KL-1, was identified within the eastern edge of the project area; located north of the intersection of Byron Hot Springs Road and Holey Road. The resource consists of a historic-age wooden corral. Mr. Lambert noted that the corral is no longer actively used and was in disrepair. The wooden posts have fallen, especially the southern section of the corral. The corral measures approximately 63 feet by 115 feet, with 6 inch by 8 inch vertical posts. A cattle chute leads east towards Byron Hot Springs Roads with the purpose of loading cattle onto trucks. The corral had evidence of historic construction materials (square cut nails and original gate hinges) and modern construction materials (round nails and screws). There is a private property located just north of the corral beyond a row of trees.

Documentation of BA-KL-1 complied with the Office of Historic Preservation (OHP) and Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-44740) and the California Office of Historic Preservation Planning Bulletin Number 4(a). Newly identified BA-KL-1 was recorded on California Department of Parks and Recreation Form DPR 523L (Series 1/95) Continuation Sheet, using the *Instructions for Recording Historical Resources* (Office of Historic Preservation 1995). The DPR Form will be submitted to the NWIC and included in Appendix C.

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5 SIGNIFICANCE EVALUATION

5.1 CRHR Significance Evaluation

CEQA Guidelines provide that a project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance. In order to best mitigate the effects of the proposed project on cultural resources, a reasonable, good faith effort must be applied to determining their archaeological character and eligibility for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852).

Based on existing records (records search and historic aerials), the eastern portion of the project area was utilized for agriculture from approximately the early 1900s to 1993. The majority of the Byron Airport property, except for the north western portion where a smaller airport was located from 1966 to 1993, was left as open grasslands until the present day Byron Airport was built. The newly recorded historic-age resource, BA-KL-1, consists of a historic-age wooden corral. The records indicate that the corral is likely associated with the property located just north of the resource (outside the ADI). According to historic topographic maps, the property served as a school from 1914 to 1948. By 1955, and on, the school is no longer being used as such. Only a building location is shown on the maps. The earliest historic aerial for the property is 1949. This photograph shows the property as being an agricultural residence/ private property with the wooden corral located just south of the property. The 1949, 1959, 1966, 1968, 1979, 1993, 2005, 2009, and 2010 photographs do not reveal any changes to the property and corral locations. It is important to note that the residence is outside of the project area and will not be impacted by the proposed project developments.

CEQA guidelines were used in determining significance of BA-KL-1. It was found that BA-KL-1, while speaking to the presence and types of activities that occurred historically concerning agriculture, it is not associated with any known significant events locally, regionally, or nationally (Criterion 1); the wooden corral, on its own, does not provide information that would be associated with the lives of any important people locally, regionally, or nationally (Criterion 2); does not contain intact or individual distinction (Criterion 3); and since all data potential for BA-KL-1 has been exhausted through field-level recordation, this resource does not have the potential to further yield information locally, regionally, or nationally (Criterion 4). The resource is not eligible for listing on the CRHR or the Local Register, and is not significant under CEQA. California Department of Parks and Recreation (DPR) 523 series forms were completed for the site (Confidential Appendix A). As such, no further work is recommended for this resource.

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6 SUMMARY AND MANAGEMENT CONSIDERATIONS

The current cultural resources inventory was completed to satisfy the requirements of CEQA. Dudek's Phase I cultural resources inventory of the project area suggests that there is a moderate potential for the inadvertent discovery of intact cultural deposits during earth moving activities. The NWIC records search identified one previously recorded resource, P-29-002547 (Byron Bethany Irrigation District Main Canal No.9) located within the project area. NAHC Sacred Lands File search did not identify cultural resources within the project area. One newly recorded resource was identified during the intensive level pedestrian field survey.

The Byron Bethany Irrigation District Main Canal No.9 was evaluated by Par Environmental in 2001 and by Condor Country Consulting in 2005 as not being eligible for listing in the NRHP or CRHR. The canal does not retain sufficient integrity since it has been impacted by the construction of Byron Airport in 1990. The canal also lacks association with any significant important people locally, regionally, or nationally. Dudek concurs with the previous evaluations of the historic resource.

During pedestrian surveys, Dudek identified a newly recorded historic-age animal corral (BA-KL-1) within the project ADI. The resource has been documented to OHP standards and does not have the potential to further yield information locally, regionally, or nationally. The resource is not eligible for listing in the NRHP, CRHR or the Local Register. As the resources is not considered significant, impacts to this feature will not represent a significant impact under CEQA.

Based on available information and in consideration of the topography, no historical resources, as defined under CEQA and County guidelines, will be impacted by the project. However, due to the presence of cultural resources located within the eastern portion of the project area, Dudek recommends that a qualified archaeologist should be present at the Byron Airport preconstruction meeting to discuss archaeological sensitivity within the project area and to work with the construction project manager and/or foreman to determine the duration and extent of monitoring for historical archaeological deposits that may be uncovered during project implementation.

In the event that archaeological resources are exposed during construction, work in the immediate vicinity of the find should be halted or directed to another location until a qualified archaeologist meeting the Secretary of the Interior's Professional Qualification Standards can evaluate the significance of the find. Construction activities may continue in other areas, but should be redirected a safe distance from the find. If the new discovery is evaluated and found to be significant under CEQA and avoidance is not feasible, additional work such as data recovery may be warranted.

In the event of the discovery of human remains during ground disturbing activities, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur in areas which could contain human remains until the County coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The County coroner must be notified of the find immediately. If the human remains are determined to be of Native American origin, the coroner will notify the NAHC within 24 hours. The NAHC will then determine and notify a MLD. The MLD shall complete the inspection of the site within 48 hours of notification and may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

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APPENDIX A (Confidential)
NWIC Records Search Results

APPENDIX B
NAHC and Tribal Correspondence

DUDEK

MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 T 800.450.1818 F 760.632.0164

February 22, 2016

NAHC Staff
Associate Government Program Analyst
Native American Heritage Commission

Subject: ***NAHC Sacred Lands File Records Search Request for Byron Airport, Contra Costa County, California***

Dear NAHC Staff,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2).

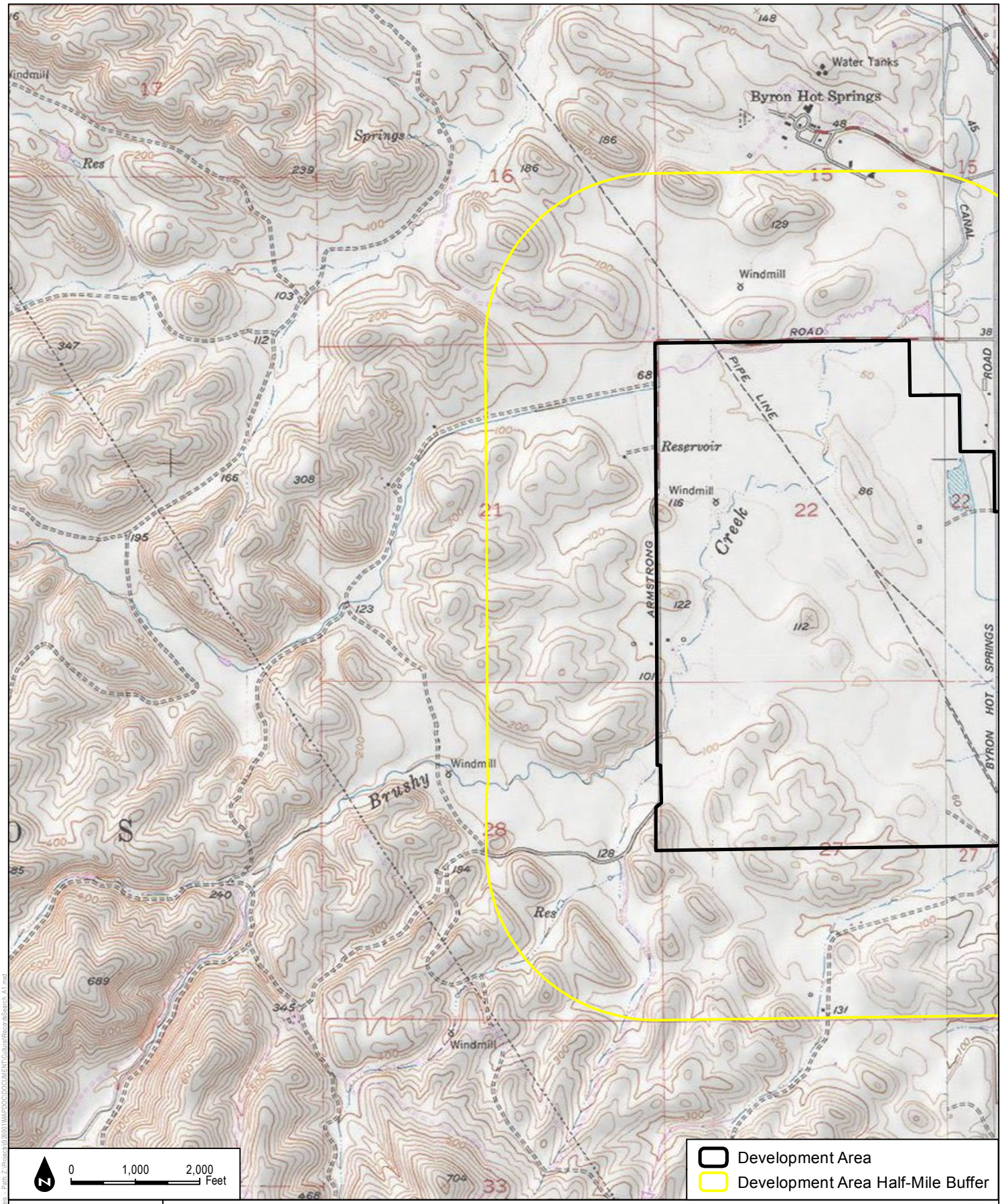
Dudek is requesting a NAHC search for any sacred sites or other Native American cultural resources that may fall within the proposed project location or a surrounding one-half mile buffer. Please provide a Contact List with all Native American tribal representatives that may have traditional interests in this parcel or the surrounding search area. The results of this search can be faxed to 760-632-0164.

If you have any questions relating to this investigation, please contact me directly by email or phone.

Regards,

William Burns, M.Sc., RPA
Archaeologist
DUDEK
Phone: (760) 334-1156
Email: wburns@dudek.com

Attachments:
Figure A1. SLF Records Search Request Map - West
Figure A2. SLF Records Search Request Map - East



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Township 1S / Range 3E / Sections 15, 16, 21, 22, 22, 27, 28

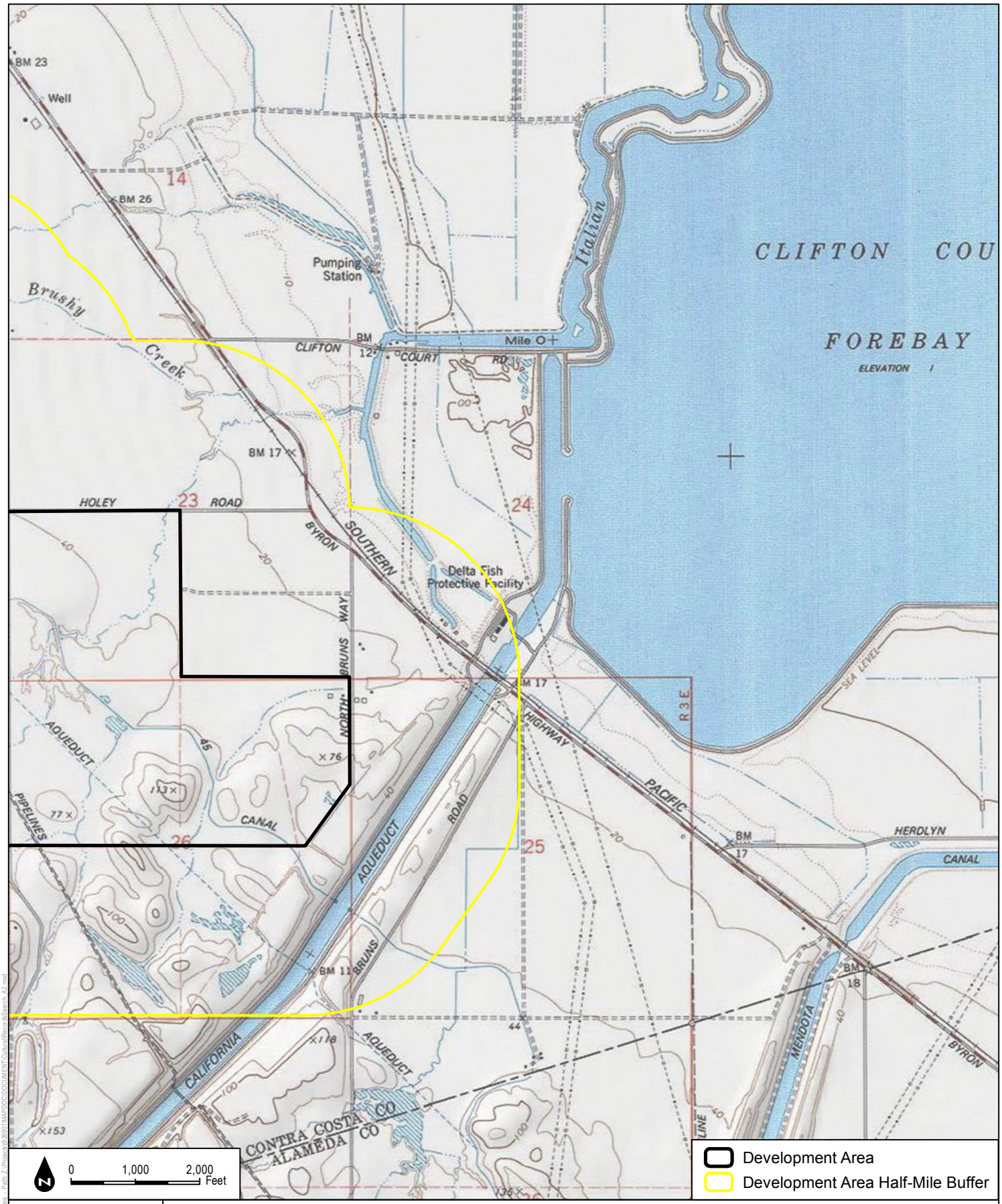
FIGURE A1

Records Search Map

DUDEK

Byron Airport

Date: 2/18/2016 -- Last saved by: gregs -- Path: Z:\Projects\2260\MAPDOC\DOCUMENT\ConformRecordsSearch_A1.mxd



SOURCE: USGS 7.5-Minute Series - Byron Hot Springs and Clifton Court Forebay Quadrangles.
Township 1S / Range 3E / Sections 14, 23, 24, 25, 26

FIGURE A2

Records Search Map

DUDEK

Byron Airport

Date: 2/18/2016 - Last saved by: gregs - Path: Z:\Projects\9360\MAPDOC\DOCUMENTS\Burn\Records\Search A2.mxd

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 - Fax

March 1, 2016

William Burns
Dudek

Sent by Email: wburns@dudek.com
Number of Pages: 2

RE: Byron Airport Aviation Project, Contra Costa County

Dear Mr. Burns:

Government Code §65352.3 requires local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of protecting, and/or mitigating impacts to cultural places in creating or amending general plans, including specific plans. Attached is a consultation list of tribes traditionally and culturally affiliated with the location referenced above.

As a part of consultation, the NAHC recommends that local governments conduct record searches through the NAHC and the appropriate archaeological Information Center of the California Historic Resources Information System (CHRIS) (http://ohp.parks.ca.gov/?page_id=1068) to determine if any tribal cultural resources are located within the area(s) affected by the proposed action. A record search of the NAHC Sacred Lands File was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the Sacred Lands File does not indicate the absence of tribal cultural resources in any APE. Records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of tribal cultural resources. A tribe may be the only source of information regarding the existence of tribal cultural resources within any APE.

The list should provide a starting place to locate areas of potential adverse impact within the APE. I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes on the attached list, please notify me. With your assistance we are able to assure that our consultation list contains current information.

If you have any questions, please contact me at my email address: sharay.souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst

Native American Heritage Commission
Tribal Consultation List
Contra Costa County
February 29, 2016

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street — Miwok
Elk Grove , CA 95624
rhitchcock@wiltonrancheria-nsn.gov
(916) 683-6000 Office

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road — Ohlone/Costanoan
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 400-4806 Cell

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791 — Ohlone / Costanoan
Milpitas , CA 95036
muwekma@muwekma.org
(408) 314-1898
(510) 581-5194

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152 — Ohlone/Costanoan
Fremont , CA 94539 — Bay Miwok
chochenyo@AOL.com — Plains Miwok
(510) 882-0527 Cell — Patwin

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28 — Ohlone/Costanoan
Hollister , CA 95024
ams@indiancanyon.org
(831) 637-4238

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3 and 65362.4 et seq for the proposed Byron Airport Aviation Land Use Project, Contra Costa County.

DUDEK

853 LINCOLN WAY, SUITE #208
AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 8, 2016

Ms. Rosemary Cambra, Chairperson
Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
P.O. 360791
Milpitas, CA 95036

Subject: ***Information Request for the Byron Airport Aviation Project, Contra Costa County, California***

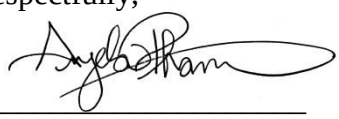
Dear Ms. Cambra,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2)

The Native American Heritage Commission conducted a Sacred Lands file search. No Native American cultural resources were identified within the constraints study area. I am writing as part of the cultural inventory process in order find out if you, or your tribal community, have any knowledge of cultural resources or places that may be impacted by the proposed project.

If you have any information or concerns pertaining to such information, please contact me by phone or email.

Respectfully,



Angela Pham, M.A., RPA
Archaeologist
DUDEK
Phone: (760) 479-4855
Email: apham@dudek.com

Attachments:
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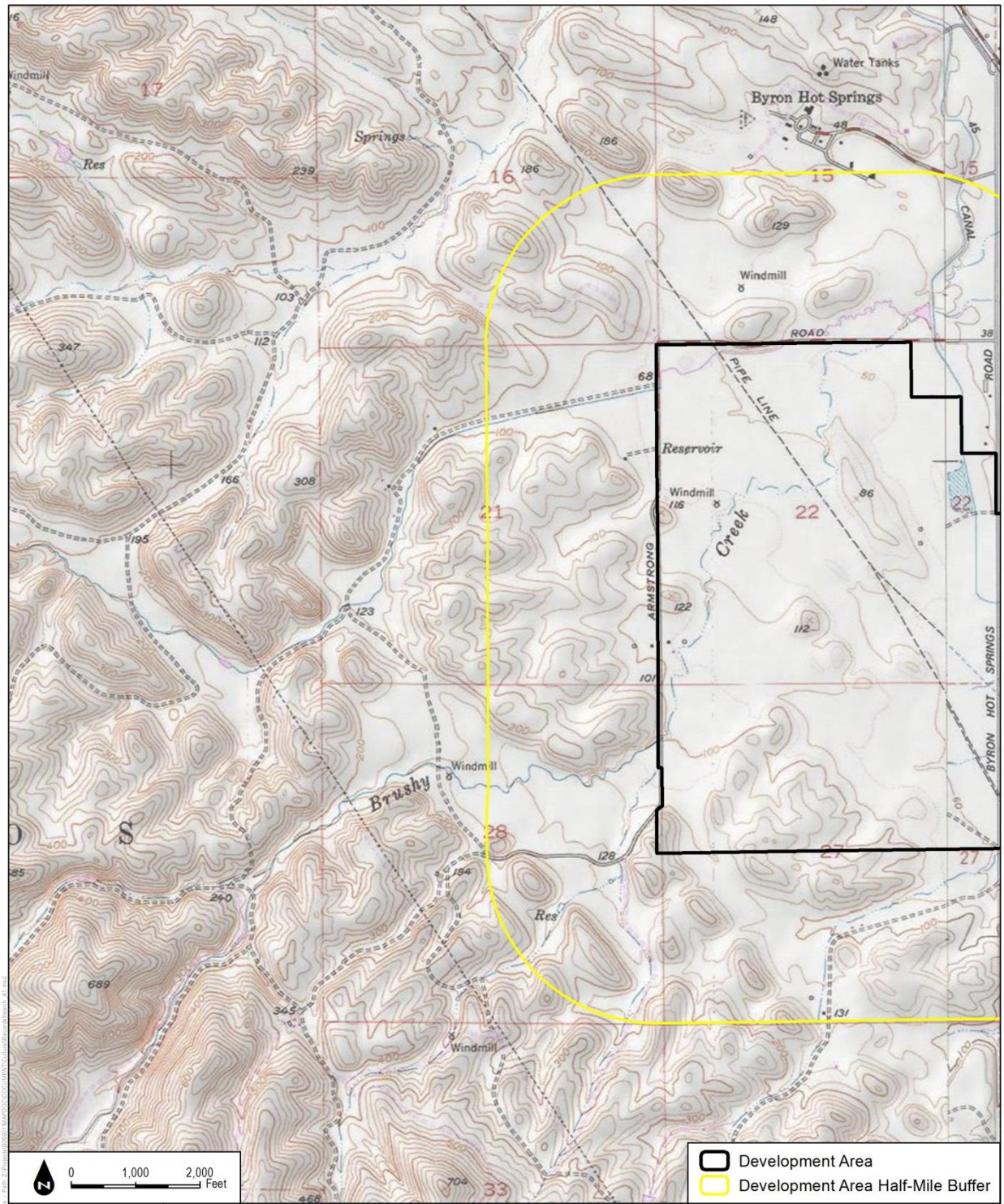

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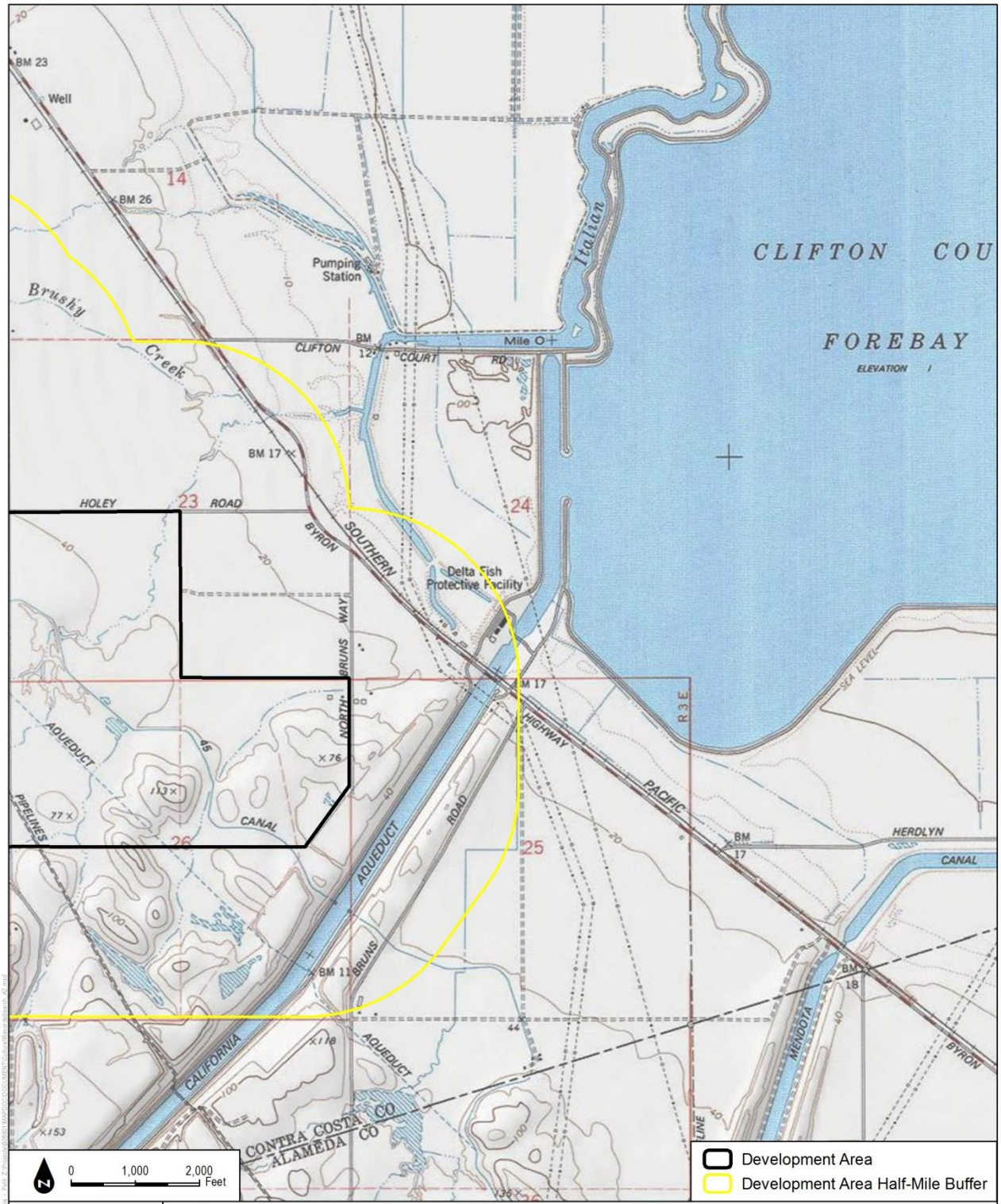
Township 1S / Range 3E / Sections 15, 16, 21, 22, 22, 27, 28

FIGURE A1

Records Search Map

DUDEK

Byron Airport



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Township 1S / Range 3E / Sections 14, 23, 24, 25, 26

FIGURE A2

Records Search Map

DUDEK

Byron Airport

DUDEK

853 LINCOLN WAY, SUITE #208
AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 8, 2016

Mr. Andrew Galvan,
The Ohlone Indian Tribe
P.O. Box 3152
Fremont, CA 94539

Subject: ***Information Request for the Byron Airport Aviation Project, Contra Costa County, California***

Dear Mr. Galvan,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2)

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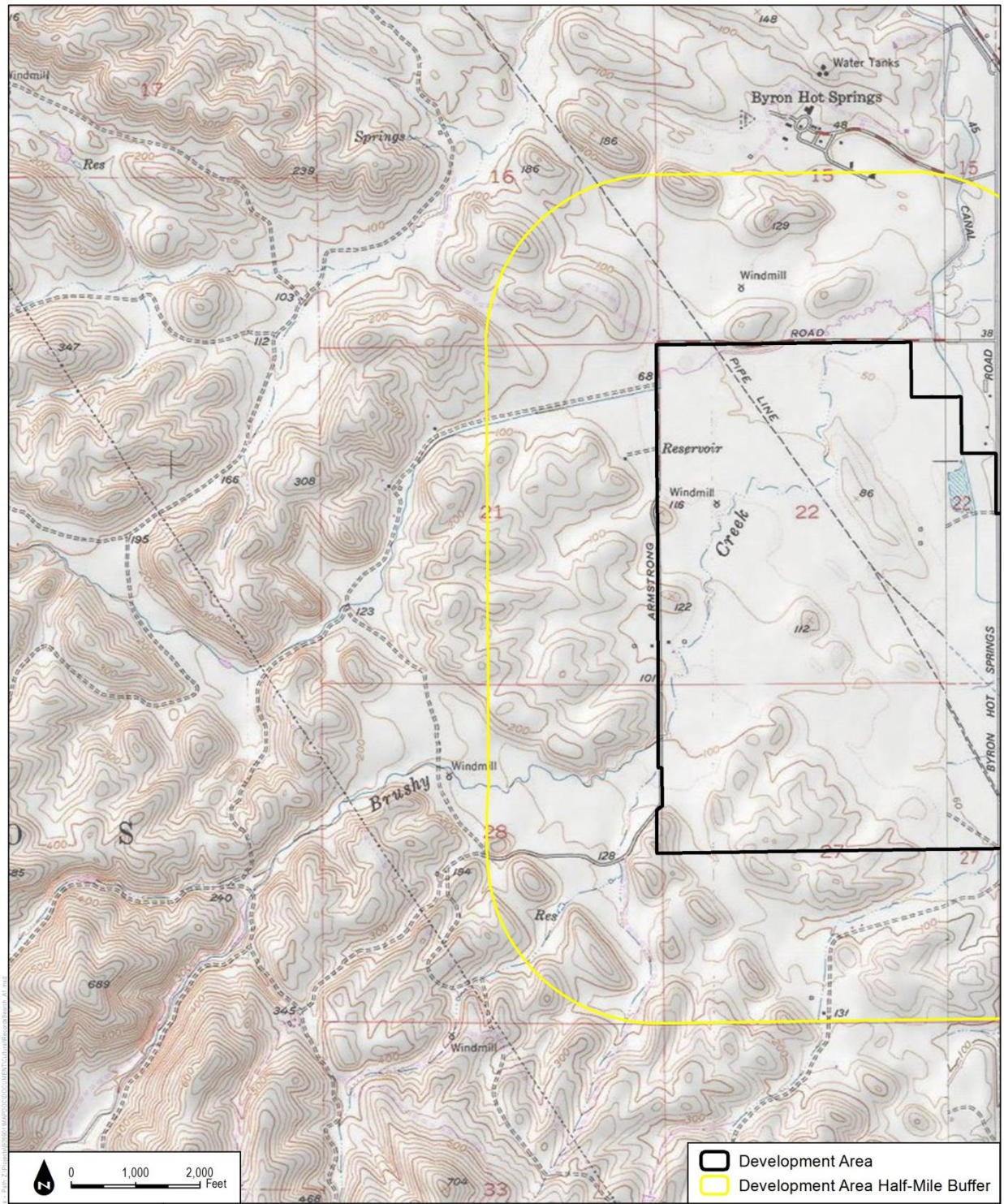

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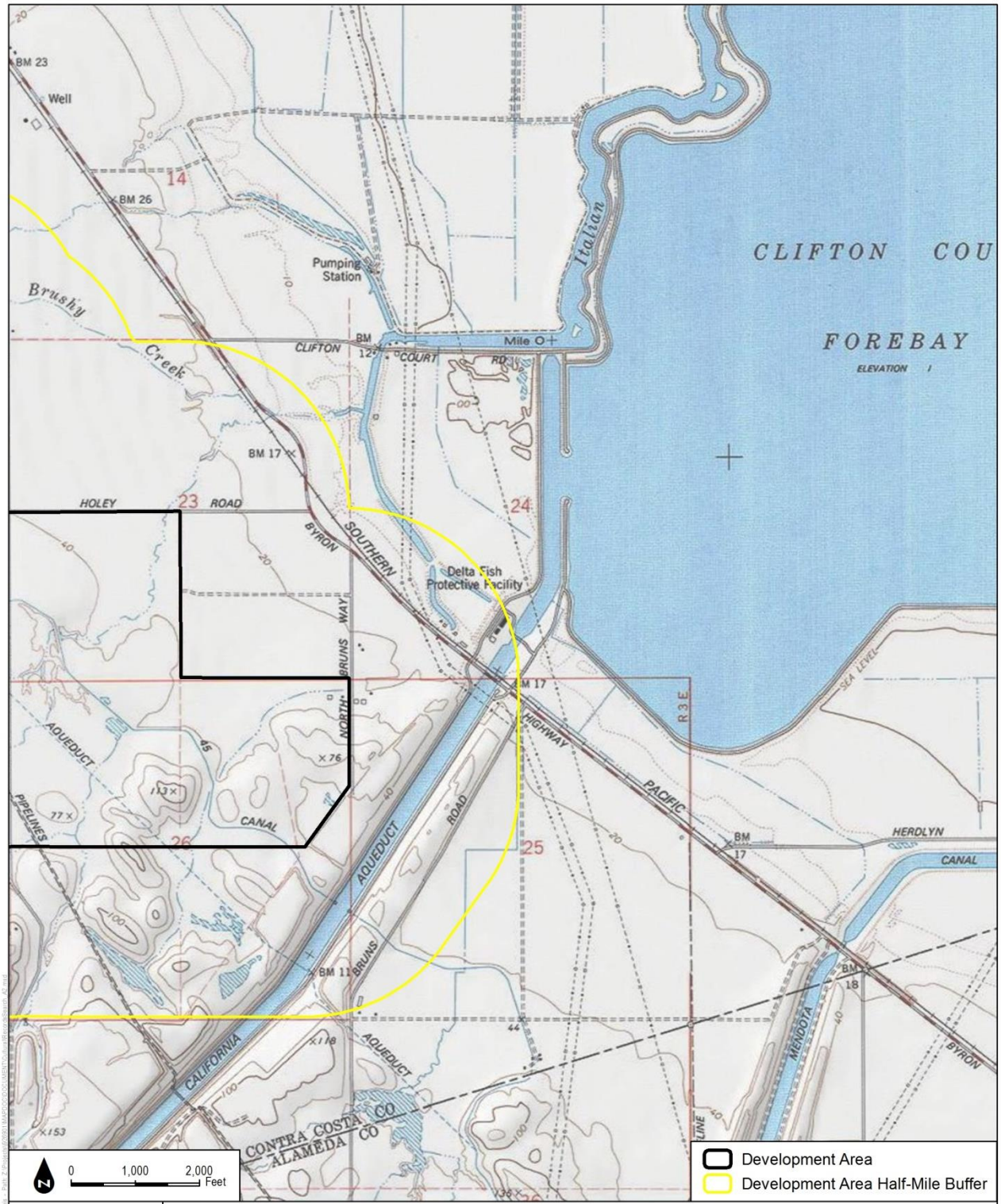

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Byron Airport

DUDEK

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AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 8, 2016

Mr. Raymond Hitchcock, Chairperson
Wilton Rancheria
9728 Kent St.
Elk Grove, CA 95624

Subject: ***Information Request for the Byron Airport Aviation Project, Contra Costa County, California***

Dear Mr. Hitchcock,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2)

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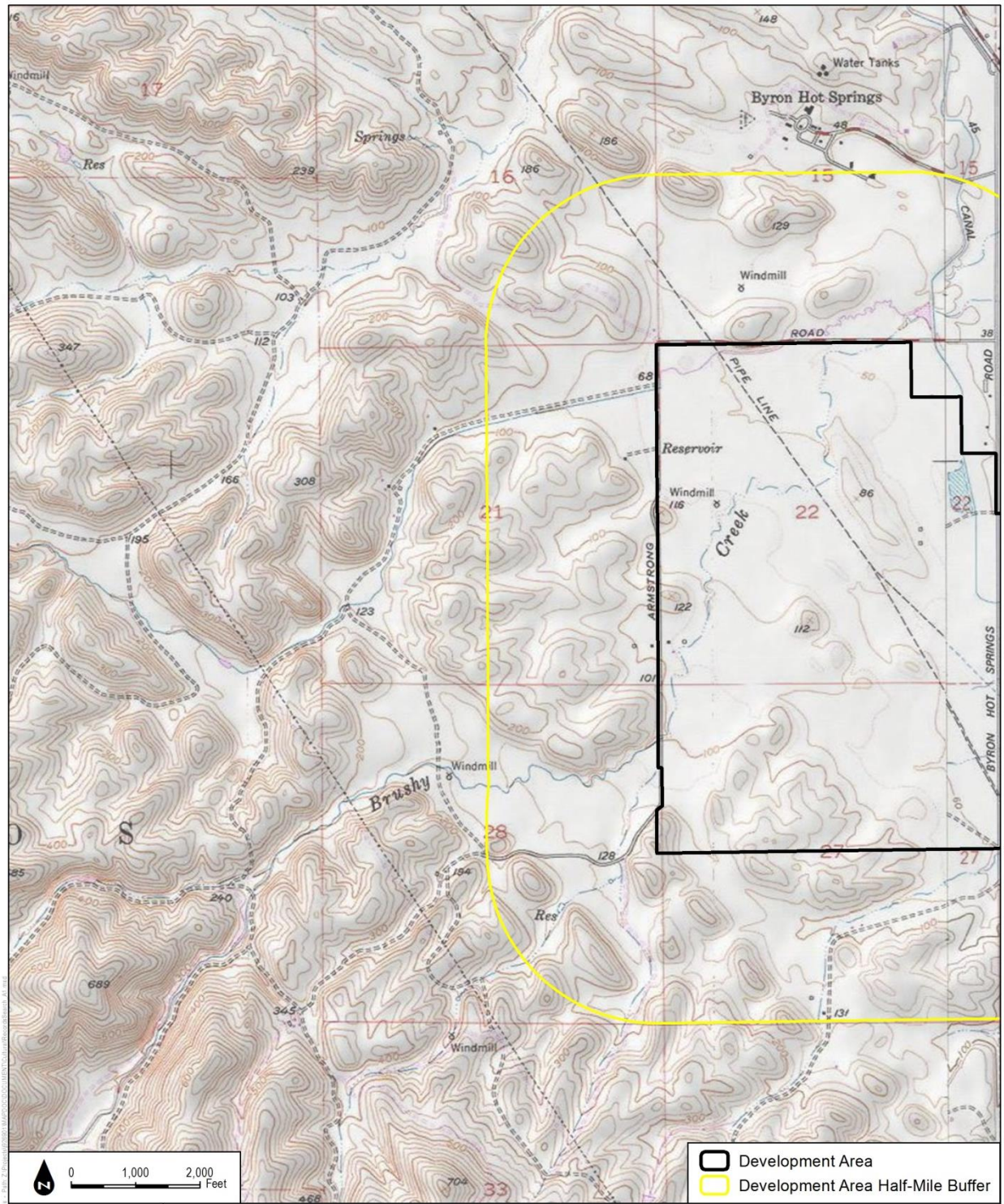

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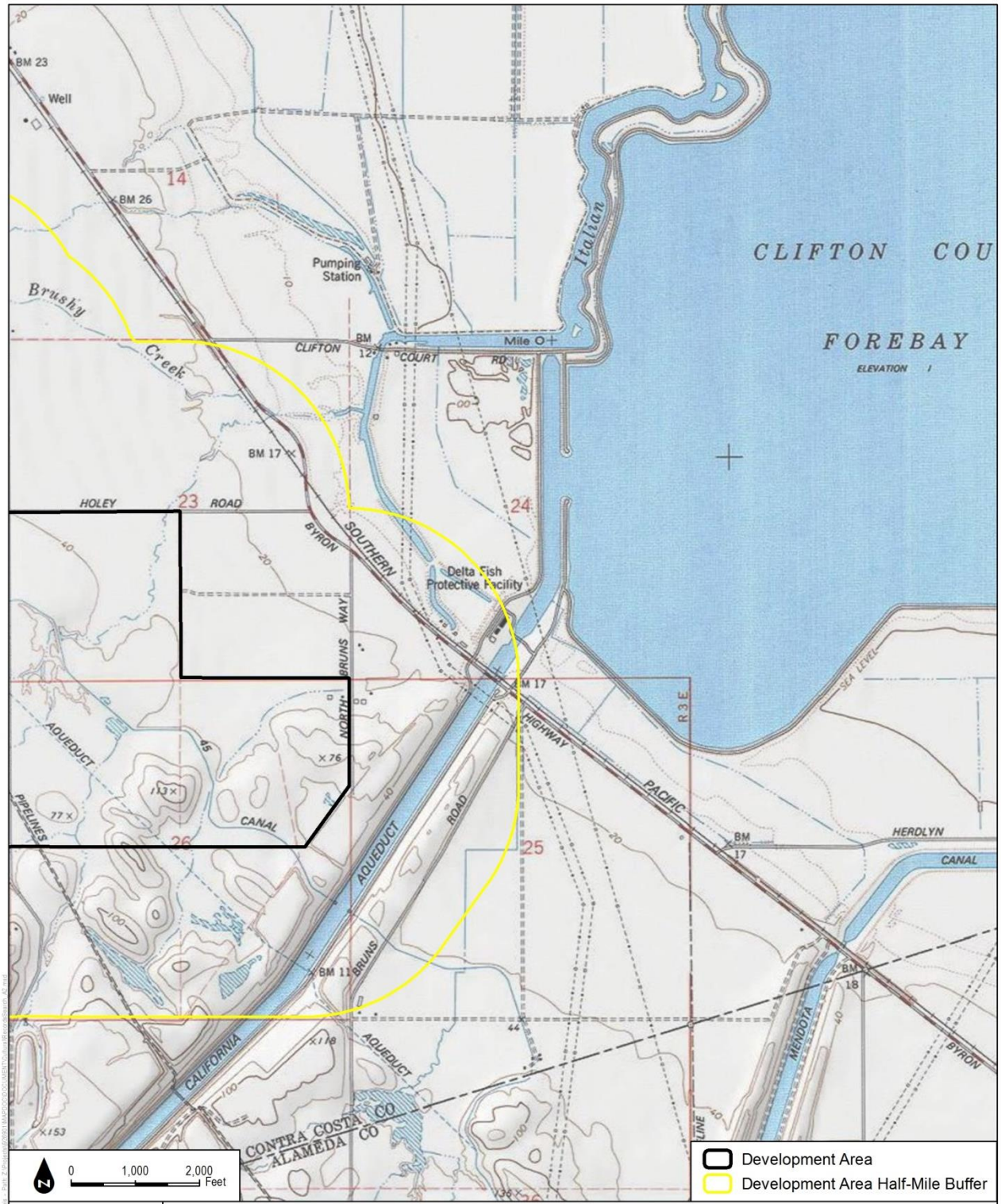

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Byron Airport

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853 LINCOLN WAY, SUITE #208
AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 8, 2016

Ms. Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan
P.O. Box 28
Hollister, CA 95024

Subject: ***Information Request for the Byron Airport Aviation Project, Contra Costa County, California***

Dear Ms. Sayers,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2)

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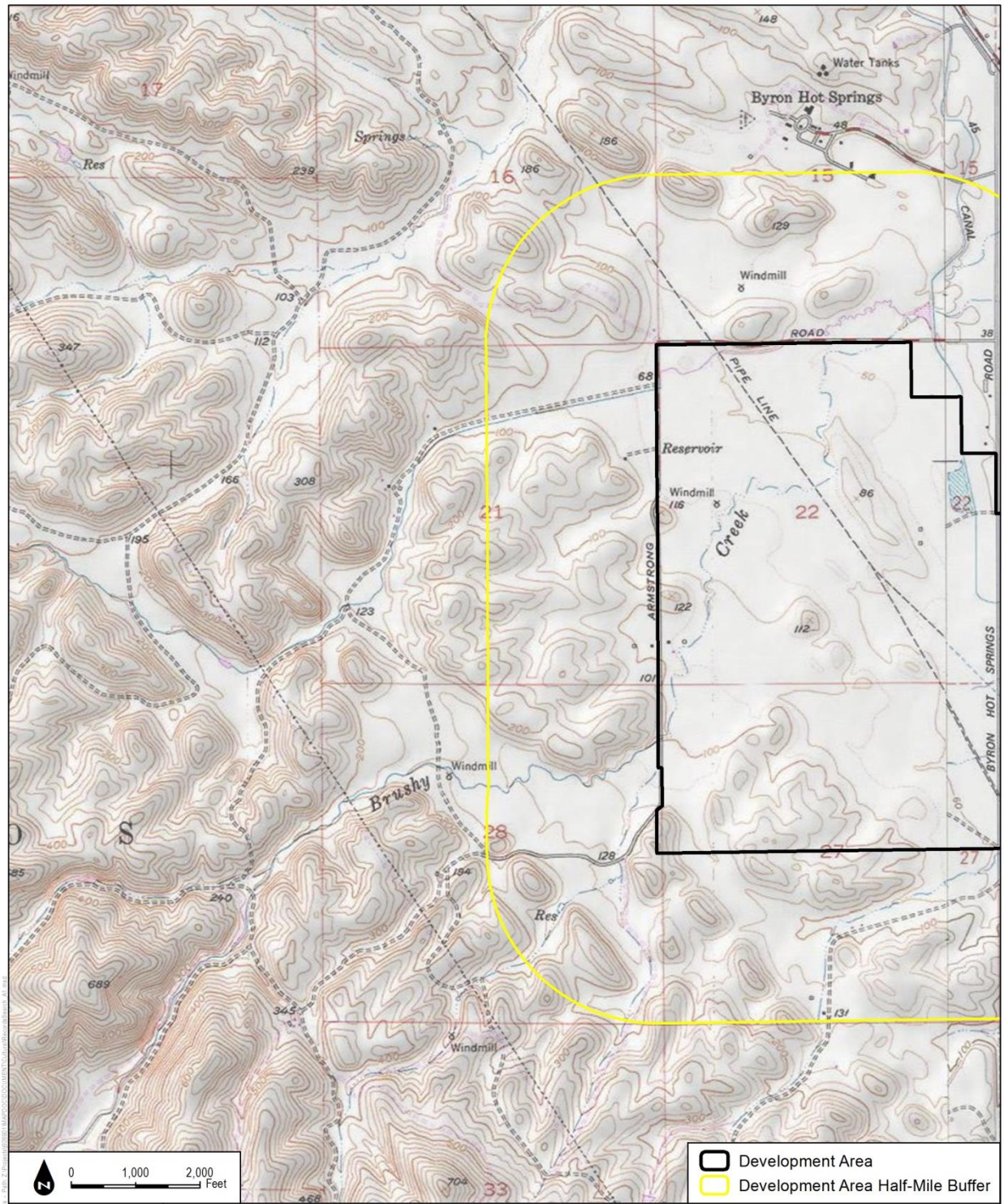

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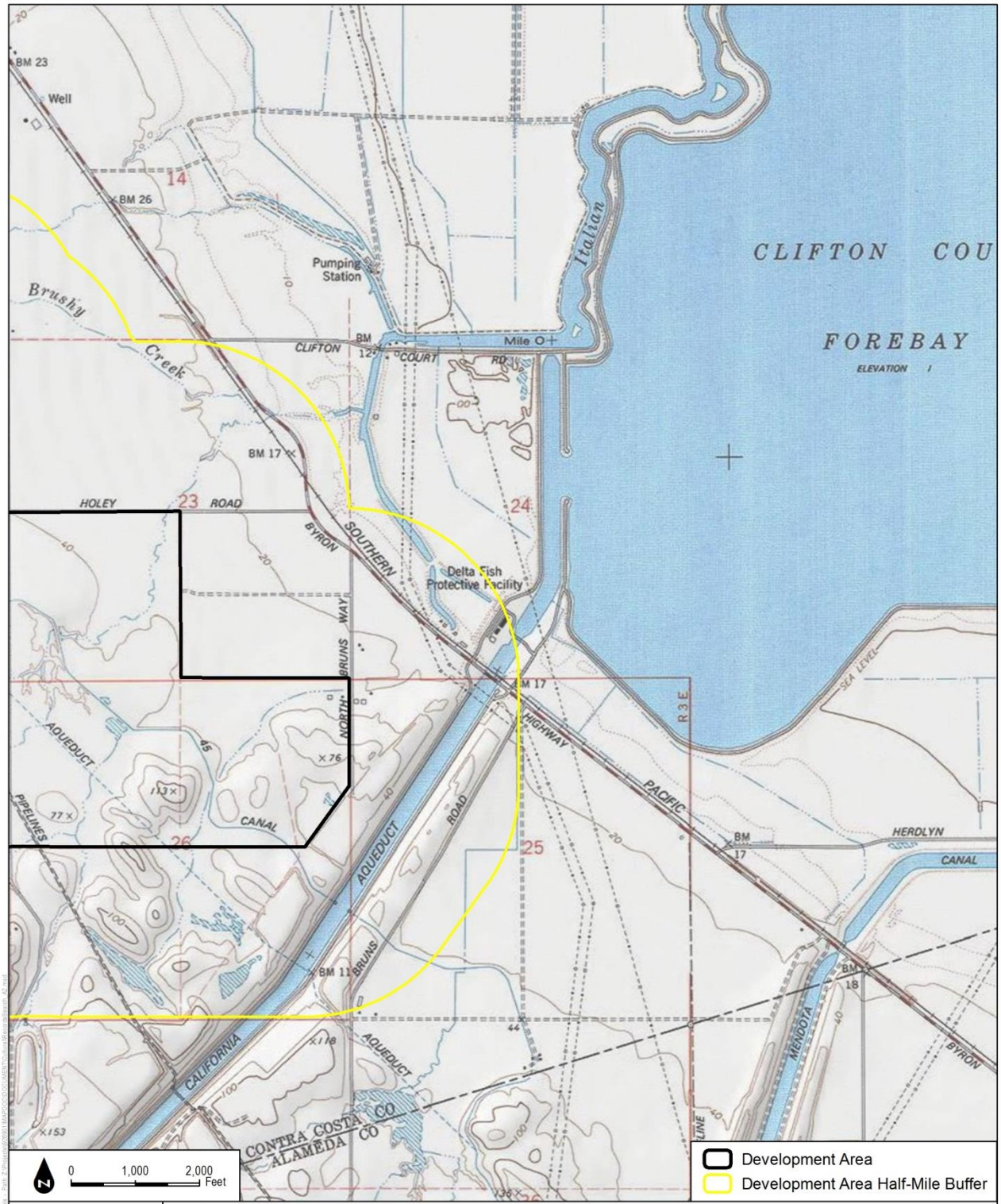

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DUDEK

Byron Airport

DUDEK

853 LINCOLN WAY, SUITE #208
AUBURN, CALIFORNIA 95603
T 530.887.8500 F 530.885.8372

April 8, 2016

Ms. Irene Zwieriein, Chairperson
Amah Mutsun Tribal Band of Mission San Juan Bautista Ohlone Costanoan
789 Canada Road
Woodside, CA 94062

Subject: ***Information Request for the Byron Airport Aviation Project, Contra Costa County, California***

Dear Ms. Zwieriein,

Byron Airport, located in Contra Costa County, California, is investigating the compatibility of proposed aviation-related and aviation-reserve land use with the County's Airport Land Use Compatibility Plan (ALUCP). This area falls within the following PLSS area: Township 1S/ Range 3E - Sections 21, 22, 23, 26, 27, 28; Byron Hot Springs and Clifton Court Forebay, CA 7.5-Minute USGS maps (Figures A1 & A2)

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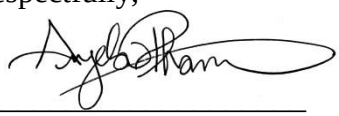

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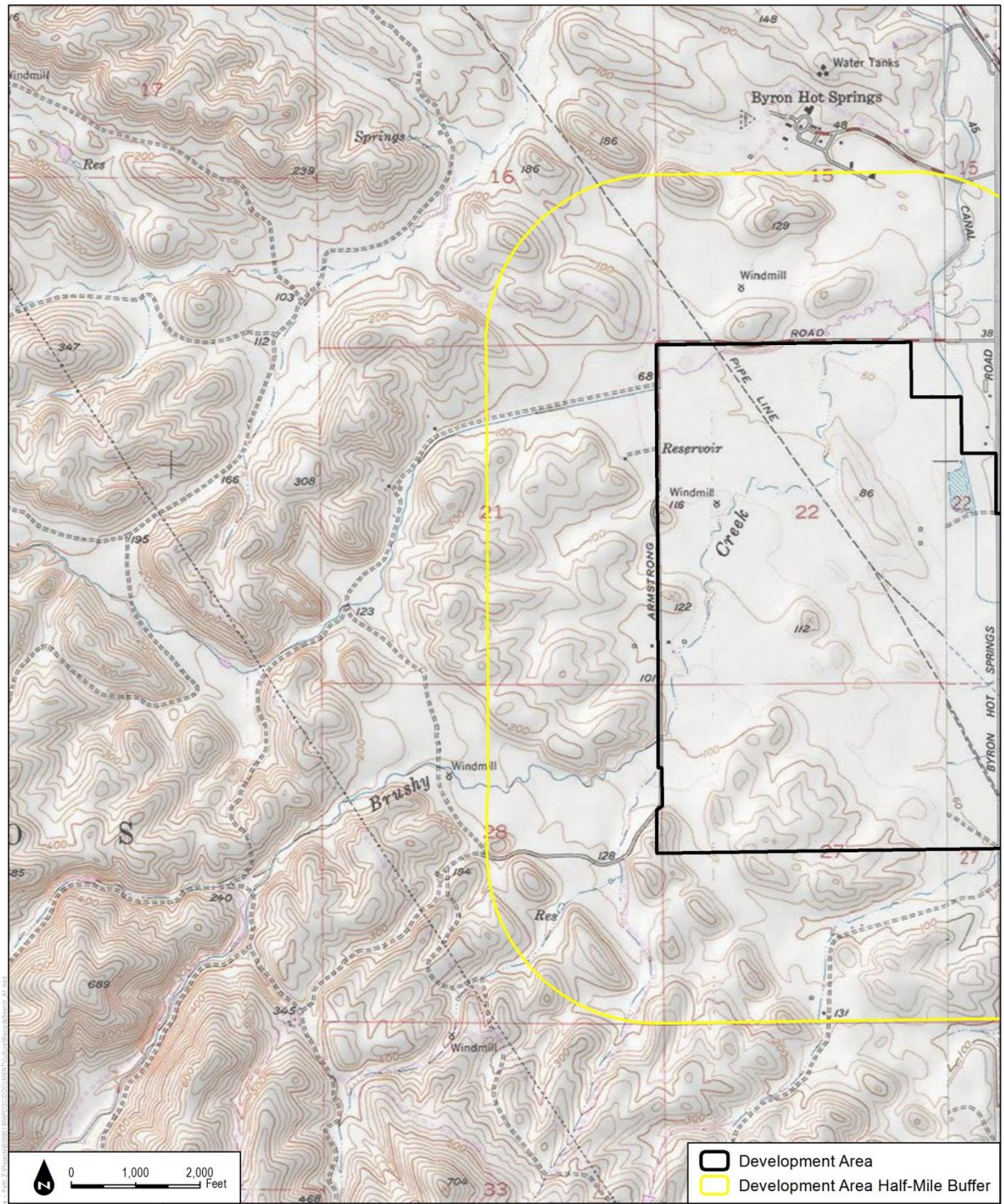

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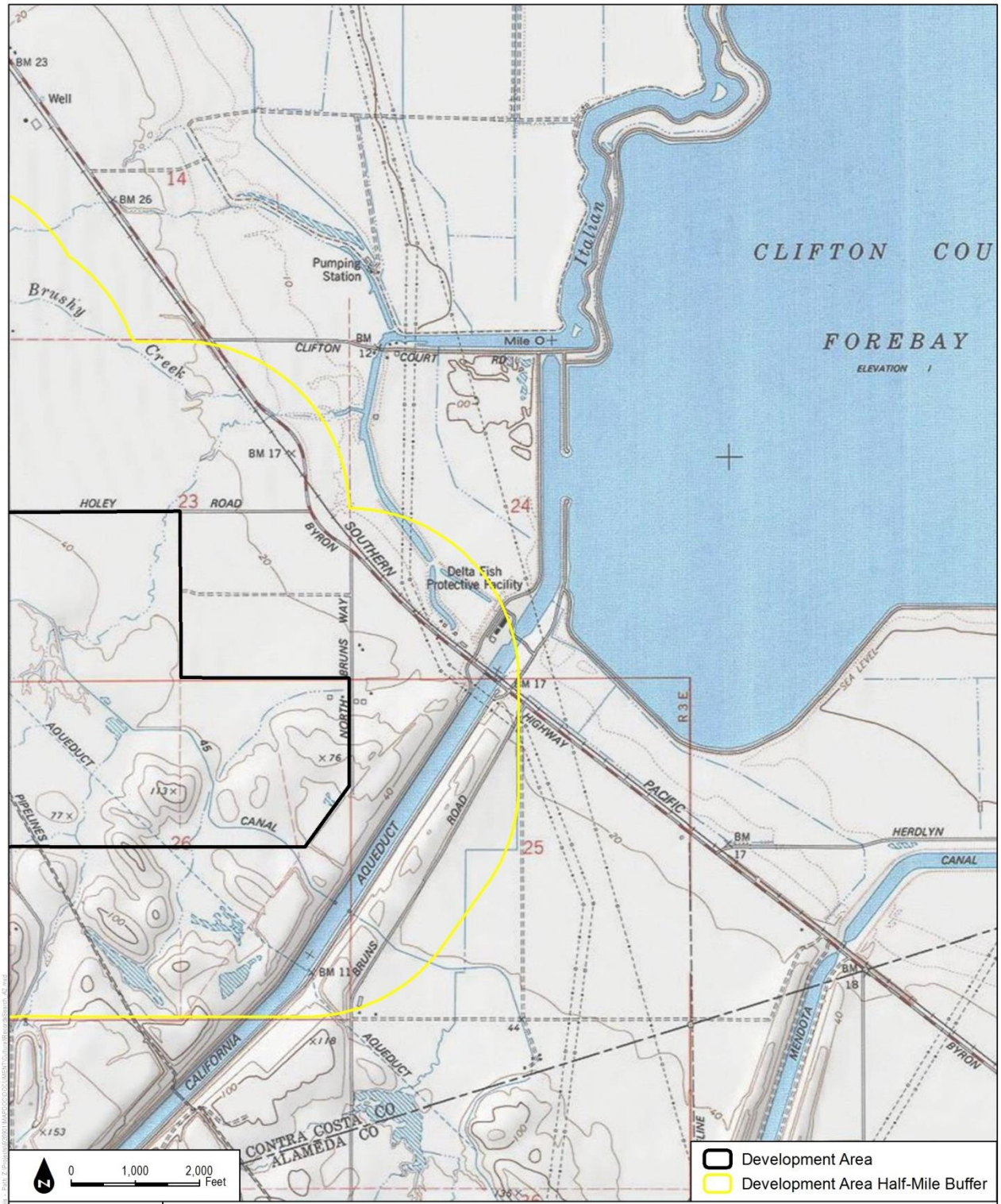

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FIGURE A2

Records Search Map

DUDEK

Byron Airport

Department of Conservation and Development

30 Muir Road
Martinez, CA 94553

Phone:1-855-323-2626

Contra Costa County

John Kopchik
Director

Aruna Bhat
Deputy Director

Jason Crapo
Deputy Director

Maureen Toms
Deputy Director

Kara Douglas
Assistant Deputy Director

August 15, 2017

Wilton Rancheria
Attn: Antonio Ruiz, Jr.
Cultural Resources Officer
Cultural Preservation Department
9728 Kent Street
Elk Grove, CA 95624

RE: Notice of Opportunity to Request Consultation for the Byron Airport General Plan Amendment Project

Project Location: 550 Eagle Court, Byron, CA 94514
Assessor Parcel Numbers: 001-011-013, 001-031-023, 001-011-033, 001-011-037
County File Numbers: GP12-0003 and DP14-3008

Dear Mr. Ruiz:

In accordance with Section 21080.3.1 of the California Public Resources Code (PRC), we are providing notice of a proposed project that may be in your jurisdiction. We are hereby notifying you of an opportunity to request a consultation with us regarding the potential for this project to impact tribal cultural resources, as defined in PRC Section 21074.

Proposed Project

The proposed project is a County-initiated General Plan Amendment (GPA), Development Plan Modification (DPM), and Airport Land Use Compatibility Plan (ALUCP) Amendment for the Byron Airport. The County's long-term goal is for Byron Airport to reach its aviation potential and achieve economic self-sufficiency. However, the current General Plan policies, zoning regulations, and ALUCP policies for the airport do not allow for establishment of most of the land uses necessary to attain this goal. The County intends to amend its regulatory documents to expand the range of uses allowed on the airport property (see Attachments B and C for regional and site maps, respectively).

The proposed GPA would include new policies that update and clarify the range of land uses and activities allowed at Byron Airport, similar to those already adopted for the County's other general aviation airport, Buchanan Field in Concord.

The current Development Plan for the airport would be modified to permit all of the uses listed in Attachment A either by-right or with approval of a land use (conditional) permit. The DPM would also establish certain development standards, such as maximum building heights, maximum lot coverage, landscaping requirements, etc.

The ALUCP would be updated with new policies and maps specific to Byron Airport. The updated policies and maps would reflect the 2017 Airport Layout Plan for Byron Airport, the 2005 Byron Airport Master Plan, and guidance set forth in the most recent version of the Caltrans *California Airport Land Use Planning Handbook*.

The County will analyze the impacts of the proposed project in an environmental impact report.

Opportunity for Consultation

The purpose of tribal consultation is to determine, as part of the CEQA review process, whether or not tribal cultural resources are present within the project area, and if so, whether those resources will be significantly impacted by the project. If tribal cultural resources may be significantly impacted, then consultation will also help to determine the most appropriate way to avoid or mitigate those impacts.

In accordance with PRC Section 21080.3.1(d), you are provided 30 days from receipt of this letter to either request or decline consultation for this project in writing. Please send your written response to:

Contra Costa County
Department of Conservation and Development
Attention: Will Nelson
30 Muir Road, Martinez, CA 94553

You may also respond by e-mail to william.nelson@dcd.cccounty.us. We will proceed with the project if we do not receive a response within the period provided by law.

If you have any questions, please do not hesitate to call me at (925) 674-7791. Thank you and we look forward to your response.

Respectfully,

Will Nelson
Principal Planner

Attachments

A. Permitted and Conditional Land Uses (Proposed)
B. Figure 1 Regional Map
C. Figure 3 Site Map

Attachment A
Permitted and Conditional Land Uses
(Proposed)

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
AGRICULTURE AND OPEN SPACE USES				
Open space	-	-	P	P
AVIATION USES				
Aerial advertising	P	P	-	-
Aerial photography and surveying services	P	P	-	-
Aerial power line and pipeline patrol	P	P	-	-
Agricultural aviation and crop dusting	P	P	-	-
Air cargo and related services/activities	P	P	-	-
Air charter and air taxi services	P	P	-	-
Aircraft maintenance, repair, and servicing, including line maintenance and specialized maintenance (avionics, upholstery, propeller, helicopters, aircraft components, aircraft accessories, specific aircraft engines, aircraft detailing, specific pilot supplies, and the like)	P	P	-	-
Aircraft management and flight support	P	P	-	-
Aircraft rental and leasing	P	P	-	-
Aircraft and aircraft parts sales	P	P	-	-
Aircraft tie-downs and parking	P	P	-	-

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
Aircraft washing and washing facilities	P	P	-	-
Airport administrative offices	P	P	-	-
Airport infrastructure (including aviation fueling facilities)	P	P	-	-
Any other type of aeronautical activity or service not listed but is recognized and permissible by the FAA	P	P	-	-
Automobile parking, short and long-term	P	P	L	-
Automobile rental	P	P	-	-
Aviation education programs (public, private or non-profit)	P	P	-	-
Aviation museum	P	P	-	-
Aviation-based recreation such as flying clubs, sightseeing, and skydiving	P	P	-	-
Concessions/catering/vending facilities: FBO, publicly owned or operated, or third party facilities	P	P	-	-
Civil Air Patrol	P	P	-	-
Commercial aircraft operations and services	P	P	-	-
Control tower and equipment	P	P	-	-
Courtesy customer transportation to nearby destinations	P	P	-	-
Fixed base operator (FBO)	P	P	-	-
Flight schools, instruction, and training, including flight simulators	P	P	-	-

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
General aviation terminal	P	P	-	-
Ground services including, but not limited to, aircraft towing, baggage handling, power starts, air starts, lavatory services, potable water, aircraft cleaning, cabin supplies, and other related services not listed	P	P	-	-
Hangars (corporate/executive, commercial and individual (including T-hangars)	P	P	-	-
Meeting space and business center	P	P	-	-
Meteorological infrastructure and equipment	P	P	P	-
Navigational antennas and equipment	P	P	P	-
Office space for aviation and aviation-related businesses	P	P	-	-
Pilot lounge	P	P	-	-
Recycling facility (aviation-related materials)	P	P	-	-
Rental car offices and facilities	P	P	-	-
Restrooms independent of other uses	P	P	-	-
Sales of aviation fuel, oil, and petroleum products	P	P	-	-
Trade schools/vocational training (aviation)	P	P	-	-
Travel agency, including hotel and automobile reservations	P	P	-	-

Attachment A: Permitted Uses				
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Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
Unmanned aerial systems fleet monitoring activities and services	P	P	-	-
Weather and flight planning services	P	P	-	-
COMMERCIAL USES				
Automobile/vehicle and equipment sales, repair/service, storage, and facilities	P	P	-	-
Banks and financial institutions [3]	P	P	-	-
Building materials sales, storage, and service	-	P	-	-
Business support services [3]	P	P	-	-
Conference, convention, and meeting facilities (public or private)	P	P/L	-	-
Cultural and entertainment facilities and services	-	L	-	-
Food and beverage establishments, sales, and services [4]	P	P	-	-
General commercial, wholesale, and retail businesses	-	P	-	-
Golf course (public or private)	-	P	P	-
Offices (business, professional, administrative/executive, medical/dental, multi-tenant) [3]	P	P	-	-
Parking facility	P	P	-	-
Sports/recreational facilities, including commercial facilities	-	L	L	-
Trade schools/vocational training (non-aviation) [3]	P	P	-	-

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
LIGHT INDUSTRY, MANUFACTURING & PROCESSING USES [5]				
Agricultural-industrial: limited processing, storage, and sales [6]	-	P	-	-
Assembly of products [3]	P	P	-	-
Business equipment assembly, services, and sales [3]	P	P	-	-
Computer systems research and development [3]	P	P	-	-
Container/package shipping and storage	-	P	-	-
Corporate offices [3]	P	P	-	-
Distribution and storage	-	P	-	-
Equipment repair and maintenance (non-aviation) [3]	P	P	-	-
Furniture manufacturing	-	P	-	-
Electronic repair and assembly [3]	P	P	-	-
General food and beverage manufacturing and processing [6]	-	P	-	-
Machine shop	P	P	-	-
Packaging	P	P	-	-
Pharmaceutical manufacturing	-	P	-	-
Printing and publishing companies, book binding	-	P	-	-
Recycling facility (non-aviation materials) [7]	-	L	-	-
Research and development, including testing and laboratories [8]	-	P	-	-

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land
Self-storage	-	P	-	-
Software development [3]	P	P	-	-
Technology manufacturing and support industries [3, 8]	P	P	-	-
Warehouses [3]	P	P	-	-
PUBLIC FACILITY USES				
Emergency services (i.e., law enforcement, fire protection)	P	P	-	-
Government services (non-aviation) [3]	P	P	-	-
Public transit and shuttle stops	P	P	-	-
Public utilities	P	P	-	-

Attachment A: Permitted Uses				
P		Permitted Use (By-Right) [1]		
L		Land Use Permit Required (Conditional)		
-		Use Not Allowed		
Land Use Category		Land Use Area		
	Aviation Reserve [2]	Aviation Related	Low Intensity Use	Habitat Management Land

Notes:

[1] All permitted uses are subject to compliance with adopted design and development standards and must be consistent with the Airport Land Use Compatibility Plan (ALUCP). Any use not defined as permitted shall not be allowed unless determined by the Planning Director to be sufficiently similar in nature to a permitted use. Any use determined to be inconsistent with the ALUCP or that poses a hazard to aircraft operation shall be prohibited.

[2] All uses within the Aviation Reserve Area must be consistent with the approved Airport Layout Plan (ALP) and consistent with FAA regulation and guidance.

[3] If located within the Aviation Reserve area, these uses must be within a building and may not exceed 30 percent of the gross floor area.

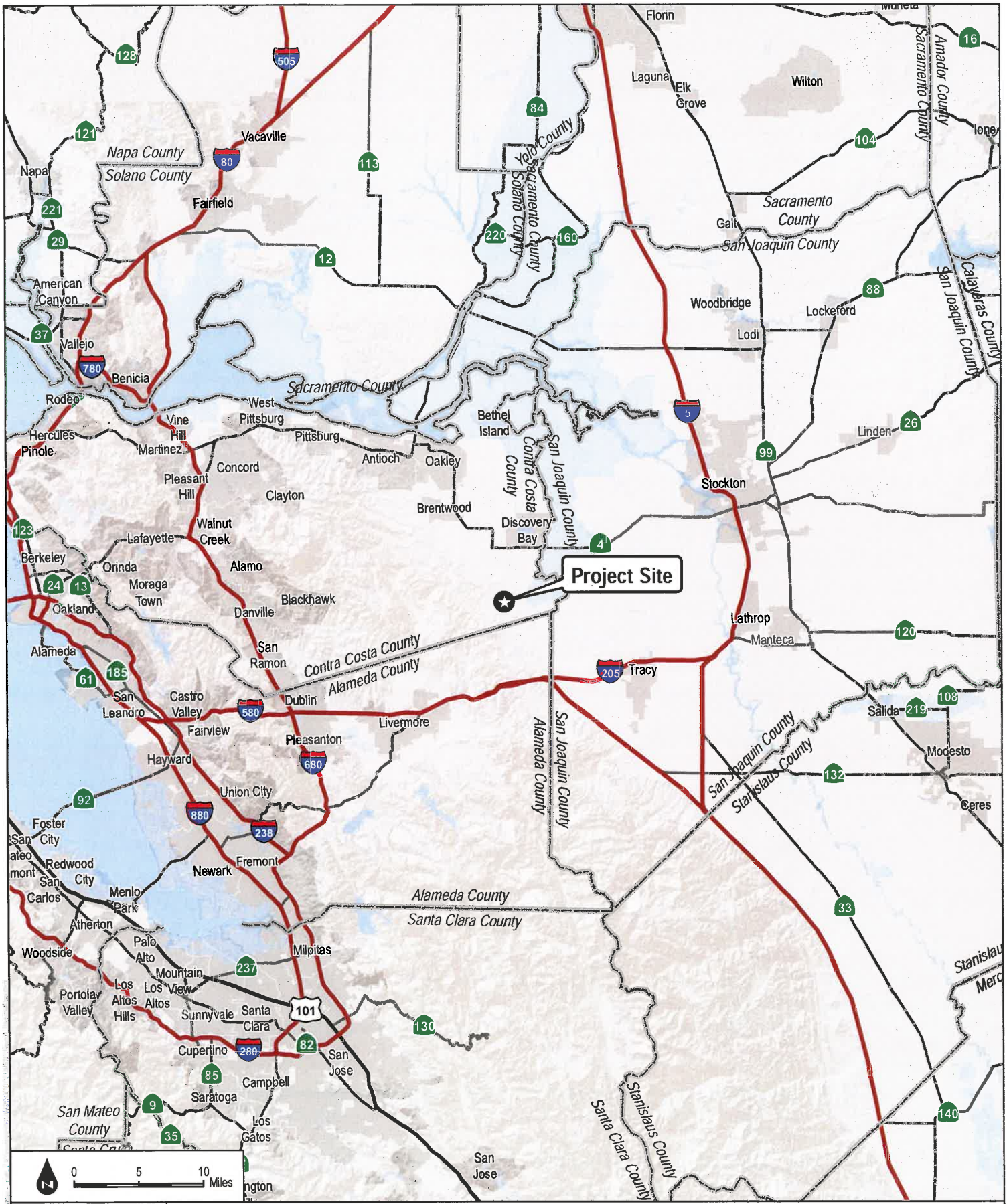
[4] Food and beverage establishments are permitted in the Aviation Reserve area if they are accessory to a primary use. No more than two stand-alone food and beverage establishments, such as fast-food restaurants, may be established on airport property. See also catering (FBO, publicly operated, or third party).

[5] All manufacturing and processing must be conducted entirely within an enclosed building.

[6] Subject to the County determination that water demand can be adequately served.

[7] Must be conducted within an enclosed building. Recycling of hazardous materials, including household hazardous waste, paint, batteries, etc. is subject to approval of a land use permit.

[8] Subject to the County determination that the equipment to be used does not have the potential for interference with airport operations.

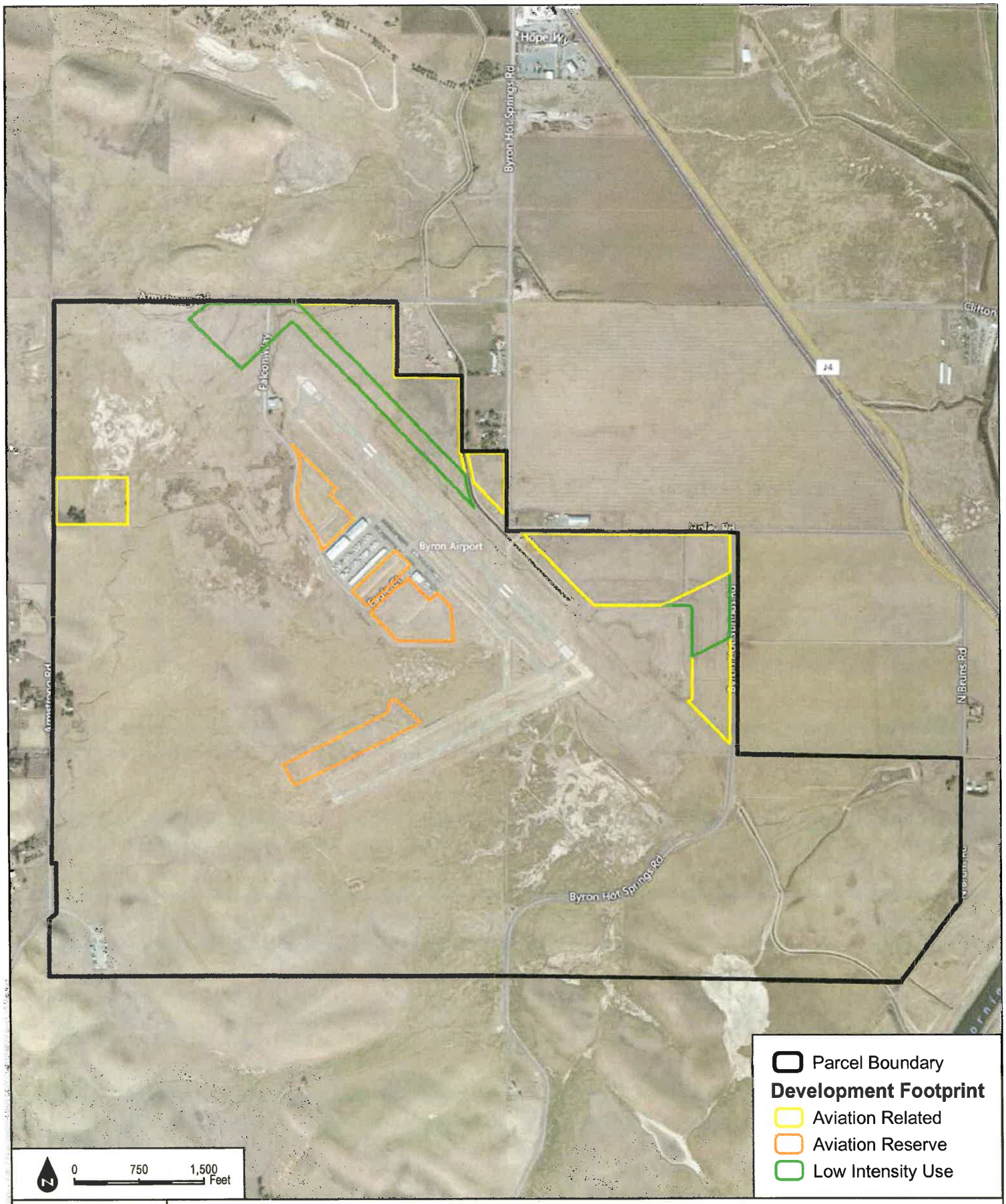


DUDEK

FIGURE 1

Regional Map

Byron Airport Biological Resources Assessment



SOURCE: Bing Maps (Accessed 2016), Mead & Hunt (2015)

FIGURE 3
Site Map

DUDEK

Byron Airport Biological Resources Assessment

Wilton Rancheria

9728 Kent Street, Elk Grove, CA 95624

CONTRA COSTA
2017 AUG 30 P 1:03
DEPARTMENT OF CONSERVATION

Friday, August 25, 2017

Contra Costa County
Will Nelson
30 Muir Road
Martinez Ca 94553

RE: Bryon Airport General Plan

Dear: Will Nelson,

This letter constitutes a formal request for tribal consultation under the provisions of Senate Bill 18 for the participation in land use decisions and for the mitigation of potential project impacts to tribal cultural resource for the above referenced project.

The Tribe requests notification on the following topics checked below, which shall be included in consultation if requested (Public Resources Code section 5097.9 and 5097.995:

_____ Open space designations
__X__ Recommended mitigation measures
__X__ Significant effects of the project
__X__ Native American Inspector

The Tribe also requests consultation on the following discretionary topics checked below (Public Resources Code section 21080.3.2, subd. (a):

__X__ Type of environmental review necessary
__X__ Significance of tribal cultural resources, including any regulations, policies or standards used by your agency to determine significance of tribal cultural resources
_____ Significance of the project's impacts on tribal cultural resources
__X__ Project alternatives and/or appropriate measures for preservation or mitigation that we may recommend, including, but not limited to:

(1) Avoidance and preservation of the resources in place, pursuant to Public Resources Code section 21084.3, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural context, or planning greenspace, parks or other open space, to incorporate the resources with culturally appropriate protection and management criteria;
(2) Treating the resources with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resources, including but not limited to the following:

a. Protecting the cultural character and integrity of the resource;

b. Protection the traditional use of the resource; and
c. Protecting the confidentiality of the resource.

(3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
(4) Protecting the resource.

Additionally, the Tribe would like to receive any cultural resources assessments or other assessments that have been completed on all or part of the project's area of potential effect (APE), and area surrounding the APE including, but not limited to:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE or surrounding the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE or surrounding the APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
     - ✦ The Tribe requests to be present at any survey conducted on the Applicants behalf.
2. The results of any archaeological inventory survey that was conducted, including:
   - Any reports that may contain site forms, site significance, and suggested mitigation measures.
   - Any reports or inventories found under the Native American Graves Protection and Repatriation Act.
     - ✦ All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10. All Wilton Rancheria correspondences shall be kept under this confidential section and only shared between the Tribe and lead agency.
3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. The request form can be found at http://www.nahc.ca.gov/slf_request.html. USGS 7.5-minute quadrangle name, township, range, and section required for the search.
4. Any ethnographic studies conducted for any area including all or part of the potential APE or areas surrounding the APE; and
5. Any geotechnical reports regarding all or part of the potential APE or areas surrounding the APE.

- The Tribe shall be notified before any geotechnical testing is planned. Geotechnical testing has potential to impact Tribal Cultural Resources and should be part of this consultation.

The information gathered will provide us with a better understanding of the project and will allow the Tribe to compare your records with our database.

We would like to remind your agency that CEQA Guidelines section 15126.4, subdivision (b)(3) states that preservation in place is the preferred manner of mitigating impacts to archaeological sites. Section 15126.4, subd. (b)(3) of the CEQA Guidelines has been interpreted by the California Court of Appeal to mean that "feasible preservation in place must be adopted to mitigate impacts to historical resources of an archaeological nature unless the lead agency determines that another form of mitigation is available and provides superior mitigation of impacts." *Madera Oversight Coalition v. County of Madera* (2011) 199 Cal.App.4th 48, disapproved on other grounds, *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439.

Please contact Ed Silva, Tribal Resources Coordinator at esilva@wiltonrancheria-nsn.gov to set up a meeting.

Sincerely,

Antonio Ruiz Jr
Cultural Resources Officer
Wilton Rancheria

APPENDIX C
Office of Historic Preservation DPR Forms

APPENDIX C

Office of Hisotric Preservation

DPR Forms

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

 *__Resource Name or #:__ (Assigned by recorder) BA-KL-1

P1. Other Identifier:
***P2. Location:** ■ **Not for Publication** ☐ **Unrestricted** *__a. County:__ Contra Costa
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Clifton Court Forebay, CA **Date** 2018; **T** 1S ; **R** 3E ; SE ¼ **of** NE ¼ **of Sec** 22; **B.M.: Mount Diablo**
c. Address: Byron Hot Springs Road City: Byron
d. UTM: NAD 83, Zone 10S; 621124 mE / 4188214 mN
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate): Located on the west side of Byron Hot Springs Road 800 feet north of the intersection with Holey Road.

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries) BA-KL-1 consists of a historic age corral. Historic Aerial images of the corral indicate it was constructed prior to 1949. Corral consists of two holding pens separated by a fenced corridor and a loading corridor on the south side. There is a gate and collapsed fence on the southwest corner. No associated artifacts were observed in the vicinity, although the ground visibility is very poor due to tall grass. Fasteners within the fence structure itself include modern wire nails, indicating the corral has undergone later maintenance since its construction prior to 1949.

***P3b. Resource Attributes:** (List attributes and codes): HP33. Farm/Ranch; HP46. Walls/gates/fences

***P4. Resources Present:** ☐ Building ■ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)



P5a. Photograph or Drawing:

P5b. Description of Photo: (View, date, accession #) Photo of a corral, facing NE 11/28/2018, Original Media held at Dudek

***P6. Date Constructed/Age and Sources:**

■ Historic ☐ Prehistoric ☐ Both

***P7. Owner and Address:**
U.S. Department of the Interior
Bureau of Land Management
Palm Springs South Coast Field Office
1201 Bird Ctr. Dr. palm Springs, CA 92262

***P8. Recorded by:** (Name, affiliation, and address)
Kurt Lambert; Dudek
605 3rd Street
Encinitas, CA 92024

***P9. Date Recorded:** 5/10/2016

***P10. Survey Type: (Describe):** Intensive Pedestrian Surbey

***P11. Report Citation:** *Pham, Angela, Adam Giacinto, and William Burns. 2019. Cultural Resources Inventory Report for the Byron Airport Project, Contra Costa County, California.*

*__Attachments:__ ☐ NONE ■ Location Map ☐ Sketch Map ☐ Continuation Sheet ☐ Building, Structure, and Object Record ■ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHAEOLOGICAL SITE RECORD

Primary # _____
Trinomial _____

 *__Resource Name or #:__ (Assigned by recorder) BA-KL-1

***A1. Dimensions:** a. Length: 62 feet (N-S) x b. Width: 114 feet (E-W)

Method of Measurement: ☐ Paced ■ Taped ☐ Visual estimate ☐ Other:

Method of Determination: (check any that apply) ☐ Artifacts ■ Features ☐ Soil ☐ Vegetation ☐ Topography ☐ Cut bank ☐ Animal burrow ☐ Excavation ☐ Property boundary ☐ Other (Explain):

Reliability of Determination: ■ High ☐ Medium ☐ Low Explain: Ground surface visibility approximately 100%

Limitations (check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined ☐ Disturbances ☐ Vegetation ☐ Other (Explain):

A2. Depth: ☐ None ■ Unknown **Method of Determination:** No subsurface investigation conducted.

***A3. Human Remains:** ☐ Present ■ Absent ☐ Possible ☐ Unknown

***A4. Features:** (Number, briefly describe, indicate size, list associated cultural constituents, and show location of each feature on sketch map.). Standing fences and gates forming a corral

***A5. Cultural Constituents** (Describe and quantify artifacts, ecofacts, cultural residues, etc., not associated with features.): None observed beyond the corral fencing

***A6. Were Specimens Collected?** ■ No ☐ Yes

***A7. Site Condition:** ☐ Good ■ Fair ☐ Poor (Describe disturbances.):

***A8. Nearest Water:** (Type, distance, and direction.) Clifton Court Forebay, 1.5 miles east of BA-KL-1

***A9. Elevation:** 43 feet amsl (interpreted from USGS map)

A10. Environmental Setting: (Describe culturally relevant variables such as vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.) The site is situated in a grass field currently unused. Surrounding land likely previously used for grazing or agriculture.

A11. Historical Information: None.

***A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542-1769 ☐ 1769-1848 ☐ 1848-1880 ☐ 1880-1914 ☐ 1914-1945 ■ Post 1945 ☐ Undetermined (Describe position in regional prehistoric chronology or factual historic dates if known):

A13. Interpretations: (Discuss data potential, function(s), ethnic affiliation, and other interpretations): Historic corral

A14. Remarks: This isolate is not eligible for the National register of Historic Places (NRHP) (under Criterion A-D) or the California Register of Historic Resources (CRHR) (under Criterion 1-4). All data potential associated with the isolate has been exhausted through field level recordation.

A15. References: (Documents, informants, maps, and other references): N/A

A16. Photographs: (List subjects, direction of view, and accession numbers or attach a Photograph Record.):
Original Media/Negatives Kept at: Dudek

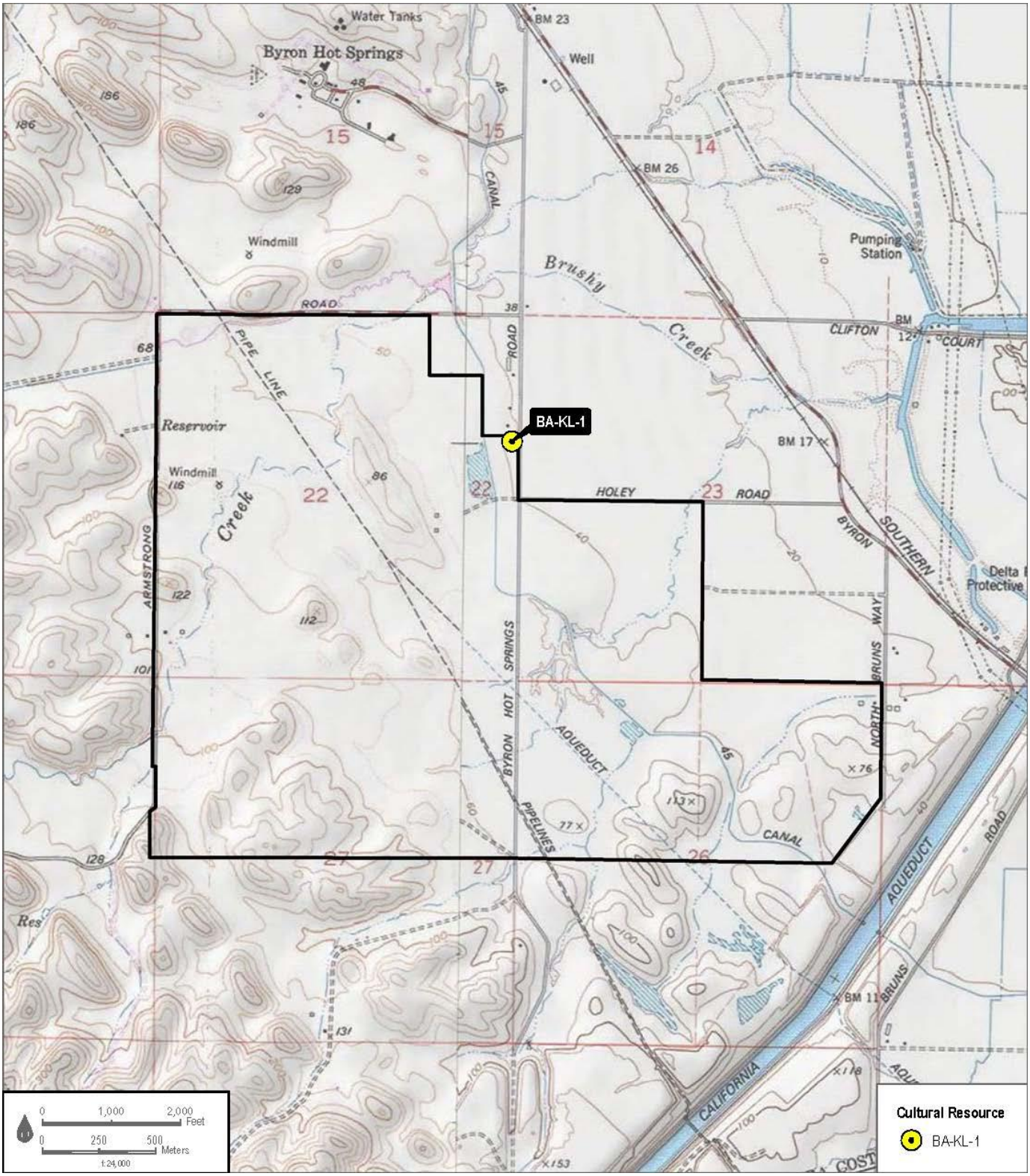
***A17. Form Prepared by:** William Burns
Date: 3/7/2019
Affiliation and Address: Dudek. 605 3rd Street Encinitas, California 92024

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary # _____
HRI # _____
Trinomial _____

*__Resource Name or #:__ (Assigned by recorder) BA-KL-1

Map Name: Clifton Court Forebay, CA & Byron Hot Springs,CA **Scale:** 1:24,000 **Date of Map:** 1991



*Required information

State of California ♁ Natural Resources Agency Primary #
DEPARTMENT OF PARKS AND RECREATION HRI#
SKETCH MAP
Trinomial

 ***Resource Name or #** (Assigned by recorder) BA-KL-1

***Drawn by:** Dudek ***Date of map:** March 2019



APPENDIX F

Checklist from Contra Costa County 2015 – CAP

Appendix E: Development Checklist

E



The development checklist (**Table E.1**) was created to help both project applicants and County staff determine where a proposed new development project is consistent with Contra Costa County's Climate Action Plan (CAP). This checklist should be filled out for each new project subject to discretionary review. The County will work with applicants on a project-by-project basis to identify appropriate measures to integrate with the project through conditions of approval or project design, or other techniques as applicable. This approach allows the County to ensure that new projects are consistent with and do not compromise the County's ability to attain the greenhouse gas (GHG) reduction targets outlined in this CAP. To assist with implementation, the checklist provides descriptions and performance criteria that explain how individual projects can comply with requirements. The individual project criterion clarifies implementation of the CAP, providing additional information that is consistent with the assumptions identified in **Appendix D**.

Development Checklist

DEVELOPMENT CHECKLIST

Project Description Characteristics

Please identify the applicable land uses included in the proposed project and provide a brief description of the proposed project (or the project description to be used for the associated environmental document).

1) What is the size of the project (in acres)?:

71 ac.

2) Identify the applicable land uses:

- ☐ Residential
- ☒ Commercial
- ☒ Industrial
- ☐ Manufacturing
- ☒ Other Aviation

3) If there is a residential component to the project, how many units are being proposed?

SINGLE-FAMILY RESIDENCES:	
MULTI-FAMILY RESIDENCES:	

4) Please provide a brief project description:

The County intends to develop aviation uses and airport-related commercial and industrial development on airport property, consistent with the adopted 2005 Master Plan. 48 acres of airport-related development, and 23 acres of aviation development would be allowed.

5) Does the project require any amendments to the General Plan or specific plans?

☒ Yes ☐ No

If yes, please explain:

General Plan will amended to clarify that airport-related commercial and industrial uses are allowed on airport property. No off-site development will be authorized.

6) Is the project located in a specific plan area?

□ Yes X No

If yes, which one?

7) Please complete the following table to identify project compliance with any applicable CAP measures.

Table E.1. Standards for CAP Consistency – New Development

Reduction Measure and Applicable Standard	Does the Project Comply?	Notes & Comments
EE 1 & EE 6. New residential development will install high-efficiency appliances and insulation to prepare for the statewide transition to zero net energy.	□ Yes □ No X N/A	Additional Notes:
EE 1. New nonresidential development will install high-efficiency appliances and insulation.	□ Yes X No □ N/A	Additional Notes:
RE 1. New residential and nonresidential development will meet the standards to be solar ready as defined by the California Building Standards Code.	□ Yes X No □ N/A	If yes, how many kW of solar will be installed? Additional Notes:
LUT 2. New single-family houses and multi-family units with private attached garages or carports will provide prewiring for EV charging stations inside the garage or carport.	□ Yes □ No X N/A	If yes, how many spaces are prewired? Additional Notes:
LUT 2. New multi-family (greater than five units) and nonresidential (greater than 10,000 square feet) developments will provide EV charging stations in designated parking spots.	□ Yes □ No X N/A	If yes, how many spaces are prewired? Additional Notes:
LUT 4. New residential and nonresidential development will be located within one half-mile of a BART or Amtrak station, or within one quarter-mile of bus station.	□ Yes X No □ N/A	If yes, what is the vehicle miles traveled reduction from the project? Additional Notes:

APPENDIX G

Byron Airport Hazards Assessment

DUDEK

MEMORANDUM

To:	Brian Grattidge
From:	Nicole Peacock
Subject:	Hazards Assessment for Byron Airport
Date:	December 6, 2018
Attachment(s):	A – EDR Radius Report B – Agency Records C – Historical Aerial Photographs D – Topographic Maps E - Sanborn Fire Insurance Maps

This hazards assessment was conducted to identify potential environmental impacts of the proposed development project at the Byron Airport (project site). This assessment is based on 1) review of regulatory files searched by Environmental Data Resources (EDR), 2) regulatory files available from Contra Costa Health Services Hazardous Materials Programs, 3) a review of historical aerial photographs and topographic maps, 4) review of mapped pipeline information, and 5) review of additional site documents. Current handling of hazardous materials at the project site and potential future handling of hazardous materials associated with operations of the proposed project at the Byron Airport were also reviewed in the context of relevant environmental regulations and guidance. The majority of this Hazards evaluation was conducted in 2016; however, due to a change in the project boundary, this Hazards evaluation was not completed until 2018.

Site Description

The project site is located south of Armstrong Rd near Falcon Way and Byron Hot Springs Rd in Byron, California (Figure 1). The study area consists of an approximately 1,319-acre area that encompasses five parcels (Assessor Parcel Numbers 001-031-023; 001-011-13, -17, -33, -37). The study area include the airport property south of Armstrong Road and a privately owned 11.7-acre parcel, and is bordered by vacant land to the north, vacant land to the south, agricultural and vacant land to the east, and residential and vacant land to the west.

The Airport Master Plan identified four proposed development areas totaling 221 acres. The aviation-reserve area, generally located northwest of the intersection of the two runways, is reserved for uses directly associated with the function of the Byron Airport, such as a terminal,

hangars, fixed base operator, aircraft maintenance, fueling facilities, airport administrative offices, etc. The airport-related area, generally located east of the two runways, plus a small parcel on Armstrong Road, could be developed with certain aviation uses and airport compatible uses, such as light industry (Contra Costa County, 2005). These areas could be leased to private entities, thereby providing a revenue stream for the Airport. The County has since narrowed the scope of the project to include 46.6 acres of airport-related development east of the main runway and 23.5 acres of aviation-reserve development west of the main runway (Figure 2). The entirety of the project site is included within the 221 acre area initially identified.

Evaluation of Existing Conditions

1) EDR Report Review

Dudek reviewed a computerized government records search conducted by EDR on November 26, 2018 (Attachment A). The EDR Radius Report was conducted for the larger airport area that includes the smaller project site. The EDR Radius Report (in the main listing and the unmapped listing) listed 13 unique sites within the American Society for Testing and Materials (ASTM) standard one-mile search radius of the project site.

The project site (500 and 505 Eagle Court, 6901 Falcon Way, Osprey Court, and 3000 Armstrong Street) was listed in the EDR report, however, it was not listed in databases that indicate a release has occurred, nor was it listed in the databases compiled pursuant to Government Code Section 65962.5. The project site was listed in the following databases[1] under several different names (Redstar Airshows Inc., Contra Costa County, Byron Airport, CCC Byron Airport, Bay Area Skydiving, and Byron Jet Center):

- AST and CERS Tanks: The AST listing for the project site is associated with 10,000 gallon (100 low lead fuel), 1,000 gallon (unleaded fuel), 200 gallon (diesel fuel), and 250 gallon (waste oil) aboveground petroleum storage tanks (ASTs) located on or adjacent to the project site (Figure 2).

- Contra Costa Co. Site List, CERS, CERS Haz Waste, HAZNET, FINDS, ECHO: These databases are associated with permitting and the storage, handling and disposal of hazardous materials.

- NPDES, CIWQS, and WDS: The NPDES and WDS listings for the project site are associated with its active status as a facility with an NPDES permit and waste discharge

[1] Description/definition of the database acronyms is included in the EDR Report (Attachment A)

requirements for water discharges from construction and industrial activities. The CIWQS listing is associated with storm water permitting.

- SWEEPS UST: The project site was listed in the SWEEPS UST database due to what is listed as an underground storage tank (UST) permit for a 10,000 gallon aviation gas tank. The permit was noted as being active in 1991. No further information regarding a UST at the site was available from the EDR report or Contra County Health Services Hazardous Materials Programs regulatory records.

Twelve additional sites, outside of the project site, were listed within the EDR search radius (Table 1).

Table 1 – Additional Listed Sites

Site Name	**Location**	**Databases**	**Comments**
Airport Ranch Sludge Spreading	Holey Road East of Byron Hot Springs Rd and Holey Rd intersection, less than 1/8 mile east/north of the project site	Solid Waste Facilities/Landfill Sites (SWF/LF)	Site is a biosolids spreading facility. Groundwater monitoring data indicate this site is downgradient from the project site.
Chevron, Holey-Byron Road, Byron	Holey Road East of Byron Hot Springs Rd and Holey Rd intersection, 1/4 mile east of the project site	State and Tribal Leaking Storage Tanks (SLIC), CERS	Release of total petroleum hydrocarbons (TPH) to soil and groundwater closed by lead agency following determination of no health risk to potential residents or ecological receptors within one mile of the site. Groundwater monitoring data indicate this site is downgradient from the project site.
SWIMS	6701 Armstrong Rd West of Falcon Way, less than ¼ mile west of the project site	Contra Costa County Site List	Listings do not indicate a release has occurred.
Byron Hot Springs	North of Armstrong Road and west of Byron	Envirostor	The site received a no further action (NFA) determination from the

Interrogation Center	Hot Springs Road, approximately ¾ mile north of the project site		Department of Toxic Substances Control (DTSC) in May 2004 (DTSC, 2004). Due to its closed status, distance from the project site, and lack of a documented release to the environment, it is unlikely that this site has impacted environmental conditions at the project site.
Souza Ranch Landspreading Facility	Northeast of Armstrong Rd and Byron Hot Springs Rd Intersection, more than ¼ mile northeast of the project site	SWF/LF	Site is a biosolids spreading facility.
Woodmill Recycling Co.	5595 Byron Hot Springs Road Northeast of Armstrong Rd and Byron Hot Springs Rd Intersection, more than ¼ mile northeast of the project site	SWF/LF Contra Costa County Site List RGA LF	Site is a composting Facility.
Byron	Unknown	FINDS	The site listing was related to air emissions. While the site location is not known, the listing does not indicate a release to ground occurred.
Chevron Texaco Bruns	Byron Rd (milepost 225.6), approximately ½ mile east of the project site	SLIC CERS FINDS	This site is associated with a release of crude oil from a pipeline along the highway. The release case was closed by the lead regulatory agency. Based on the case closure and the distance from the project site, it is unlikely that this site has impacted the project site.

Byron Bethany Irrigation Dist.	7995 Brun, approximately a mile south of the project site	Notify 65	The listing does not indicate a release to ground occurred.
Byron Highway Shoulder Widening	Byron Hot Springs Road to 800 feet south of Rankin Road, approximately ½ mile northeast of the project site	NPDES CIWQS	The listing does not indicate a release to ground occurred.
Byron Gas & Mini Mart	4100 Byron Hwy, approximately ½ mile east of the project site	EDR Hist Auto	The listing does not indicate a release to ground occurred.
Byron Hot Springs	Byron Hot Springs	FINDS, ECHO	The listing does not indicate a release to ground occurred.

2) Agency Records Review

An agency records request for the site was submitted on February 25, 2016 to the Contra Costa Health Services Hazardous Materials Programs, which serves as the Certified Unified Program Agency (CUPA) for Contra Costa County. The files provided by the CUPA included the Hazardous Materials Business Plan (HMBP) for the Byron Airport and CUPA inspection reports (Attachment B). The files indicate the following:

- The project site is registered with the CUPA for a Hazardous Materials Business Plan/Hazardous Materials Management Plan (HMBP), Hazardous Waste Generator (HWG), and Aboveground Petroleum Storage Tanks (APSA). According to the HMBP for the airport, chemical and fuel storage at the site consists of a 10,000 gallon aviation fuel AST, an empty 1,000 gallon gasoline AST, a 200 gallon diesel AST, and a 250 gallon waste oil AST.

- On February 22, 1993, the Contra Costa County Health Services Department reported unlabeled drums of waste oil were stored open and dripping at the airport. A letter from Elaine C. Wilson, Hazardous Materials Specialist, was written and delivered to Harold White, Manager of Airports – Contra Costa County Public Works Department. The letter

contained recommendations for better management of the waste oil area. No unauthorized release case was opened in association with this leak.

- On May 12, 2000, the Contra Costa County Health Services Department reported a tanker with 100 gallons of jet fuel leaking on pavement and causing some ground contamination (3 ft x 1 ft area) at the airport. The contamination was "contained and cleaned up" according to the Incident, Notification, and Complaint Report Form reported by Mark Grosenheider, Airport Operations Specialist.

- A 2000 inspection report noted that water from washing and from the oil tank area goes to an oil/water separator and to the back field/leach field. Water runoff from the fueling operation also goes to an oil/water separator. No map was provided and it is not clear where these features are, specifically the oil/water separator(s). Dudek reviewed the August 2003 Infrastructure Study for the Byron Airport prepared by Mead & Hunt, which included information about the leach field location. The 2003 report noted that the leach field was located southwest of the airport ramp (Figure 2).

- A 2003 inspection report noted that a washpad for the airport has an oil/water separator and that 4 ASTs are present.

- Inspection reports from 2003 - 2009 note that the gasoline AST was empty.

- An HMBP for Bay Cities Refuse Service (2525 Garden Tract Road, Richmond, CA) was also included in the site file obtained from the CUPA; however, this site is not located near the project site.

3) Aerial Photograph and Topographic Map Review

In addition to the EDR review, Dudek also reviewed historical aerial photographs (Attachment C) and topographic maps (Attachment D). Sanborn Fire Insurance maps for the project site were searched, but not found by EDR (Attachment E).

Aerial Photograph Review

Dudek reviewed historical aerial photographs to determine if evidence of recognized environmental conditions can be identified on the project site. The historical aerial photographs were obtained from EDR and are included in Attachment C. The photographs reviewed were from 1949, 1958, 1967, 1974, 1981, 1993, 1998, 2005, 2006, 2009, 2010 and 2012.

- 1949 through 1958 - Land appears undeveloped within and near the project site, except for what appears to be two residential structures south of the project site and a canal and some agricultural land east of the project site and west of Byron Hot Springs Rd.

- 1967 through 1993 – The former Byron Airpark is visible in the northwestern portion of the project area. Some agricultural land is visible on the northeastern portion of the project site, adjacent to the canal.

- 1998 through 2012 – The existing Byron Airport has been constructed to replace the prior Byron Airpark. The two residential structures south of the project site are no longer visible in the aerial photograph from 1998. More airport-related structures and hangars were developed on the project site between 1998 and 2005.

Topographic Map Review

Historical topographic maps were observed within the EDR Historical Topo Map Report. The historical topographic maps reviewed were from 1911, 1914, 1916, 1940, 1952, 1953, 1968, and 2012. The topographic maps show the area surrounding the project site as undeveloped land through 1968. The current Byron Airport is labeled and the runways are visible on the topographic map for 2012.

4) National Pipeline Mapping System (NPMS)

The NPMS on-line database was reviewed on April 13, 2016 to determine if gas transmission pipelines, hazardous liquid pipelines, or liquefied natural gas (LNG) plants are located within the proposed project site. A gas transmission pipeline and a hazardous liquid (crude oil) pipeline were shown within the western portion of project site (Figure 2). A second gas transmission pipeline is located near the eastern edge of the project site.

5) Additional Site Records

Dudek reviewed the September 1985 Draft Environmental Impact Report for the Proposed East Contra Costa County Airport. The report noted the presence of the prior small, privately owned Byron Airpark in the northwestern portion of the project site. The oil and high-pressure gas pipelines noted on the NPMS search were present as of 1985. Additionally, the 1985 Draft EIR notes the presence of two fuel islands; one was located northwest of the current runway and the location of the other is unclear. It is not known if these fuel islands were associated with aboveground or underground fuel storage tanks.

Summary of Existing Conditions

The Byron Airport was opened to the public in 1994. Prior to the existing development of the Airport, the project site appeared to include the smaller Byron Airpark in the northwestern portion of the project site, an agricultural area in the eastern portion of the project site, and two residences near the central portion of the project site. Some of the surrounding land was developed for agriculture and residences as early as 1949. The project site currently contains vacant land and land adjacent to structures associated with the function of the Airport, such as a terminal, hangars, aircraft maintenance, fueling facilities, airport administrative offices, etc. The surrounding area consists of airport-related structures, some residential development, and agricultural and vacant land. The proposed rezoning of the Airport would allow aviation uses, light industrial uses, and some light commercial uses within the project site.

The project site was identified in the EDR report as being listed in databases associated with aboveground petroleum storage tanks and generation and off-site disposal of hazardous materials. The site was also listed in the SWEEPS UST database, which may be associated with a possible UST on the former Byron Airpark site. It is not known if the potential UST was removed or where it was located. No information about a UST was included in the CUPA files reviewed. However, an additional site document reviewed indicated the former presence of two fuel islands, one of which appears to have been located in the northern portion of the project site.

Information regarding the use of hazardous materials at the project site was obtained from the Contra Costa Health Services Department and other records reviewed. The files indicate the following fuel and oil storage, use, and releases at or adjacent to the project site:

- 10,000 gallon aviation fuel AST
- 1,000 gallon gasoline AST
- 200 gallon diesel AST (adjacent)
- 250 gallon waste oil AST
- 100 gallon aviation fuel release (remediated)
- Former fuel islands indicate the potential presence of underground storage tanks or an additional fuel AST. Additionally, the EDR report indicates a UST was present on or near the project site in 1991.
- Minor releases from waste oil drums
- At least one oil/water separator, apparently located near the 250 gallon waste oil AST (Figure 2). Another oil/water separator may be located near the aviation fuel AST.
- Water from the oil/water separator(s) runs to the leach field.
- A hazardous liquid (crude oil) pipeline is located in the western portion of the project site (Figure 2).

Based on a review of the EDR report, it is not likely that operations or releases at surrounding sites have impacted environmental conditions at the project site. Additionally, based on review of historical aerial photographs, it appears that an area in the eastern portion of the project site was used for agriculture from the 1960s until the 1980s. Pesticides may have been used at the project site during this time.

Recommendations

Based on available information regarding the storage and use of fuel and oil at the project site, it is likely that future operations at the project site will also involve similar storage, use and disposal of fuel and oil. These hazardous materials should be safely managed in accordance with local, state and federal regulations.

As the quantities of hazardous materials handled by the airport currently, and will likely still, equal or exceed 55 gallons of liquid, 500 pounds of solids and/or 200 cubic feet of a compressed gas at any time, a Hazardous Materials Business Plan (HMBP) must be prepared/updated for the project site and submitted to the CUPA via the California Environmental Reporting System (CERS). The HMBP must include an inventory of hazardous materials, present a site map identifying locations of hazardous materials and safety equipment, and address preparedness for emergency response to incidents involving hazardous materials.

Likewise, as the project site involves the above ground storage of an aggregate quantity of 1,320 gallons or more of petroleum or petroleum products, a Spill Prevention Control and Countermeasure (SPCC) plan must be prepared/updated and implemented.

Accumulation, management and disposal of hazardous waste is regulated by the California Department of Toxic Substances Control (DTSC) and the United States Environmental Protection Agency (EPA). Under federal regulation (RCRA), waste is classified as hazardous based on the process that generated it (listed waste) or its characteristics of ignitibility, reactivity, corrosion and/or toxicity. California mandates further criteria for hazardous waste in addition to those established under RCRA. Once classified as hazardous, waste must not accumulate longer than 90 days for large quantity generators (LQGs) and 180 days (or 270 days if the distance to the TSD is more than 200 miles) for SQGs. These accumulation times begin as soon as the waste begins accumulating. For CESQGs, hazardous waste can accumulate for 180 days (or 270 days if the distance to the TSD is more than 200 miles) once 100 kg of hazardous waste has accumulated. Waste considered acutely or extremely hazardous must be removed within 90 days for SQGs and CESQGs. Hazardous and non-hazardous waste must be stored, labeled and manifested in accordance with state and federal regulations, including those summarized in the Hazardous Waste

Generator Requirements (DTSC, 2002). Waste oil, which is currently generated at the airport and will likely continue to be generated, is the only California-hazardous waste anticipated for the project site.

General standards for airport fueling operations are presented in the 2015 Airport Cooperative Research Program Synthesis 63, *Overview of Airport Fueling System Operations*.

While there have been no known releases to the subsurface (other than minor releases from drums and a fuel release to the surface that was cleaned up), it is possible that subsurface releases/contamination have occurred in areas of fuel/oil storage and use (areas near the ASTs, wash rack, oil/water separator(s), crude oil pipeline, leach field, former fuel islands, and potential UST(s)).

Due to the potential impacts in these areas (discussed in the prior paragraph), precautions should be taken in the event that impacted soil and/or groundwater is encountered during construction. A hazardous materials contingency plan should be prepared and should specify measures to be taken to protect worker and public health and safety and measures to be taken to manage and remediate wastes. The plan should highlight the areas of potential soil and/or groundwater contamination. The plan should include the following:

- Identification of areas of potential fuel or oil impacts.
- Known environmental setting (e.g. depth to groundwater anticipated around 5-15 feet below ground surface based on the depth to water measurements at the near-by Chevron site).
- Discussion about identification of suspected contaminated soils.
- Procedures for temporary cessation of construction activity and evaluation of the level of environmental concern.
- Procedures for limiting access to the contaminated area to properly trained personnel.
- Procedures for notification and reporting, including internal management and local agencies, as needed.
- A worker health and safety plan for excavation of contaminated soil and/or groundwater.
- Procedures for characterizing and managing excavated soils.
- Procedures for certification of completion of remediation.

While potential oil and fuel releases can be identified during construction using visual and odor indicators and air monitoring, potential pesticides impacts are not easily identified during

construction. Therefore, Dudek recommends collection of shallow soil samples for pesticide analysis in areas of former agricultural use prior to construction (Figure 2).

References

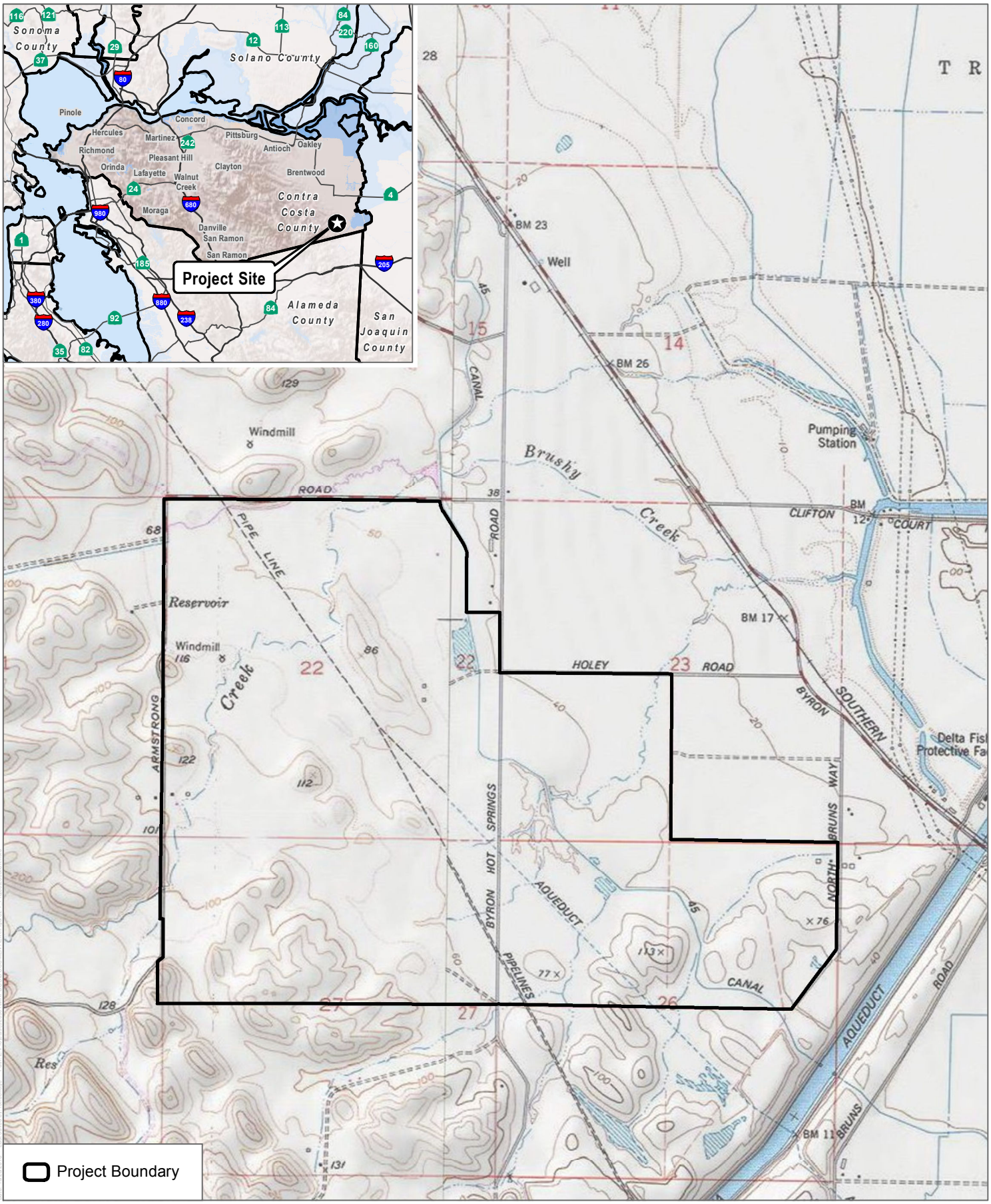
AECOM, 2015. Additional Subsurface Investigation Work Plan. July 28.

Contra Costa County, 2005. Byron Airport Master Plan. Prepared by Leigh Fisher Associates. June 2005.

DTSC, 2004. No Further Department of Defense Actions Indicated, Letter. May 19.

SAIC Energy, 2011. Human Health Screening Evaluation Holey-Byron Road. June 21.

SAIC Energy, 2012. No Further Action Required Request Report Holey-Byron Road. March 28.



SOURCE: USGS 7.5-Minute Series Byron Hot Springs & Clifton Court Forebay Quadrangles

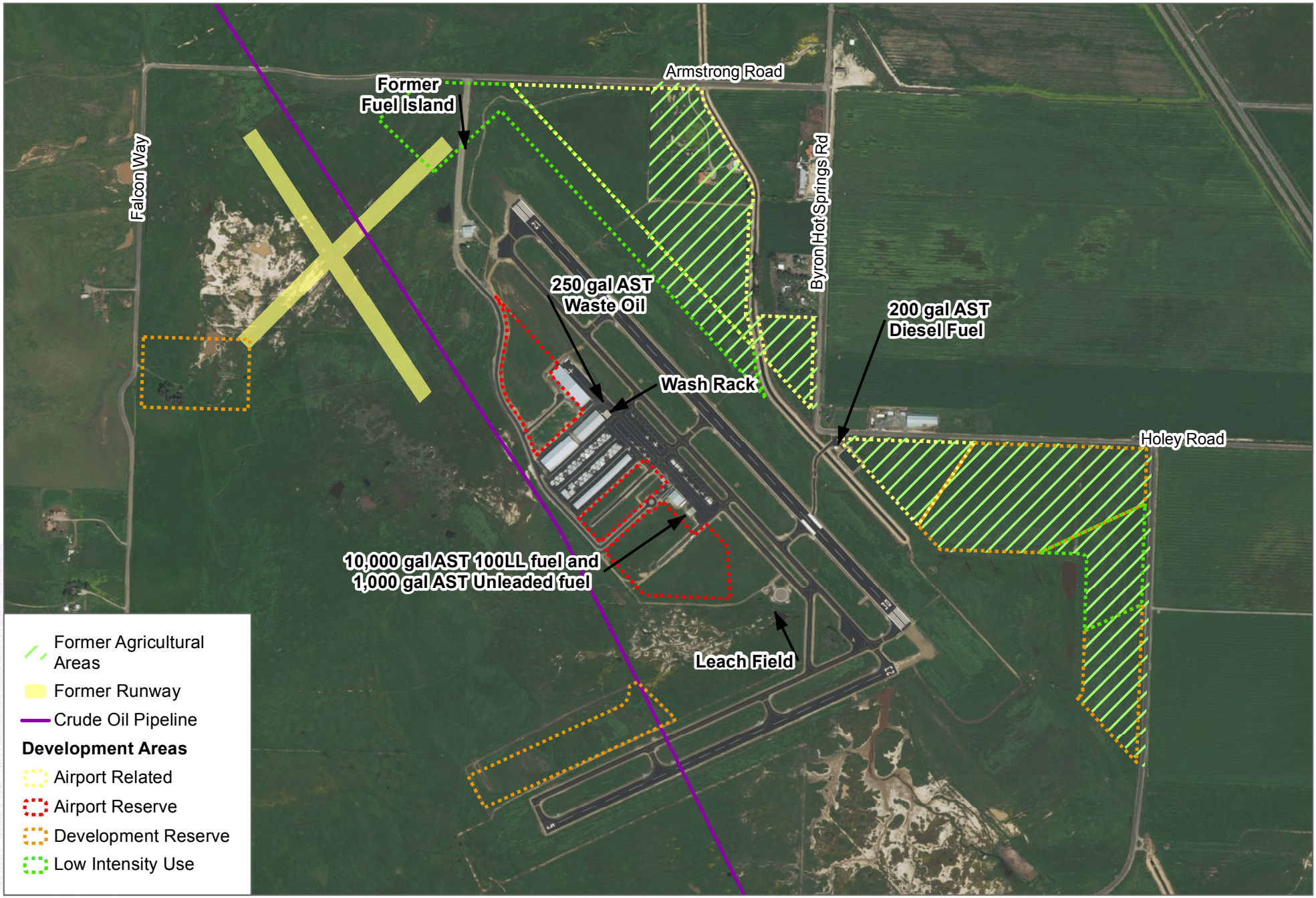
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Byron Airport Hazards Assessment



SOURCE: ESRI 2019

DUDEK

0 500 1,000 Feet

FIGURE 2

Hazards Site Map

Byron Airport Hazards Assessment

ATTACHMENTS

ATTACHMENT A

Environmental Data Resources, Inc. Report

Byron Airport
Byron Airport
Byron, CA 94514

Inquiry Number: 5493859.2s
November 26, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

BYRON AIRPORT
BYRON, CA 94514

COORDINATES

Latitude (North):	37.8291510 - 37° 49' 44.94''
Longitude (West):	121.6269570 - 121° 37' 37.04''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	620834.6
UTM Y (Meters):	4187542.0
Elevation:	59 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5640632 BYRON HOT SPRINGS, CA
Version Date:	2012
East Map:	5640050 CLIFTON COURT FOREBAY, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140606
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
BYRON AIRPORT
BYRON, CA 94514

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	REDSTAR AIRSHOWS INC	760 OSPREY CT	AST, CONTRA COSTA CO. SITE LIST, CERS TANKS, CERS,...	Higher	1 ft.
A2	CONTRA COSTA COUNTY	500 EAGLE CT	AST, NPDES, CONTRA COSTA CO. SITE LIST, WDS, CERS...	Higher	1 ft.
A3	BYRON AIRPORT	500 EAGLE CT	HAZNET	Higher	1 ft.
A4	CCC BYRON AIRPORT	500 EAGLE CT	FINDS	Higher	1 ft.
A5	BAY AREA SKYDIVING	505 EAGLE CT	AST, CONTRA COSTA CO. SITE LIST, CERS	Higher	1 ft.
6	BYRON	UNKNOWN	FINDS	Lower	1 ft.
7	CHEVRON, HOLEY-BYRON	HOLEY ROAD	CPS-SLIC, CERS	Lower	44, 0.008, ENE
8	BAY AREA SKYDIVING	6901 FALCON WAY	CONTRA COSTA CO. SITE LIST, CERS TANKS, CERS	Lower	49, 0.009, NNW
9	SWIMS	6701 ARMSTRONG RD	CONTRA COSTA CO. SITE LIST	Higher	146, 0.028, West
10	AIRPORT RANCH SLUDGE	HOLEY ROAD	SWF/LF	Lower	242, 0.046, ENE
11	SOUZA RANCH LANDSPRE	ARMSTRONG ROAD VIA B	SWF/LF	Higher	2168, 0.411, WNW
12	WOODMILL RECYCLING C	5595 BYRON HOT SPRIN	SWF/LF, CONTRA COSTA CO. SITE LIST	Lower	2413, 0.457, NNE
13	CHEVRONTEXACO, BRUNS	BYRON RD (MILEPOST 2	CPS-SLIC, CERS	Lower	2424, 0.459, East
14	BYRON HOT SPRINGS IN		ENVIROSTOR	Higher	3609, 0.684, NNW
15	BYRON BETHANY IRRIGA	7995 BRUN	Notify 65	Lower	5180, 0.981, SE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ..... Sites with Institutional Controls

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File

EXECUTIVE SUMMARY

ABANDONED MINES	Abandoned Mines
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WIP	Well Investigation Program Case List
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
UIC GEO	UIC GEO (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 07/30/2018 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BYRON HOT SPRINGS IN Facility Id: 80000377 Status: Inactive - Needs Evaluation		NNW 1/2 - 1 (0.684 mi.)	14	59

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, has revealed that there are 3 SWF/LF sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
SOUZA RANCH LANDSPRE Database: SWF/LF (SWIS), Date of Government Version: 08/08/2018 Facility ID: 07-AA-0038 Operational Status: Active Regulation Status: Exempt	ARMSTRONG ROAD VIA B	WNW 1/4 - 1/2 (0.411 mi.)	11	56

Lower Elevation	Address	Direction / Distance	Map ID	Page
AIRPORT RANCH SLUDGE Database: SWF/LF (SWIS), Date of Government Version: 08/08/2018	HOLEY ROAD	ENE 0 - 1/8 (0.046 mi.)	10	55

Facility ID: 07-AA-0054
Operational Status: Active
Regulation Status: Exempt

WOODMILL RECYCLING C ***5595 BYRON HOT SPRIN*** ***NNE 1/4 - 1/2 (0.457 mi.)*** ***12*** ***56***
Database: SWF/LF (SWIS), Date of Government Version: 08/08/2018
Facility ID: 07-AA-0062
Facility ID: 07-AA-0064
Operational Status: Active
Regulation Status: Notification

State and tribal leaking storage tank lists

CPS-SLIC: Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the CPS-SLIC list, as provided by EDR, has revealed that there are 2 CPS-SLIC sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHEVRON, HOLEY-BYRON	***HOLEY ROAD***	***ENE 0 - 1/8 (0.008 mi.)***	***7***	***49***
Database: CPS-SLIC, Date of Government Version: 09/10/2018 Facility Status: Completed - Case Closed Global Id: SL0601316394				
CHEVRONTEXACO, BRUNS	***BYRON RD (MILEPOST 2***	***E 1/4 - 1/2 (0.459 mi.)***	***13***	***58***
Database: CPS-SLIC, Date of Government Version: 09/10/2018 Facility Status: Completed - Case Closed Global Id: SL0601319412				

State and tribal registered storage tank lists

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there are 3 AST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDSTAR AIRSHOWS INC	***760 OSPREY CT***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
Database: AST, Date of Government Version: 07/06/2016				
CONTRA COSTA COUNTY	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***
Database: AST, Date of Government Version: 07/06/2016				
BAY AREA SKYDIVING	***505 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A5***	***47***
Database: AST, Date of Government Version: 07/06/2016				

EXECUTIVE SUMMARY

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 07/23/2018 has revealed that there are 2 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDSTAR AIRSHOWS INC	***760 OSPREY CT***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
CONTRA COSTA COUNTY	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***

Local Lists of Registered Storage Tanks

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 07/23/2018 has revealed that there are 3 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDSTAR AIRSHOWS INC	***760 OSPREY CT***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
CONTRA COSTA COUNTY	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***

Lower Elevation	Address	Direction / Distance	Map ID	Page
BAY AREA SKYDIVING	***6901 FALCON WAY***	***NNW 0 - 1/8 (0.009 mi.)***	***8***	***50***

Other Ascertainable Records

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 08/07/2018 has revealed that there are 2 FINDS sites within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CCC BYRON AIRPORT Registry ID:: 110055657828	500 EAGLE CT	0 - 1/8 (0.000 mi.)	A4	47

Lower Elevation	Address	Direction / Distance	Map ID	Page
BYRON	UNKNOWN	0 - 1/8 (0.000 mi.)	6	48

EXECUTIVE SUMMARY

Registry ID:: 110037989558

HAZNET: The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000-1,000,000 annually, representing approximately 350,000-500,000 shipments. Data from non-California manifests & continuation sheets are not included at the present time. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, & disposal method. The source is the Department of Toxic Substance Control is the agency. This database begins with calendar year 1993.

A review of the HAZNET list, as provided by EDR, and dated 12/31/2017 has revealed that there is 1 HAZNET site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BYRON AIRPORT GEPAID: CAL000112340	500 EAGLE CT	0 - 1/8 (0.000 mi.)	A3	45

NPDES: A listing of NPDES permits, including stormwater.

A review of the NPDES list, as provided by EDR, and dated 08/09/2018 has revealed that there is 1 NPDES site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CONTRA COSTA COUNTY Facility Status: Active	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***

Notify 65: Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

A review of the Notify 65 list, as provided by EDR, and dated 09/19/2018 has revealed that there is 1 Notify 65 site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
BYRON BETHANY IRRIGA	7995 BRUN	SE 1/2 - 1 (0.981 mi.)	15	60

CONTRA COSTA CO. SITE LIST: Lists includes sites from the Underground Tank Program, Hazardous Waste Generator Program & Business Plan 12185 Program

A review of the CONTRA COSTA CO. SITE LIST list, as provided by EDR, and dated 08/20/2018 has revealed that there are 5 CONTRA COSTA CO. SITE LIST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDSTAR AIRSHOWS INC Facility Id: FA0037833	***760 OSPREY CT***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
CONTRA COSTA COUNTY Facility Id: FA0033495	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***
BAY AREA SKYDIVING	***505 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A5***	***47***

Facility Id: FA0037832

SWIMS Facility Id: FA0031250	6701 ARMSTRONG RD	W 0 - 1/8 (0.028 mi.)	9	54

Lower Elevation	Address	Direction / Distance	Map ID	Page
BAY AREA SKYDIVING Facility Id: FA0041104	***6901 FALCON WAY***	***NNW 0 - 1/8 (0.009 mi.)***	***8***	***50***

WDS: California Water Resources Control Board - Waste Discharge System.

A review of the WDS list, as provided by EDR, and dated 06/19/2007 has revealed that there is 1 WDS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CONTRA COSTA COUNTY Facility Status: A Facility Id: 5S07I002606	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 09/04/2018 has revealed that there is 1 CIWQS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CONTRA COSTA COUNTY	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***

CERS: The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

A review of the CERS list, as provided by EDR, and dated 07/23/2018 has revealed that there are 3 CERS sites within approximately 0.001 miles of the target property.

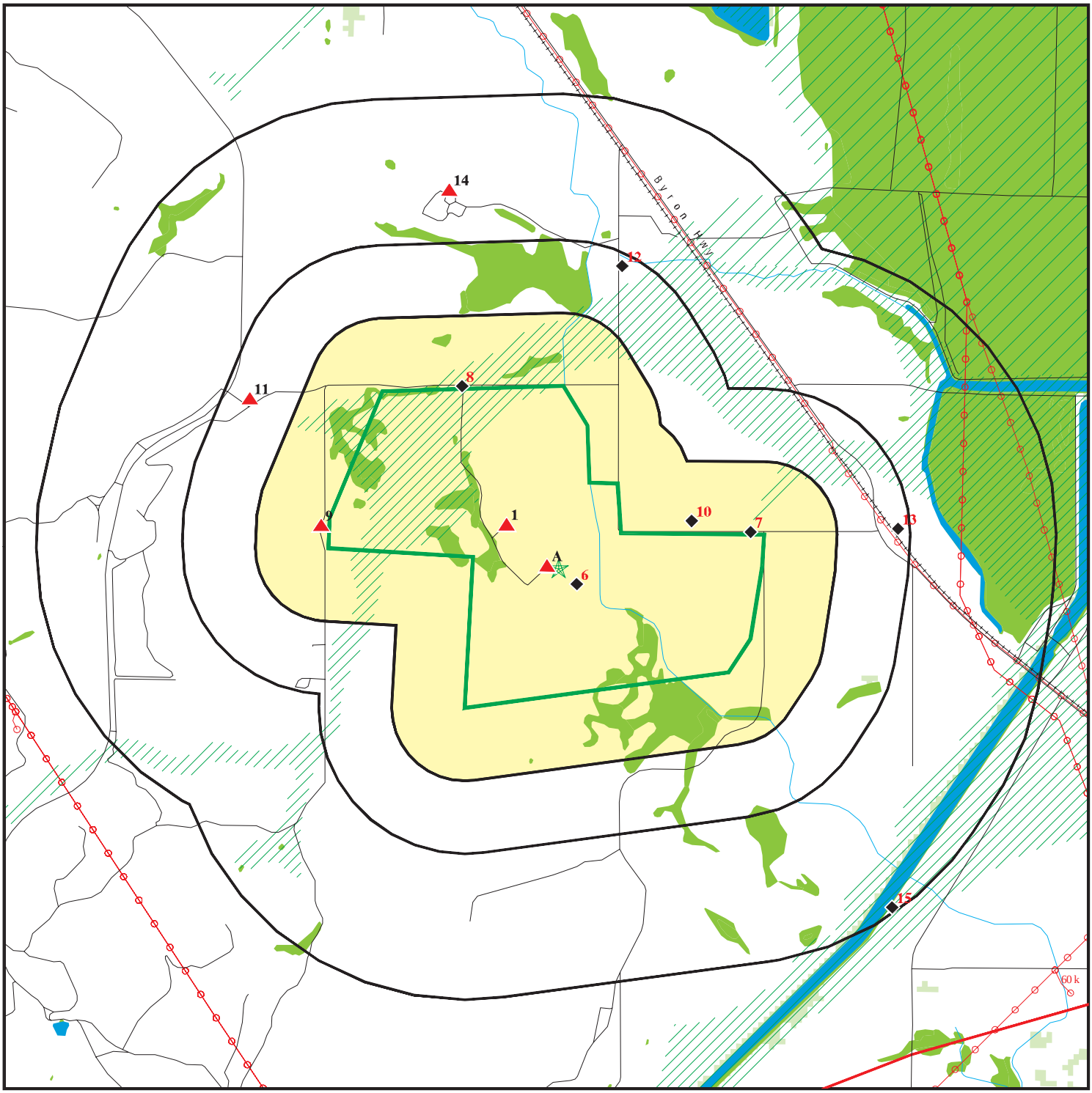
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
REDSTAR AIRSHOWS INC	***760 OSPREY CT***	***0 - 1/8 (0.000 mi.)***	***1***	***8***
CONTRA COSTA COUNTY	***500 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A2***	***22***
BAY AREA SKYDIVING	***505 EAGLE CT***	***0 - 1/8 (0.000 mi.)***	***A5***	***47***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 14 records.

Site Name	Database(s)
BYRON HIGHWAY SHOULDER IMPROVE	CIWQS
EAST BYRON BOYS RNCH	NPDES, CIWQS
BYRON HIGHWAY SHOULDER WIDENING	NPDES
BYRON AIRPORT BYRON JET CENTER	NPDES
BYRON AIRPORT	SWEEPS UST
CHEVRONTEXACONA BRUNSNA BYRON	FINDS
BYRON HOT SPRINGS	FINDS, ECHO
CONTRA COSTA COUNTY BYRON AIRPORT	FINDS, ECHO
CHEVRONNA HOLEY-BYRON ROADNA BYRON	FINDS
BYRON GAS & MINI MART	EDR Hist Auto
BYRON HOTSPRINGS LANDSPREADING	RGA LF
BYRON HOT SPRINGS RD. TIRE PILE	RGA LF
BYRON HOT SPRINGS LANDSPREADING	RGA LF
AIRPORT RANCH SLUDGE SPREADING	RGA LF

OVERVIEW MAP - 5493859.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Byron Airport	CLIENT:	Dudek & Associates
ADDRESS:	Byron Airport Byron CA 94514	CONTACT:	Nicole Peacock
		INQUIRY #:	5493859.2s
LAT/LONG:	37.829151 / 121.626957	DATE:	November 26, 2018 4:21 pm

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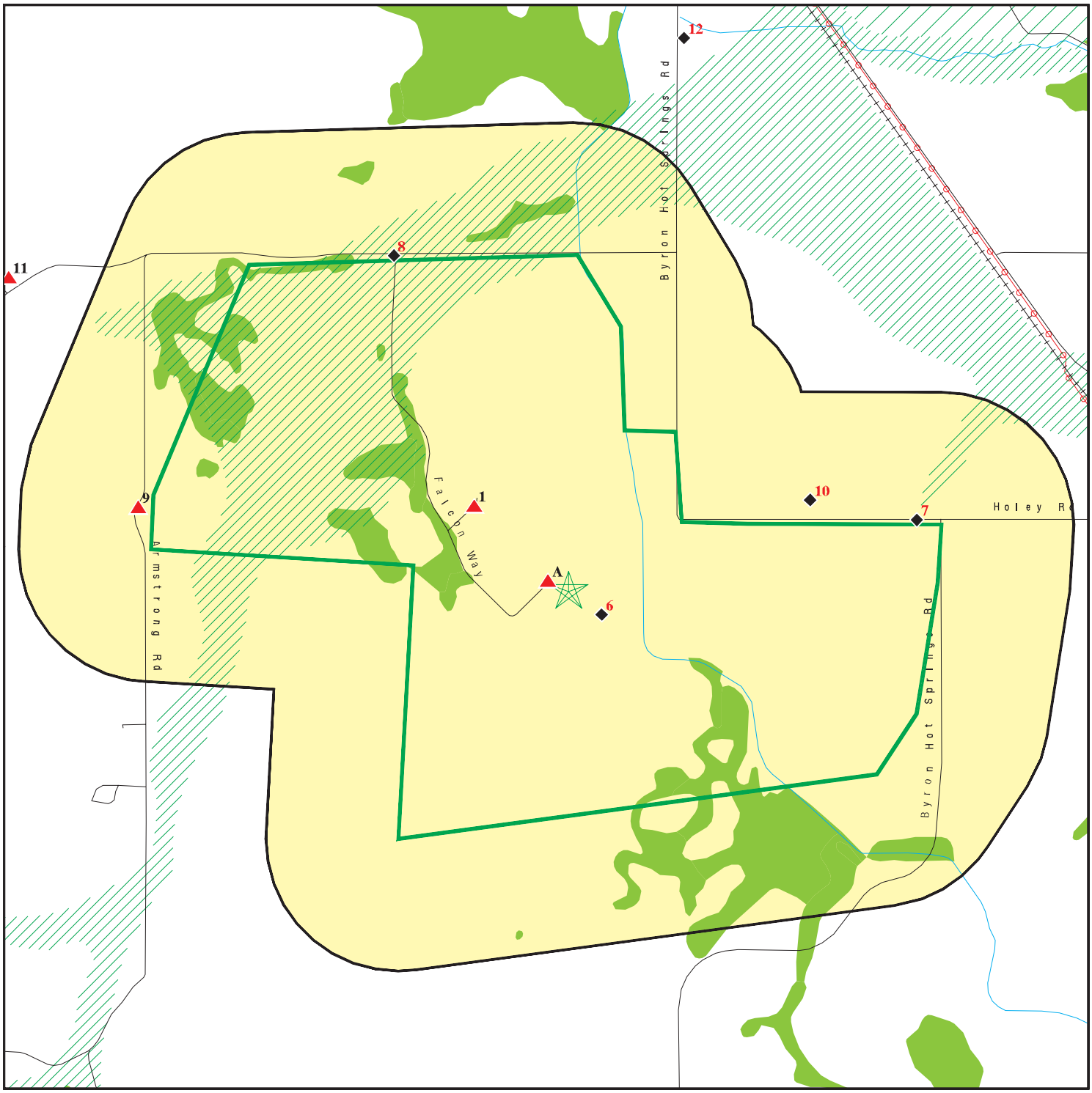
DETAIL MAP - 5493859.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Byron Airport	CLIENT:	Dudek & Associates
ADDRESS:	Byron Airport Byron CA 94514	CONTACT:	Nicole Peacock
		INQUIRY #:	5493859.2s
LAT/LONG:	37.829151 / 121.626957	DATE:	November 26, 2018 4:25 pm

Copyright © 2018 EDR, Inc. © 2015 TomTom Rel. 2015.

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		1	0	2	NR	NR	3
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		1	0	1	NR	NR	2
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		3	0	NR	NR	NR	3
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		2	0	NR	NR	NR	2
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		3	0	NR	NR	NR	3
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		2	NR	NR	NR	NR	2
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		1	NR	NR	NR	NR	1
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		1	NR	NR	NR	NR	1
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	1	NR	1
CONTRA COSTA CO. SITE LIST	0.250		5	0	NR	NR	NR	5
UIC	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		1	NR	NR	NR	NR	1
WIP	0.250		0	0	NR	NR	NR	0
CIWQS	0.001		1	NR	NR	NR	NR	1
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		3	NR	NR	NR	NR	3
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	24	0	3	2	0	29

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **REDSTAR AIRSHOWS INC.** **AST** **S118648332**
760 OSPREY CT **CONTRA COSTA CO. SITE LIST** **N/A**
< 1/8 **BYRON, CA 94514** **CERS TANKS**
1 ft. **CERS**
CERS HAZ WASTE

Relative: Higher
Actual: 84 ft.

AST:

Certified Unified Program Agencies:	Not reported
Owner:	Randy Howell
Total Gallons:	Not reported
CERSID:	10667140
Facility ID:	07-000-775259
Business Name:	Redstar Airshows Inc.
Phone:	9254371035
Fax:	Not reported
Mailing Address:	760 Osprey Court
Mailing Address City:	Byron
Mailing Address State:	CA
Mailing Address Zip Code:	94514
Operator Name:	Randy Howell
Operator Phone:	9254371035
Owner Phone:	925-437-1035
Owner Mail Address:	5592 Drakes Drive
Owner State:	CA
Owner Zip Code:	94505
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000416088

CONTRA COSTA CO. SITE LIST:

Facility ID:	FA0037833
Billing Status:	ACTIVE, BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	APSA: <10K GALLONS
Region:	CONTRA COSTA
Cupa Number:	775259

Facility ID:	FA0037833
Billing Status:	ACTIVE, BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	HMBP: >10K-100K LBS, 0-19 EMPLOYEES
Region:	CONTRA COSTA
Cupa Number:	775259

Facility ID:	FA0037833
Billing Status:	ACTIVE, BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	HWG: REPORTED ZERO
Region:	CONTRA COSTA
Cupa Number:	775259

CERS TANKS:

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Site ID: 367439
CERS ID: 10667140
CERS Description: Aboveground Petroleum Storage

Violations:

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.95 Multiple Sections - California Health and Safety Code, Chapter 6.95, Section(s) Multiple Sections
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 04/26/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.67 Multiple Sections - California Health and Safety Code, Chapter 6.67, Section(s) Multiple Sections
Violation Description: APSA Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 06/06/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.95 Multiple Sections - California Health and Safety Code, Chapter 6.95, Section(s) Multiple Sections
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 06/20/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.5 Multiple - California Health and Safety Code, Chapter 6.5, Section(s) Multiple
Violation Description: Haz Waste Generator Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 04/08/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Evaluation:

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Contra Costa County Health Services Department
Entity Title:	Not reported
Affiliation Address:	4585 Pacheco BlvdSuite 100
Affiliation City:	Martinez
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94553
Affiliation Phone:	(925) 335-3200

Affiliation Type Desc:	Document Preparer
Entity Name:	Ginette Huot
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Ginette Huot
Entity Title:	Not reported
Affiliation Address:	1360 Sunflower Ln
Affiliation City:	Brentwood
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94513
Affiliation Phone:	(925) 437-3630

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	760 Osprey Court
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94514
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Ginette Huot
Entity Title:	Administrator
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	5592 Drakes Drive
Affiliation City:	Discovery Bay
Affiliation State:	CA

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Affiliation Country:	United States
Affiliation Zip:	94505
Affiliation Phone:	(925) 437-1035
Affiliation Type Desc:	Operator
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 437-1035
Affiliation Type Desc:	Parent Corporation
Entity Name:	Redstar Airshows Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CERS TANKS:

Site ID:	367439
CERS ID:	10667140
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	367439
Site Name:	Redstar Airshows Inc.
Violation Date:	04-05-2016
Citation:	HSC 6.95 Multiple Sections - California Health and Safety Code, Chapter 6.95, Section(s) Multiple Sections
Violation Description:	Business Plan Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 04/26/2016.
Violation Division:	Contra Costa County Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	367439
Site Name:	Redstar Airshows Inc.
Violation Date:	04-05-2016
Citation:	HSC 6.67 Multiple Sections - California Health and Safety Code, Chapter 6.67, Section(s) Multiple Sections
Violation Description:	APSA Program - Administration/Documentation - General
Violation Notes:	Returned to compliance on 06/06/2016.
Violation Division:	Contra Costa County Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	367439
Site Name:	Redstar Airshows Inc.
Violation Date:	04-05-2016
Citation:	HSC 6.95 Multiple Sections - California Health and Safety Code,

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Chapter 6.95, Section(s) Multiple Sections
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 06/20/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.5 Multiple - California Health and Safety Code, Chapter 6.5, Section(s) Multiple
Violation Description: Haz Waste Generator Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 04/08/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Contra Costa County Health Services Department
Entity Title: Not reported
Affiliation Address: 4585 Pacheco BlvdSuite 100
Affiliation City: Martinez
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94553
Affiliation Phone: (925) 335-3200

Affiliation Type Desc: Document Preparer
Entity Name: Ginette Huot
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Ginette Huot
Entity Title: Not reported
Affiliation Address: 1360 Sunflower Ln
Affiliation City: Brentwood
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94513
Affiliation Phone: (925) 437-3630

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	760 Osprey Court
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94514
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Ginette Huot
Entity Title:	Administrator
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	5592 Drakes Drive
Affiliation City:	Discovery Bay
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94505
Affiliation Phone:	(925) 437-1035

Affiliation Type Desc:	Operator
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 437-1035

Affiliation Type Desc:	Parent Corporation
Entity Name:	Redstar Airshows Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CERS HAZ WASTE:

Site ID:	367439
CERS ID:	10667140
CERS Description:	Hazardous Waste Generator

Violations:

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.95 Multiple Sections - California Health and Safety Code, Chapter 6.95, Section(s) Multiple Sections
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 04/26/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.67 Multiple Sections - California Health and Safety Code, Chapter 6.67, Section(s) Multiple Sections
Violation Description: APSA Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 06/06/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.95 Multiple Sections - California Health and Safety Code, Chapter 6.95, Section(s) Multiple Sections
Violation Description: Business Plan Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 06/20/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Violation Date: 04-05-2016
Citation: HSC 6.5 Multiple - California Health and Safety Code, Chapter 6.5, Section(s) Multiple
Violation Description: Haz Waste Generator Program - Administration/Documentation - General
Violation Notes: Returned to compliance on 04/08/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-05-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 06-20-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 367439
Site Name: Redstar Airshows Inc.
Site Address: 760 OSPREY CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 04-05-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Contra Costa County Health Services Department
Entity Title: Not reported

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Affiliation Address:	4585 Pacheco BlvdSuite 100
Affiliation City:	Martinez
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94553
Affiliation Phone:	(925) 335-3200
Affiliation Type Desc:	Document Preparer
Entity Name:	Ginette Huot
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Ginette Huot
Entity Title:	Not reported
Affiliation Address:	1360 Sunflower Ln
Affiliation City:	Brentwood
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94513
Affiliation Phone:	(925) 437-3630
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	760 Osprey Court
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94514
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Ginette Huot
Entity Title:	Administrator
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	5592 Drakes Drive
Affiliation City:	Discovery Bay
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94505
Affiliation Phone:	(925) 437-1035

REDSTAR AIRSHOWS INC. (Continued) **S118648332**

Affiliation Type Desc:	Operator
Entity Name:	RANDY HOWELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 437-1035

Affiliation Type Desc:	Parent Corporation
Entity Name:	Redstar Airshows Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

A2 **CONTRA COSTA COUNTY BYRON AIRPORT** **AST** **S104578189**
500 EAGLE CT **NPDES** **N/A**
< 1/8 **BYRON, CA 94514** **CONTRA COSTA CO. SITE LIST**
1 ft. **WDS**
Site 1 of 4 in cluster A **CERS TANKS**
CERS HAZ WASTE
Relative: **CERS**
Higher **CIWQS**
Actual:
65 ft.

AST:

Certified Unified Program Agencies:	Not reported
Owner:	CCC BYRON AIRPORT
Total Gallons:	Not reported
CERSID:	10011013
Facility ID:	07-000-770985
Business Name:	CCC BYRON AIRPORT
Phone:	9256340147
Fax:	9256465731
Mailing Address:	550 Sally Ride Drive
Mailing Address City:	Concord
Mailing Address State:	CA
Mailing Address Zip Code:	94520
Operator Name:	CCC PUBLIC WORKS
Operator Phone:	8443598687
Owner Phone:	8443598687
Owner Mail Address:	550 Sally Ride Drive
Owner State:	CA
Owner Zip Code:	94520
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000112340

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Certified Unified Program Agencies:	Contra Costa
Owner:	Not reported
Total Gallons:	10,000
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

NPDES:

Facility Status:	Active
NPDES Number:	CAS000001
Region:	5S
Agency Number:	0
Regulatory Measure ID:	198150
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	5S07I002606
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/01/1992
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	550 Sally Ride Dr
Discharge Name:	Contra Costa Cnty
Discharge City:	Concord
Discharge State:	California
Discharge Zip:	94520
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	198150
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S07I002606
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	04/01/1992
Status:	Active
Status Date:	04/01/1992
Place Size:	368
Place Size Unit:	Acres
Contact:	Daniel Wick
Contact Title:	Administrative Analyst I
Contact Phone:	925-681-4202
Contact Phone Ext:	Not reported
Contact Email:	Daniel.Wick@airport.cccounty.us
Operator Name:	Contra Costa Cnty
Operator Address:	550 Sally Ride Dr
Operator City:	Concord
Operator State:	California
Operator Zip:	94520
Operator Contact:	Keith Freitas
Operator Contact Title:	Director of Airports
Operator Contact Phone:	925-681-4200
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	keith.freitas@airport.cccounty.us
Operator Type:	Other
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	925-681-4200
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	California Delta
Certifier:	Keith Freitas
Certifier Title:	Director of Airports
Certification Date:	29-JUN-15
Primary Sic:	4581-Airports, Flying Fields, and Airport Terminal Services
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5S
Regulatory Measure ID:	198150
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S07I002606
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/01/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Contra Costa Cnty
Discharge Address:	550 Sally Ride Dr
Discharge City:	Concord
Discharge State:	California
Discharge Zip:	94520
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5S07I002606
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Discharge Zip:	Not reported
Status:	Active
Status Date:	04/01/1992
Operator Name:	Contra Costa Cnty
Operator Address:	550 Sally Ride Dr
Operator City:	Concord
Operator State:	California
Operator Zip:	94520

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5S
Regulatory Measure ID:	198150
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5S07I002606
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	05/09/2008
Processed Date:	04/01/1992
Status:	Active
Status Date:	04/01/1992
Place Size:	368
Place Size Unit:	Acres
Contact:	Daniel Wick
Contact Title:	Administrative Analyst I
Contact Phone:	925-681-4202
Contact Phone Ext:	Not reported
Contact Email:	Daniel.Wick@airport.cccounty.us
Operator Name:	Contra Costa Cnty
Operator Address:	550 Sally Ride Dr
Operator City:	Concord
Operator State:	California
Operator Zip:	94520
Operator Contact:	Keith Freitas
Operator Contact Title:	Director of Airports
Operator Contact Phone:	925-681-4200
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	keith.freitas@airport.cccounty.us
Operator Type:	Other
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Constype Linear Utility Ind:	Not reported
Emergency Phone:	925-681-4200
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	California Delta
Certifier:	Keith Freitas
Certifier Title:	Director of Airports
Certification Date:	29-JUN-15
Primary Sic:	4581-Airports, Flying Fields, and Airport Terminal Services
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5S
Regulatory Measure ID:	198150
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5S07I002606
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/01/1992
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Contra Costa Cnty
Discharge Address:	550 Sally Ride Dr
Discharge City:	Concord
Discharge State:	California
Discharge Zip:	94520
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CONTRA COSTA CO. SITE LIST:

Facility ID:	FA0033495
Billing Status:	INACTIVE, NON-BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	UNDERGROUND STORAGE TANK SITE
Region:	CONTRA COSTA
Cupa Number:	770985

Facility ID: FA0033495

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Billing Status: ACTIVE, BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: APSA: 10K - <100K GALLONS
Region: CONTRA COSTA
Cupa Number: 770985

Facility ID: FA0033495
Billing Status: ACTIVE, BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HMBP: >10K-100K LBS, 0-19 EMPLOYEES
Region: CONTRA COSTA
Cupa Number: 770985

Facility ID: FA0033495
Billing Status: ACTIVE, BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HWG: LESS THAN 5 TONS/YEAR
Region: CONTRA COSTA
Cupa Number: 770985

WDS:
Facility ID: 5S 07I002606
Facility Type: Industrial - Facility that treats and/or disposes of liquid or semisolid wastes from any servicing, producing, manufacturing or processing operation of whatever nature, including mining, gravel washing, geothermal operations, air conditioning, ship building and repairing, oil production, storage and disposal operations, water pumping.
Facility Status: Active - Any facility with a continuous or seasonal discharge that is under Waste Discharge Requirements.
NPDES Number: CAS000001 The 1st 2 characters designate the state. The remaining 7 are assigned by the Regional Board
Subregion: 0
Facility Telephone: 9256340147
Facility Contact: MARK GROSENHEIDER
Agency Name: CONTRA COSTA CO DPW
Agency Address: 255 Glacier Dr
Agency City,St,Zip: Martinez 945534825
Agency Contact: Mike Carlson
Agency Telephone: 9253132321
Agency Type: County
SIC Code: 0
SIC Code 2: Not reported
Primary Waste Type: Not reported
Primary Waste: Not reported
Waste Type2: Not reported
Waste2: Not reported
Primary Waste Type: Not reported
Secondary Waste: Not reported
Secondary Waste Type: Not reported
Design Flow: 0
Baseline Flow: 0
Reclamation: Not reported
POTW: Not reported
Treat To Water: Minor Threat to Water Quality. A violation of a regional board order should cause a relatively minor impairment of beneficial uses compared to a major or minor threat. Not: All nurds without a TTWQ will be

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

considered a minor threat to water quality unless coded at a higher Level. A Zero (0) may be used to code those NURDS that are found to represent no threat to water quality.

Complexity: Category C - Facilities having no waste treatment systems, such as cooling water dischargers or thosewho must comply through best management practices, facilities with passive waste treatment and disposal systems, such as septic systems with subsurface disposal, or dischargers having waste storage systems with land disposal such as dairy waste ponds.

CERS TANKS:
Site ID: 103694
CERS ID: 10011013
CERS Description: Aboveground Petroleum Storage

Violations:
Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 03/17/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/01/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-22-2018
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to promptly correct visible discharges and promptly remove any accumulations of oil in diked areas.
Violation Notes: Returned to compliance on 04/17/2018. OBSERVATION: The fill box for the 10,000 gallon tank had aviation fuel in it. Due to airport procedures, the aviation fuel is checked daily resulting in the fuel being in the fill box. CORRECTIVE ACTION: By 4/21/2018, provide documentation to CCHSHMP that the fill box is free of petroleum and there is a procedure in place to prevent the aviation fuel being in the fill box.
Violation Division: Contra Costa County Health Services Department
Violation Program: APSA
Violation Source: CERS

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-08-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-08-2016
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-08-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2018
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-26-2014

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-04-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-17-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Enforcement Action:
Site ID: 103694
Site Name: CCC BYRON AIRPORT
Site Address: 500 EAGLE CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 03-08-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Site ID:	103694
Site Name:	CCC BYRON AIRPORT
Site Address:	500 EAGLE CT
Site City:	BYRON
Site Zip:	94514
Enf Action Date:	03-22-2018
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Contra Costa County Health Services Department
Enf Action Program:	APSA
Enf Action Source:	CERS

Coordinates:

Site ID:	103694
Facility Name:	CCC BYRON AIRPORT
Env Int Type Code:	HWG
Program ID:	10011013
Coord Name:	Not reported
Ref Point Type Desc:	Unknown
Latitude:	37.829353
Longitude:	-121.627546

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Contra Costa County Health Services Department
Entity Title:	Not reported
Affiliation Address:	4585 Pacheco BlvdSuite 100
Affiliation City:	Martinez
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94553
Affiliation Phone:	(925) 335-3200

Affiliation Type Desc:	Document Preparer
Entity Name:	Daniel Wick
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Daniel Wick
Entity Title:	Not reported
Affiliation Address:	550 Sally Ride Dr.
Affiliation City:	Concord
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94520
Affiliation Phone:	(925) 681-4202

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Entity Title: Not reported
Affiliation Address: 550 Sally Ride Drive
Affiliation City: Concord
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94520
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Keith Freitas
Entity Title: Director of Airports
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: CCC BYRON AIRPORT
Entity Title: Not reported
Affiliation Address: 550 Sally Ride Drive
Affiliation City: CONCORD
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94520
Affiliation Phone: (844) 359-8687

Affiliation Type Desc: Operator
Entity Name: CCC PUBLIC WORKS
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (844) 359-8687

Affiliation Type Desc: Parent Corporation
Entity Name: CCC BYRON AIRPORT
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

CERS HAZ WASTE:
Site ID: 103694
CERS ID: 10011013
CERS Description: Hazardous Waste Generator

Violations:
Site ID: 103694
Site Name: CCC BYRON AIRPORT

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 03/17/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/01/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-22-2018
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to promptly correct visible discharges and promptly remove any accumulations of oil in diked areas.
Violation Notes: Returned to compliance on 04/17/2018. OBSERVATION: The fill box for the 10,000 gallon tank had aviation fuel in it. Due to airport procedures, the aviation fuel is checked daily resulting in the fuel being in the fill box. CORRECTIVE ACTION: By 4/21/2018, provide documentation to CCHSHMP that the fill box is free of petroleum and there is a procedure in place to prevent the aviation fuel being in the fill box.
Violation Division: Contra Costa County Health Services Department
Violation Program: APSA
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-04-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-17-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Enforcement Action:
Site ID: 103694
Site Name: CCC BYRON AIRPORT
Site Address: 500 EAGLE CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 03-08-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Site Address: 500 EAGLE CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 03-22-2018
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Coordinates:
Site ID: 103694
Facility Name: CCC BYRON AIRPORT
Env Int Type Code: HWG
Program ID: 10011013

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Coord Name: Not reported
Ref Point Type Desc: Unknown
Latitude: 37.829353
Longitude: -121.627546

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Contra Costa County Health Services Department
Entity Title: Not reported
Affiliation Address: 4585 Pacheco BlvdSuite 100
Affiliation City: Martinez
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94553
Affiliation Phone: (925) 335-3200

Affiliation Type Desc: Document Preparer
Entity Name: Daniel Wick
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Daniel Wick
Entity Title: Not reported
Affiliation Address: 550 Sally Ride Dr.
Affiliation City: Concord
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94520
Affiliation Phone: (925) 681-4202

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 550 Sally Ride Drive
Affiliation City: Concord
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94520
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Keith Freitas
Entity Title: Director of Airports
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Entity Name: CCC BYRON AIRPORT
Entity Title: Not reported
Affiliation Address: 550 Sally Ride Drive
Affiliation City: CONCORD
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 94520
Affiliation Phone: (844) 359-8687

Affiliation Type Desc: Operator
Entity Name: CCC PUBLIC WORKS
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (844) 359-8687

Affiliation Type Desc: Parent Corporation
Entity Name: CCC BYRON AIRPORT
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

CERS TANKS:
Site ID: 103694
CERS ID: 10011013
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 03/17/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-08-2016
Citation: HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description: Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes: Returned to compliance on 04/01/2016.
Violation Division: Contra Costa County Health Services Department
Violation Program: HW
Violation Source: CERS

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Violation Date: 03-22-2018
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to promptly correct visible discharges and promptly remove any accumulations of oil in diked areas.
Violation Notes: Returned to compliance on 04/17/2018. OBSERVATION: The fill box for the 10,000 gallon tank had aviation fuel in it. Due to airport procedures, the aviation fuel is checked daily resulting in the fuel being in the fill box. CORRECTIVE ACTION: By 4/21/2018, provide documentation to CCHSHMP that the fill box is free of petroleum and there is a procedure in place to prevent the aviation fuel being in the fill box.
Violation Division: Contra Costa County Health Services Department
Violation Program: APSA
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-08-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-26-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-04-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-17-2018
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Enforcement Action:
Site ID: 103694
Site Name: CCC BYRON AIRPORT
Site Address: 500 EAGLE CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 03-08-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Site ID: 103694
Site Name: CCC BYRON AIRPORT
Site Address: 500 EAGLE CT
Site City: BYRON
Site Zip: 94514
Enf Action Date: 03-22-2018
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Contra Costa County Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Coordinates:
Site ID: 103694
Facility Name: CCC BYRON AIRPORT
Env Int Type Code: HWG
Program ID: 10011013
Coord Name: Not reported
Ref Point Type Desc: Unknown
Latitude: 37.829353
Longitude: -121.627546

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Contra Costa County Health Services Department
Entity Title: Not reported
Affiliation Address: 4585 Pacheco BlvdSuite 100
Affiliation City: Martinez
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94553
Affiliation Phone: (925) 335-3200

Affiliation Type Desc: Document Preparer
Entity Name: Daniel Wick
Entity Title: Not reported
Affiliation Address: Not reported

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Daniel Wick
Entity Title:	Not reported
Affiliation Address:	550 Sally Ride Dr.
Affiliation City:	Concord
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94520
Affiliation Phone:	(925) 681-4202
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	550 Sally Ride Drive
Affiliation City:	Concord
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94520
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Keith Freitas
Entity Title:	Director of Airports
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	CCC BYRON AIRPORT
Entity Title:	Not reported
Affiliation Address:	550 Sally Ride Drive
Affiliation City:	CONCORD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94520
Affiliation Phone:	(844) 359-8687
Affiliation Type Desc:	Operator
Entity Name:	CCC PUBLIC WORKS
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(844) 359-8687
Affiliation Type Desc:	Parent Corporation

CONTRA COSTA COUNTY BYRON AIRPORT (Continued) **S104578189**

Entity Name:	CCC BYRON AIRPORT
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CIWQS:

Agency:	Contra Costa Cnty
Agency Address:	550 Sally Ride Dr, Concord, CA 94520
Place/Project Type:	Industrial - Airports, Flying Fields, and Airport Terminal Services
SIC/NAICS:	4581
Region:	5S
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5S07I002606
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	04/01/1992
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	37.829316
Longitude:	-121.627645

A3 **BYRON AIRPORT** **HAZNET** **S113063896**
500 EAGLE CT **N/A**
< 1/8 **BYRON, CA 94514**
1 ft.

Site 2 of 4 in cluster A

Relative: Higher
Actual: 65 ft.

HAZNET:

envid:	S113063896
Year:	2017
GEPAID:	CAL000112340
Contact:	DANIEL WICK
Telephone:	9256814202
Mailing Name:	Not reported
Mailing Address:	550 SALLY RIDE DR
Mailing City,St,Zip:	CONCORD, CA 945205550
Gen County:	Contra Costa
TSD EPA ID:	CAD982444481
TSD County:	San Bernardino
Waste Category:	Other organic solids
Disposal Method:	Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Tons:	0.0625
Cat Decode:	Other organic solids

BYRON AIRPORT (Continued) **S113063896**

Method Decode: Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Facility County: Contra Costa

envid: S113063896
Year: 2017
GEPAID: CAL000112340
Contact: DANIEL WICK
Telephone: 9256814202
Mailing Name: Not reported
Mailing Address: 550 SALLY RIDE DR
Mailing City,St,Zip: CONCORD, CA 945205550
Gen County: Contra Costa
TSD EPA ID: MOD981123391
TSD County: 99
Waste Category: Unspecified organic liquid mixture
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.153
Cat Decode: Unspecified organic liquid mixture
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Contra Costa

envid: S113063896
Year: 2017
GEPAID: CAL000112340
Contact: DANIEL WICK
Telephone: 9256814202
Mailing Name: Not reported
Mailing Address: 550 SALLY RIDE DR
Mailing City,St,Zip: CONCORD, CA 945205550
Gen County: Contra Costa
TSD EPA ID: MOD981123391
TSD County: 99
Waste Category: Other organic solids
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.05
Cat Decode: Other organic solids
Method Decode: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Facility County: Contra Costa

envid: S113063896
Year: 2016
GEPAID: CAL000112340
Contact: DANIEL WICK
Telephone: 9256814202
Mailing Name: Not reported
Mailing Address: 550 SALLY RIDE DR
Mailing City,St,Zip: CONCORD, CA 945205550
Gen County: Contra Costa
TSD EPA ID: CAD982444481
TSD County: San Bernardino
Waste Category: Other organic solids
Disposal Method: Metals Recovery Including Retoring,Smelting,Chemicals,Ect
Tons: 0.1

BYRON AIRPORT (Continued) **S113063896**

Cat Decode: Not reported
Method Decode: Not reported
Facility County: Contra Costa

envid: S113063896
Year: 2014
GEPAID: CAL000112340
Contact: NATALIE OLESEN
Telephone: 8443598687
Mailing Name: Not reported
Mailing Address: 550 SALLY RIDE DR
Mailing City,St,Zip: CONCORD, CA 945205550
Gen County: Contra Costa
TSD EPA ID: CAD982444481
TSD County: San Bernardino
Waste Category: Unspecified oil-containing waste
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.9174
Cat Decode: Not reported
Method Decode: Not reported
Facility County: Contra Costa

Click this hyperlink while viewing on your computer to access
8 additional CA_HAZNET: record(s) in the EDR Site Report.

A4 **CCC BYRON AIRPORT** **FINDS** **1016419141**
500 EAGLE CT **N/A**
< 1/8 **BYRON, CA 94514**
1 ft.

Site 3 of 4 in cluster A

Relative: Higher
Actual: 65 ft.

FINDS:

Registry ID: 110055657828

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access
additional FINDS: detail in the EDR Site Report.

A5 **BAY AREA SKYDIVING** **AST** **S118648331**
505 EAGLE CT **CONTRA COSTA CO. SITE LIST** **N/A**
< 1/8 **BYRON, CA 94514** **CERS**
1 ft.

Site 4 of 4 in cluster A

Relative: Higher
Actual: 64 ft.

AST:
Certified Unified Program Agencies: Not reported
Owner: Aerosports Inc.
Total Gallons: Not reported
CERSID: 10667164
Facility ID: 7000775258
Business Name: Bay Area Skydiving

BAY AREA SKYDIVING (Continued) **S118648331**

Phone:	925-634-7575
Fax:	925-634-7575
Mailing Address:	P.O. Box 88
Mailing Address City:	Byron
Mailing Address State:	CA
Mailing Address Zip Code:	94514
Operator Name:	Bay Area Skydiving
Operator Phone:	925-634-7575
Owner Phone:	925-634-7575
Owner Mail Address:	P.O. Box 88
Owner State:	CA
Owner Zip Code:	94514
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

CONTRA COSTA CO. SITE LIST:

Facility ID:	FA0037832
Billing Status:	INACTIVE, NON-BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	APSA: <10K GALLONS
Region:	CONTRA COSTA
Cupa Number:	775258

Facility ID:	FA0037832
Billing Status:	INACTIVE, NON-BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	HMBP: >10K-100K LBS, 0-19 EMPLOYEES
Region:	CONTRA COSTA
Cupa Number:	775258

---

6 **BYRON** **FINDS** **1011985627**
UNKNOWN **N/A**
< 1/8 **BYRON, CA 94514**
1 ft.

FINDS:

Relative:
Lower

Registry ID: 110037989558

Actual:
53 ft.

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

7
ENE
< 1/8
0.008 mi.
44 ft.

CHEVRON, HOLEY-BYRON ROAD, BYRON
HOLEY ROAD
BYRON, CA 94514

CPS-SLIC **S108937535**
CERS **N/A**

Relative:
Lower

Actual:
29 ft.

CPS-SLIC:

Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	09/13/2012
Global Id:	SL0601316394
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5F)
Lead Agency Case Number:	Not reported
Latitude:	37.831039
Longitude:	-121.614936
Case Type:	Cleanup Program Site
Case Worker:	CDH
Local Agency:	Not reported
RB Case Number:	2050199
File Location:	Regional Board
Potential Media Affected:	Under Investigation
Potential Contaminants of Concern:	Other Solvent or Non-Petroleum Hydrocarbon
Site History:	The Site is located at the intersection of Holey Road and Byron Highway in Byron on approximately 14 acres. Historically the Old Valley Pipeline (OVP) and the Tidewater Associated Oil Company (TAOC) pipelines operated under this property. They were in operation from the early 1900s to the 1960s transporting crude oil from Bakersfield to Richmond. The Site consists of two properties: The Union Pacific Railroad (UPRR) right of way (ROW) and the Mygrant property. The Mygrant property is a large commercial area, which is currently used for grazing pastures and as a boat storage and launch facility for the Clifton Forebay. Currently Kinder Morgan Energy Partners maintains a high-pressure, petroleum-product pipeline at the Site that transports: gasoline, jet fuel and diesel. Several soil and groundwater workplans have been completed to delineate the petroleum hydrocarbon impacts condcuted 2006 - 2011. Afteran earlier investigation, RB staff concurred in a 1/28/2010 letter that the estent had been defined and a risk screening assessment could be done. In June 2011 a health screening assessment was completed by Chevron's consultant - SAIC. The aggregate excess cancer risk was determined to be 9E-07, which is below the de minimus value of 1E-06. Water Board staff concurred with the findings and a request for no further action required (NFAR) could be provided. The NFAR, dated 28 March 2012 for closure consideration was submitted for review and comment. Also, a soil and groundwater management plan was submitted for the site. The plan provides contact names and phone numbers to contact in the event crude oil is encountered at the site that is attributable to the historical pipelines. On 2 August 2012 Water Board staff provided notification to owners of property at the site or at nearby properties within 200 feet of delineated soil or groundwater that an NFAR was being considered and public comments could be submitted. No comments were received. There were no groundwater wells at the site. Chevron remains as the responsible party if in the future it is determined that residual crude oil affected soil or groundwater is encountered. On 13 September 2012, Water Board staff issued an NFAR determination for the site and the case was closed.

CHEVRON, HOLEY-BYRON ROAD, BYRON (Continued) **S108937535**

Click here to access the California GeoTracker records for this facility:

CERS TANKS:
Site ID: 255462
CERS ID: SL0601316394
CERS Description: Cleanup Program Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: C DEAN HUBBARD - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title: Not reported
Affiliation Address: 1685 E STREET
Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

8
NNW
< 1/8
0.009 mi.
49 ft.

BAY AREA SKYDIVING
6901 FALCON WAY
BYRON, CA 94514

CONTRA COSTA CO. SITE LIST **S121785070**
CERS TANKS **N/A**
CERS

Relative:
Lower

Actual:
54 ft.

CONTRA COSTA CO. SITE LIST:
Facility ID: FA0041104
Billing Status: ACTIVE, BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: APSA: <10K GALLONS
Region: CONTRA COSTA
Cupa Number: 776050

Facility ID: FA0041104
Billing Status: ACTIVE, BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HMBP: >10K-100K LBS, 0-19 EMPLOYEES
Region: CONTRA COSTA
Cupa Number: 776050

CERS TANKS:
Site ID: 435676
CERS ID: 10759720
CERS Description: Aboveground Petroleum Storage

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2018

BAY AREA SKYDIVING (Continued) **S121785070**

Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Contra Costa County Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 435676
Facility Name: Bay Area Skydiving
Env Int Type Code: APSA
Program ID: 10759720
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 37.827610
Longitude: -121.633310

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Contra Costa County Health Services Department
Entity Title: Not reported
Affiliation Address: 4585 Pacheco BlvdSuite 100
Affiliation City: Martinez
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94553
Affiliation Phone: (925) 335-3200

Affiliation Type Desc: Document Preparer
Entity Name: Mattie Guthrie
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: Mattie Guthrie
Entity Title: Not reported
Affiliation Address: 6901 Falcon Way
Affiliation City: Byron
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94514
Affiliation Phone: (925) 634-7575

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 6901 Falcon Way
Affiliation City: Byron
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 94514

BAY AREA SKYDIVING (Continued) **S121785070**

Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Mattie Guthrie
Entity Title:	General Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Shaun Fenner
Entity Title:	Not reported
Affiliation Address:	6901 Falcon Way
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94514
Affiliation Phone:	(860) 919-8866
Affiliation Type Desc:	Operator
Entity Name:	Bay Area Skydiving
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 634-7575
Affiliation Type Desc:	Parent Corporation
Entity Name:	Bay Area Skydiving
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

CERS TANKS:

Site ID:	435676
CERS ID:	10759720
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	APSA
Eval Source:	CERS

BAY AREA SKYDIVING (Continued) **S121785070**

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-22-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Contra Costa County Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	435676
Facility Name:	Bay Area Skydiving
Env Int Type Code:	APSA
Program ID:	10759720
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	37.827610
Longitude:	-121.633310

Affiliation:

Affiliation Type Desc:	CUPA District
Entity Name:	Contra Costa County Health Services Department
Entity Title:	Not reported
Affiliation Address:	4585 Pacheco BlvdSuite 100
Affiliation City:	Martinez
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94553
Affiliation Phone:	(925) 335-3200

Affiliation Type Desc:	Document Preparer
Entity Name:	Mattie Guthrie
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Mattie Guthrie
Entity Title:	Not reported
Affiliation Address:	6901 Falcon Way
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	94514
Affiliation Phone:	(925) 634-7575

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	6901 Falcon Way
Affiliation City:	Byron
Affiliation State:	CA

BAY AREA SKYDIVING (Continued) **S121785070**

Affiliation Country:	Not reported
Affiliation Zip:	94514
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Mattie Guthrie
Entity Title:	General Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Shaun Fenner
Entity Title:	Not reported
Affiliation Address:	6901 Falcon Way
Affiliation City:	Byron
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94514
Affiliation Phone:	(860) 919-8866
Affiliation Type Desc:	Operator
Entity Name:	Bay Area Skydiving
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(925) 634-7575
Affiliation Type Desc:	Parent Corporation
Entity Name:	Bay Area Skydiving
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

9
West
< 1/8
0.028 mi.
146 ft.

SWIMS
6701 ARMSTRONG RD
BYRON, CA 94514

CONTRA COSTA CO. SITE LIST **S110744823**
N/A

Relative:
Higher

Actual:
94 ft.

CONTRA COSTA CO. SITE LIST:

Facility ID:	FA0031250
Billing Status:	INACTIVE, NON-BILLABLE
Program Status:	CONTRA COSTA CO. SITE LIST
Program/Elements:	HMBP: 1K-10K LBS, 20+ EMPLOYEES
Region:	CONTRA COSTA
Cupa Number:	774275

SWIMS (Continued) **S110744823**

Facility ID: FA0031250
Billing Status: INACTIVE, NON-BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HWG: LESS THAN 5 TONS/YEAR
Region: CONTRA COSTA
Cupa Number: 774275

10
ENE
< 1/8
0.046 mi.
242 ft.

AIRPORT RANCH SLUDGE SPREADING **SWF/LF** **S103587919**
HOLEY ROAD **N/A**
BYRON, CA

Relative:
Lower

Actual:
36 ft.

SWF/LF (SWIS):
Facility ID: 07-AA-0054
Lat/Long: 37.83159 / -121.61862
Owner Name: County Of Contra Costa Public Works Dep
Owner Telephone: 5107542892
Owner Address: Not reported
Owner Address2: 418 W. Second St.
Owner City,St,Zip: Antioch, CA 94509
Operational Status: Active
Operator: County Of Contra Costa Public Works Dep
Operator Phone: 5107542892
Operator Address: Not reported
Operator Address2: 418 W. Second St.
Operator City,St,Zip: Antioch, CA 94509
Permit Date: 10/01/1993
Permit Status: Exempted
Permitted Acreage: 135
Activity: Land Application
Regulation Status: Exempt
Landuse Name: Not reported
GIS Source: Map
Category: Disposal
Unit Number: 01
Inspection Frequency: None
Accepted Waste: Sludge (BioSolids)
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: 0
SWIS Num: 07-AA-0054
Waste Discharge Requirement Num: Not reported
Program Type: Not reported
Permitted Throughput with Units: 1500
Actual Throughput with Units: Tons/day
Permitted Capacity with Units: 0
Remaining Capacity: 0
Remaining Capacity with Units: Not reported
Lat/Long: 37.83159 / -121.61862

11
WNW
1/4-1/2
0.411 mi.
2168 ft.

SOUZA RANCH LANDSPREADING FACILITY
ARMSTRONG ROAD VIA BYRON HOT SRINGS ROAD
BYRON, CA

SWF/LF **S102359859**
N/A

Relative:
Higher

Actual:
91 ft.

SWF/LF (SWIS):

Facility ID:	07-AA-0038
Lat/Long:	37.83769 / -121.6463
Owner Name:	Souza T
Owner Telephone:	2098358330
Owner Address:	Not reported
Owner Address2:	35 E. 10th Street
Owner City,St,Zip:	Tracy, CA 95376
Operational Status:	Active
Operator:	Future-Tech Environmental Services
Operator Phone:	5107542892
Operator Address:	Not reported
Operator Address2:	1116 Hastings Ct.
Operator City,St,Zip:	Antioch, CA 94509
Permit Date:	10/04/1993
Permit Status:	Exempted
Permitted Acreage:	315
Activity:	Land Application
Regulation Status:	Exempt
Landuse Name:	Not reported
GIS Source:	Map
Category:	Disposal
Unit Number:	01
Inspection Frequency:	None
Accepted Waste:	Sludge (BioSolids)
Closure Date:	Not reported
Closure Type:	Not reported
Disposal Acreage:	0
SWIS Num:	07-AA-0038
Waste Discharge Requirement Num:	Not reported
Program Type:	Not reported
Permitted Throughput with Units:	1500
Actual Throughput with Units:	Tons/day
Permitted Capacity with Units:	30000
Remaining Capacity:	0
Remaining Capacity with Units:	Tons/year
Lat/Long:	37.83769 / -121.6463

12
NNE
1/4-1/2
0.457 mi.
2413 ft.

WOODMILL RECYCLING CO
5595 BYRON HOT SPRINGS RD
BYRON, CA 94514

SWF/LF **S110455362**
CONTRA COSTA CO. SITE LIST **N/A**

Relative:
Lower

Actual:
40 ft.

SWF/LF (SWIS):

Facility ID:	07-AA-0062
Lat/Long:	37.84558 / -121.6231
Owner Name:	Milochik, John
Owner Telephone:	9255754842
Owner Address:	Not reported
Owner Address2:	3972 California Way
Owner City,St,Zip:	Livermore, CA 94550
Operational Status:	Active
Operator:	Woodmill Recycling Company

WOODMILL RECYCLING CO (Continued) **S110455362**

Operator Phone: 9256349663
Operator Address: John Milochik
Operator Address2: 3972 California Way
Operator City,St,Zip: Livermore, CA 94550
Permit Date: 10/19/2011
Permit Status: Notification
Permitted Acreage: 1
Activity: Chipping and Grinding Activity Fac./ Op.
Regulation Status: Notification
Landuse Name: Range Land,Commercial,Agricultural
GIS Source: Map
Category: Composting
Unit Number: 01
Inspection Frequency: Quarterly
Accepted Waste: Green Materials,Wood waste
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: Not reported
SWIS Num: 07-AA-0062
Waste Discharge Requirement Num: Not reported
Program Type: Not reported
Permitted Throughput with Units: 263
Actual Throughput with Units: Cu Yards/day
Permitted Capacity with Units: 36600
Remaining Capacity: Not reported
Remaining Capacity with Units: Cu Yards/year
Lat/Long: 37.84558 / -121.6231

Facility ID: 07-AA-0064
Lat/Long: 37.84911 / -121.62292
Owner Name: John M. Milochik
Owner Telephone: 9255754842
Owner Address: Not reported
Owner Address2: 5595 Byron Hot Springs Rd.
Owner City,St,Zip: Byron, CA 94514
Operational Status: Active
Operator: Woodmill Recycling Company, Inc.
Operator Phone: 9256349663
Operator Address: John M. Milochik
Operator Address2: 5595 Byron Hot Springs Rd.
Operator City,St,Zip: Byron, CA 94514
Permit Date: 10/19/2011
Permit Status: Notification
Permitted Acreage: 1
Activity: Inert Debris Type A Proc. Operation
Regulation Status: Notification
Landuse Name: Agricultural
GIS Source: Map
Category: Transfer/Processing
Unit Number: 01
Inspection Frequency: Quarterly
Accepted Waste: Inert
Closure Date: Not reported
Closure Type: Not reported
Disposal Acreage: Not reported
SWIS Num: 07-AA-0064
Waste Discharge Requirement Num: Not reported

WOODMILL RECYCLING CO (Continued) **S110455362**

Program Type: Not reported
Permitted Throughput with Units: 1500
Actual Throughput with Units: Tons/day
Permitted Capacity with Units: 62400
Remaining Capacity: Not reported
Remaining Capacity with Units: Tons/year
Lat/Long: 37.84911 / -121.62292

CONTRA COSTA CO. SITE LIST:
Facility ID: FA0031242
Billing Status: INACTIVE, NON-BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HMBP: LESS THAN 1000 LBS
Region: CONTRA COSTA
Cupa Number: 774220

Facility ID: FA0031242
Billing Status: INACTIVE, NON-BILLABLE
Program Status: CONTRA COSTA CO. SITE LIST
Program/Elements: HWG: LESS THAN 5 TONS/YEAR
Region: CONTRA COSTA
Cupa Number: 774220

13
East
1/4-1/2
0.459 mi.
2424 ft.

CHEVRONTEXACO, BRUNS, BYRON **CPS-SLIC** **S106483496**
BYRON RD (MILEPOST 225.6) **CERS** **N/A**
BYRON, CA

Relative:
Lower

Actual:
16 ft.

CPS-SLIC:
Region: STATE
Facility Status: **Completed - Case Closed**
Status Date: 11/19/2003
Global Id: SL0601319412
Lead Agency: CENTRAL VALLEY RWQCB (REGION 5F)
Lead Agency Case Number: Not reported
Latitude: 37.8312
Longitude: -121.6057
Case Type: Cleanup Program Site
Case Worker: CDH
Local Agency: Not reported
RB Case Number: 2053000
File Location: Regional Board
Potential Media Affected: Other Groundwater (uses other than drinking water), Soil
Potential Contaminants of Concern: Heating Oil / Fuel Oil
Site History: Not reported

Click here to access the California GeoTracker records for this facility:

CERS TANKS:
Site ID: 187729
CERS ID: SL0601319412
CERS Description: Cleanup Program Site

Affiliation:
Affiliation Type Desc: Regional Board Caseworker
Entity Name: C DEAN HUBBARD - CENTRAL VALLEY RWQCB (REGION 5F)

CHEVRONTEXACO, BRUNS, BYRON (Continued) **S106483496**

Entity Title:	Not reported
Affiliation Address:	1685 E STREET
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

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14 NNW 1/2-1 0.684 mi. 3609 ft. **BYRON HOT SPRINGS INTER CENTER** **ENVIROSTOR** **S107735975 N/A**

STOCKTON, CA

Relative: Higher

Actual: 61 ft.

ENVIROSTOR:

Facility ID:	80000377
Status:	Inactive - Needs Evaluation
Status Date:	07/01/2005
Site Code:	Not reported
Site Type:	Military Evaluation
Site Type Detailed:	FUDS
Acres:	5
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Charles Ridenour
Division Branch:	Cleanup Sacramento
Assembly:	14
Senate:	07
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	DERA
Latitude:	37.84805
Longitude:	-121.6338
APN:	NONE SPECIFIED
Past Use:	NONE SPECIFIED
Potential COC:	NONE SPECIFIED
Confirmed COC:	NONE SPECIFIED
Potential Description:	NONE SPECIFIED
Alias Name:	CA99799F570300
Alias Type:	Federal Facility ID
Alias Name:	J09CA0762
Alias Type:	INPR
Alias Name:	80000377
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Records Research Report (RRR)
Completed Date:	05/19/2004
Comments:	DTSC agreed No Defense Action was Indicated for this site.
Future Area Name:	Not reported
Future Sub Area Name:	Not reported

BYRON HOT SPRINGS INTER CENTER (Continued) **S107735975**

Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: PROJECT WIDE
Schedule Sub Area Name: Not reported
Schedule Document Type: Site Screening
Schedule Due Date: 07/01/2018
Schedule Revised Date: Not reported

15
SE
1/2-1
0.981 mi.
5180 ft.

BYRON BETHANY IRRIGATION DIST. **Notify 65** **S100179270**
7995 BRUN **N/A**
BYRON, CA 92410

Relative:
Lower

Actual:
7 ft.

NOTIFY 65:
Date Reported: Not reported
Staff Initials: Not reported
Board File Number: Not reported
Facility Type: Not reported
Discharge Date: Not reported
Issue Date: Not reported
Incident Description: Not reported

Count: 14 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BRENTWOOD	S122246835	BYRON HIGHWAY SHOULDER WIDENING	BYRON HOT SPRINGS RD TO 800 FE	94514	NPDES
BYRON	S106923691	BYRON AIRPORT	3000 ARMSTRONG ST	94514	SWEEPS UST
BYRON	S114725665	BYRON HOTSPRINGS LANDSPREADING	BYRON HOT SPRINGS ROAD		RGA LF
BYRON	S114725664	BYRON HOT SPRINGS RD. TIRE PILE	BYRON HOT SPRINGS ROAD		RGA LF
BYRON	S114725662	BYRON HOT SPRINGS LANDSPREADING	BYRON HOT SPRINGS ROAD		RGA LF
BYRON	S121625633	BYRON HIGHWAY SHOULDER IMPROVE	BYRON HWY BW HOLWAY DR & BYRON		CIWQS
BYRON	1020274553	BYRON GAS & MINI MART	4100 BYRON HWY	94514	EDR Hist Auto
BYRON	S117699304	EAST BYRON BOYS RNCH	EAST BYRON BOYS RANCH	94514	NPDES, CIWQS
BYRON	1023257787	CHEVRONTEXACONA BRUNSNA BYRON	BYRON RD (MILEPOST 225.6)	94514	FINDS
BYRON	1005584667	BYRON HOT SPRINGS	BYRON HOT SPRINGS	94514	FINDS, ECHO
BYRON	1023691772	CONTRA COSTA COUNTY BYRON AIRPORT	500 EAGLE CT	94514	FINDS, ECHO
BYRON	S114724582	AIRPORT RANCH SLUDGE SPREADING	HOLEY ROAD		RGA LF
BYRON	1023224247	CHEVRONNA HOLEY-BYRON ROADNA BYRON	HOLEY ROAD	94514	FINDS
BYRON	S122246834	BYRON AIRPORT BYRON JET CENTER	OSPREY COURT	94514	NPDES

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: N/A
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2018
Next Scheduled EDR Contact: 10/15/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 43

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 43

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/14/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/31/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 17

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 08/08/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 14

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/08/2018
Number of Days to Update: 26

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 21
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 20

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/18/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 33

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 09/28/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 11/02/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 07/30/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/21/2018
Date Data Arrived at EDR: 09/21/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 49

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/28/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Quarterly

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/28/2018
Date Data Arrived at EDR: 05/25/2018
Date Made Active in Reports: 07/10/2018
Number of Days to Update: 46

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 10/01/2018
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/02/2018
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/26/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 06/08/2018
Number of Days to Update: 73

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 51

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/27/2018
Next Scheduled EDR Contact: 11/05/2018
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/08/2018
Number of Days to Update: 26

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/28/2018
Date Made Active in Reports: 06/22/2018
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/19/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 08/31/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/09/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/21/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/24/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 43

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 36

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/11/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/07/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/04/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 10/26/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/03/2018
Date Made Active in Reports: 11/09/2018
Number of Days to Update: 37
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 10/03/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/30/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/17/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 80
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218
Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/03/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546
Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3
Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23
Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 08/13/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 43
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 10/04/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/29/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 37

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 30

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/18/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 06/19/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 87

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/02/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 9

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/31/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 08/22/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 44

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 21

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 08/28/2018
Date Data Arrived at EDR: 08/30/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 63

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 10/15/2018
Date Data Arrived at EDR: 10/16/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 31

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 10/04/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 27

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/30/2018
Date Data Arrived at EDR: 09/27/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 35

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/21/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 36

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/14/2018
Date Data Arrived at EDR: 08/16/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 25

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 37

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 20

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List
The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/09/2018
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 37

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 10/10/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 08/28/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 28

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 08/09/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 31
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 28
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/15/2018
Number of Days to Update: 33
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/19/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/19/2018
Number of Days to Update: 29
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/13/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/12/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 09/25/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)
Other Oil & Gas Projects sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 10/02/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 09/05/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)
Non-Case Information sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data
The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/23/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/23/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/09/2018
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 10/05/2018
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 22

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 10/05/2018
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 23

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List

Cupa Facility List

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 27

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Varies

BUTTE COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 08/02/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 08/20/2018
Number of Days to Update: 14

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 05/23/2018
Date Data Arrived at EDR: 05/24/2018
Date Made Active in Reports: 07/13/2018
Number of Days to Update: 50

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/11/2018
Number of Days to Update: 21

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/29/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 08/16/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 8

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/05/2018
Date Made Active in Reports: 09/18/2018
Number of Days to Update: 13

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 10/18/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 27

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/11/2018
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/22/2018
Number of Days to Update: 40

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/25/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 20

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/20/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/12/2018
Number of Days to Update: 49

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/23/2018
Date Data Arrived at EDR: 08/24/2018
Date Made Active in Reports: 09/18/2018
Number of Days to Update: 25

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 11/08/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 6

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 10/15/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 22

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AOCONCERN: San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 09/20/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 35
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/15/2018
Date Data Arrived at EDR: 10/16/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 31
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/16/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 05/01/2018
Date Made Active in Reports: 05/14/2018
Number of Days to Update: 13
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 10/16/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 31
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/16/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/05/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/30/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 15

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/31/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 19

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 07/18/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 15

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/29/2018
Date Data Arrived at EDR: 11/01/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 15

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 08/27/2018
Date Data Arrived at EDR: 08/28/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 36

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/06/2018
Date Data Arrived at EDR: 11/08/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 6

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/08/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/08/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 33

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/13/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 09/12/2018
Number of Days to Update: 37

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 11/06/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/06/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 27

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 07/19/2018
Date Data Arrived at EDR: 07/25/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 42

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 4

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 10/12/2018
Date Made Active in Reports: 11/05/2018
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/03/2018
Date Data Arrived at EDR: 10/02/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 30

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/23/2018
Date Data Arrived at EDR: 10/02/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 31

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 10/02/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List

Cupa facility list

Date of Government Version: 08/07/2018
Date Data Arrived at EDR: 08/09/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 27

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 07/27/2018
Date Data Arrived at EDR: 07/31/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 41

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/05/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/04/2018
Date Data Arrived at EDR: 06/06/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 41

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 09/06/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 07/24/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 31
Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 09/17/2018
Date Data Arrived at EDR: 09/18/2018
Date Made Active in Reports: 10/03/2018
Number of Days to Update: 15
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/31/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/20/2018
Date Data Arrived at EDR: 08/21/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 17

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 11/01/2018
Number of Days to Update: 42

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/17/2018
Number of Days to Update: 27

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/10/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/17/2018
Date Data Arrived at EDR: 08/22/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 16

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/24/2018
Next Scheduled EDR Contact: 12/10/2018
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 08/01/2018
Date Data Arrived at EDR: 08/06/2018
Date Made Active in Reports: 09/11/2018
Number of Days to Update: 36
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/01/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90
Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51
Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 10/17/2018
Number of Days to Update: 43
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 09/04/2018
Date Made Active in Reports: 10/18/2018
Number of Days to Update: 44
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/29/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 09/25/2018
Date Made Active in Reports: 10/16/2018
Number of Days to Update: 21

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 10/25/2018
Number of Days to Update: 21

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/24/2018
Next Scheduled EDR Contact: 01/07/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 08/14/2018
Date Data Arrived at EDR: 08/16/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 8

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 09/18/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/25/2018
Number of Days to Update: 35

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/17/2018
Next Scheduled EDR Contact: 12/17/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 07/17/2018
Date Data Arrived at EDR: 08/02/2018
Date Made Active in Reports: 09/07/2018
Number of Days to Update: 36

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/25/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 20

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 09/13/2018
Date Data Arrived at EDR: 09/14/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 5

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/18/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 09/05/2018
Number of Days to Update: 41

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/01/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 11/07/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 07/02/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 08/24/2018
Number of Days to Update: 29
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/22/2018
Next Scheduled EDR Contact: 02/04/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 09/04/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/04/2018
Number of Days to Update: 22
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/12/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 10/15/2018
Date Data Arrived at EDR: 10/19/2018
Date Made Active in Reports: 11/05/2018
Number of Days to Update: 17
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/14/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/07/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 7
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/25/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 08/10/2018
Date Data Arrived at EDR: 08/10/2018
Date Made Active in Reports: 09/10/2018
Number of Days to Update: 31
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/14/2018
Next Scheduled EDR Contact: 02/25/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/01/2018
Number of Days to Update: 19

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/09/2018
Next Scheduled EDR Contact: 01/21/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 07/01/2018
Date Data Arrived at EDR: 08/01/2018
Date Made Active in Reports: 08/31/2018
Number of Days to Update: 30

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/31/2018
Next Scheduled EDR Contact: 02/11/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/15/2018
Next Scheduled EDR Contact: 01/28/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/16/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/06/2018
Next Scheduled EDR Contact: 12/24/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

BYRON AIRPORT
BYRON AIRPORT
BYRON, CA 94514

TARGET PROPERTY COORDINATES

Latitude (North):	37.829151 - 37° 49' 44.94''
Longitude (West):	121.626957 - 121° 37' 37.05''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	620834.6
UTM Y (Meters):	4187542.0
Elevation:	59 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5640632 BYRON HOT SPRINGS, CA
Version Date:	2012
East Map:	5640050 CLIFTON COURT FOREBAY, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

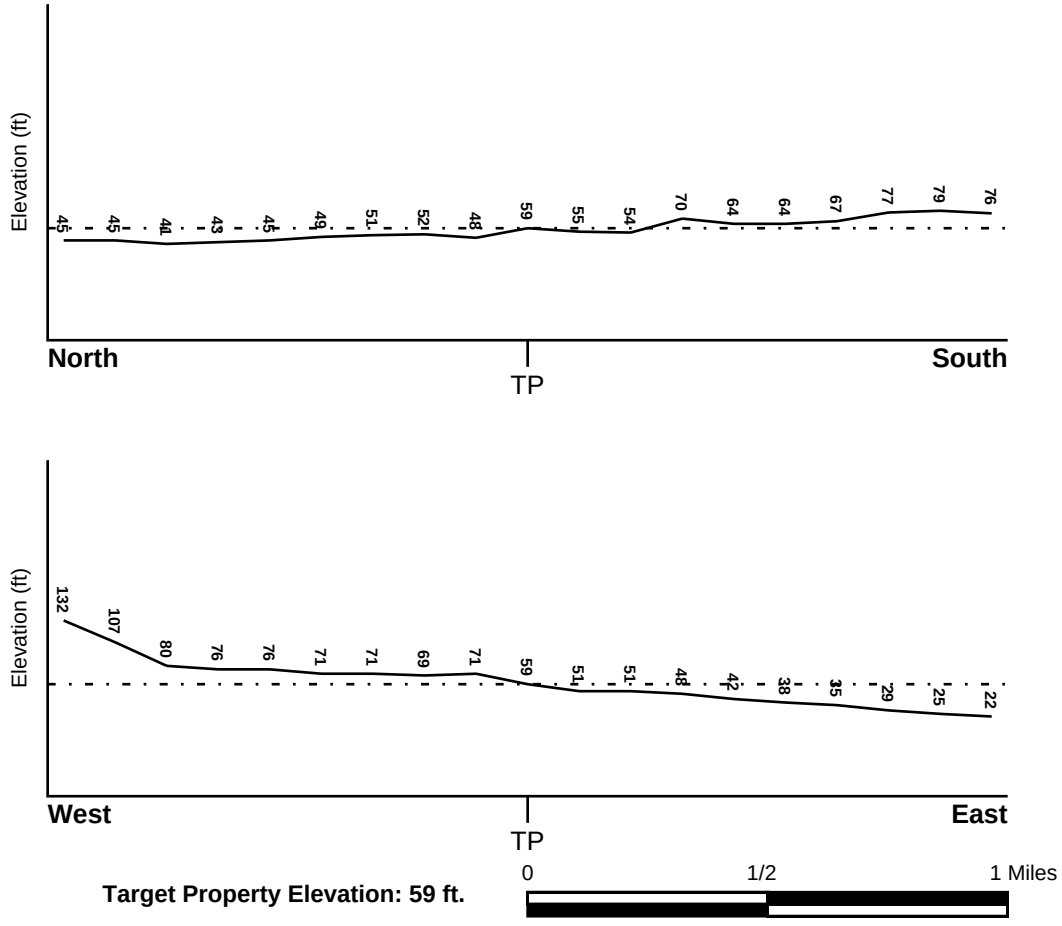
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General ENE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 59 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06013C0525F	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06013C0530F	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
BYRON HOT SPRINGS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

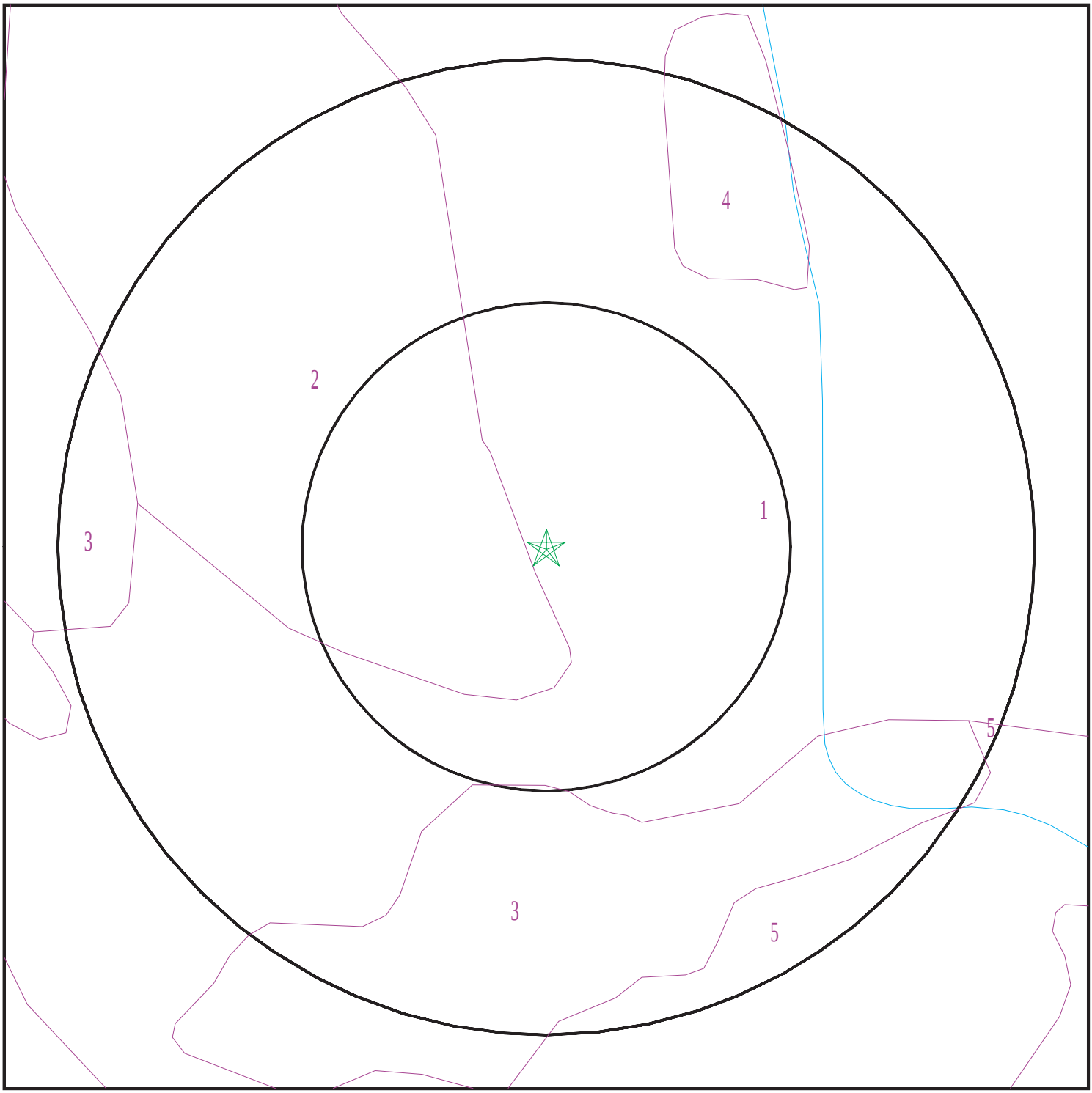
Era:	Cenozoic
System:	Tertiary
Series:	Eocene
Code:	Te *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5493859.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Byron Airport	CLIENT:	Dudek & Associates
ADDRESS:	Byron Airport Byron CA 94514	CONTACT:	Nicole Peacock
		INQUIRY #:	5493859.2s
LAT/LONG:	37.829151 / 121.626957	DATE:	November 26, 2018 4:27 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: SAN YSIDRO

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
2	14 inches	53 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
3	53 inches	79 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

Soil Map ID: 2

Soil Component Name: LINNE

Soil Surface Texture: clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: Min:
2	29 inches	33 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 1.4 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: SOLANO

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9
2	9 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9

Soil Map ID: 4

Soil Component Name: Water

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: SOLANO

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Somewhat poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9
2	9 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 0.42 Min: 0.01	Max: 9 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

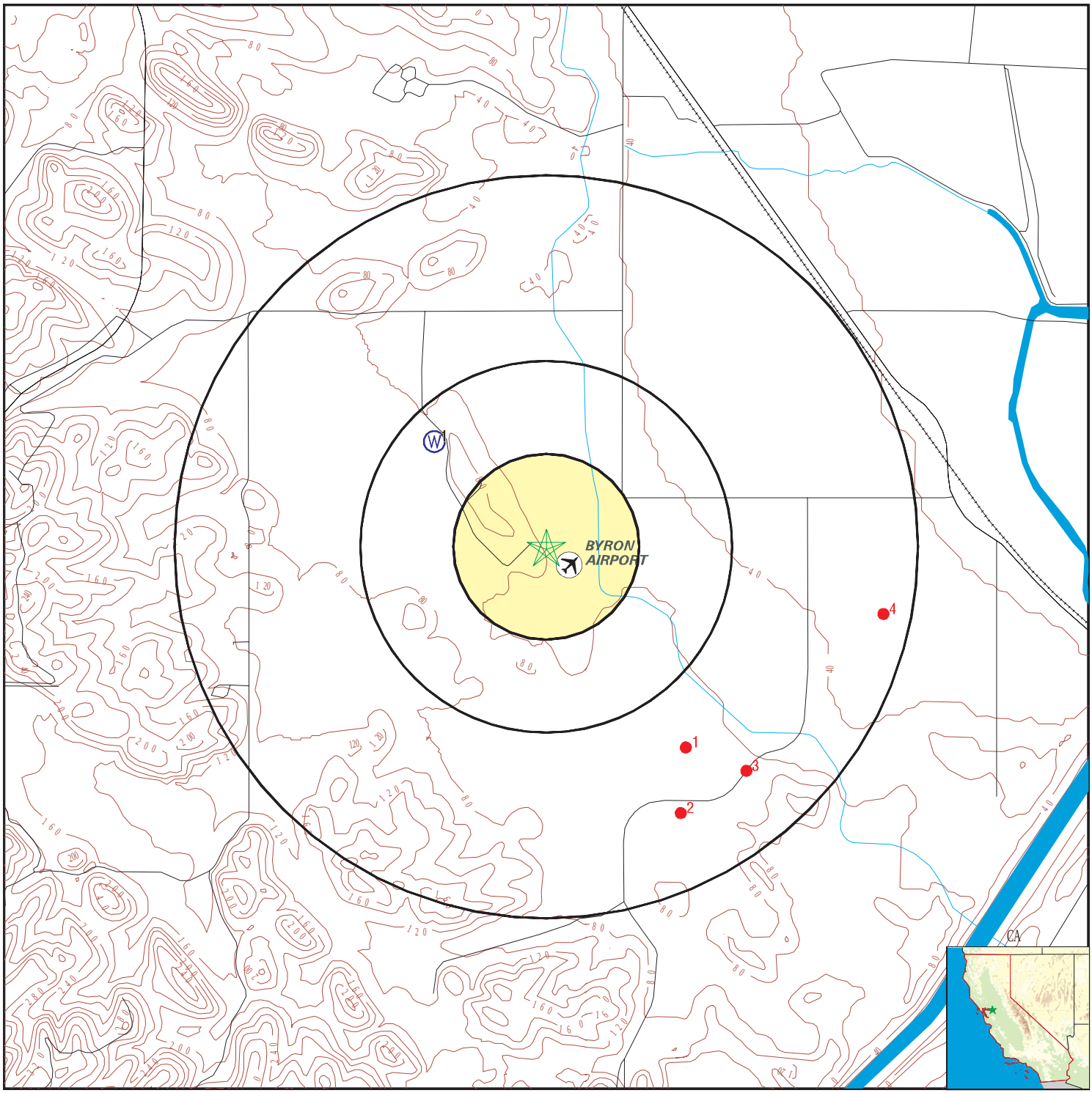
MAP ID	WELL ID	LOCATION FROM TP
1	796	1/4 - 1/2 Mile NW

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG11000232525	1/2 - 1 Mile SE
2	CAOG11000232526	1/2 - 1 Mile SSE
3	CAOG11000232527	1/2 - 1 Mile SE
4	CAOG11000232524	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 5493859.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

SITE NAME:	Byron Airport	CLIENT:	Dudek & Associates
ADDRESS:	Byron Airport Byron CA 94514	CONTACT:	Nicole Peacock
		INQUIRY #:	5493859.2s
LAT/LONG:	37.829151 / 121.626957	DATE:	November 26, 2018 4:27 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
NW
1/4 - 1/2 Mile
Higher | **CA WELLS** | **796**

Seq:	796	Prim sta c:	01S/03E-15C01 M
Frds no:	0706024001	County:	07
District:	37	User id:	07C
System no:	0706024	Water type:	G
Source nam:	WELL 01	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	375000.0	Longitude:	1213753.0
Precision:	3	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	0706024	System nam:	BYRON HOT SPRINGS RESORT
Hqname:	Not Reported	Address:	Not Reported
City:	Not Reported	State:	Not Reported
Zip:	Not Reported	Zip ext:	Not Reported
Pop serv:	0	Connection:	0
Area serve:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
SE **OIL_GAS** **CAOG11000232525**
1/2 - 1 Mile

Districtnu:	6	Apinumber:	01300237
Blmwell:	N	Redrillcan:	Not Reported
Dryhole:	Y	Wellstatus:	P
Operatorna:	Rinde Oil Co.	Countyname:	Contra Costa
Fieldname:	Any Field	Areaname:	Any Area
Section:	26	Township:	01S
Range:	03E	Basemeridi:	MD
Elevation:	Not Reported	Locationde:	Not Reported
Gissourcec:	hud	Comments:	Status Code 006
Leasename:	Hannum Trust	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	20-JAN-64
Welldeptha:	3794	Redrillfoo:	0
Abandonedd:	29-JAN-64	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000232525		

2
SSE **OIL_GAS** **CAOG11000232526**
1/2 - 1 Mile

Districtnu:	6	Apinumber:	01300238
Blmwell:	N	Redrillcan:	Not Reported
Dryhole:	Y	Wellstatus:	P
Operatorna:	Rinde Oil Co.	Countyname:	Contra Costa
Fieldname:	Any Field	Areaname:	Any Area
Section:	26	Township:	01S
Range:	03E	Basemeridi:	MD
Elevation:	Not Reported	Locationde:	Not Reported
Gissourcec:	hud	Comments:	Status Code 006
Leasename:	Hannum Trust	Wellnumber:	2
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	03-FEB-64
Welldeptha:	2000	Redrillfoo:	0
Abandonedd:	07-FEB-64	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000232526		

3
SE **OIL_GAS** **CAOG11000232527**
1/2 - 1 Mile

Districtnu:	6	Apinumber:	01300239
Blmwell:	N	Redrillcan:	Not Reported
Dryhole:	Y	Wellstatus:	P
Operatorna:	Santa Fe Minerals	Countyname:	Contra Costa
Fieldname:	Any Field	Areaname:	Any Area
Section:	26	Township:	01S
Range:	03E	Basemeridi:	MD
Elevation:	Not Reported	Locationde:	Not Reported
Gissourcec:	hud	Comments:	Status Code 006
Leasename:	ROCO-Hannum Trust	Wellnumber:	2

Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	31-MAY-63
Welldeptha:	6968	Redrillfoo:	0
Abandonedd:	11-JUL-63	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000232527		

4
ESE **OIL_GAS** **CAOG11000232524**
1/2 - 1 Mile

Districtnu:	6	Apinumber:	01300236
Blmwell:	N	Redrillcan:	Not Reported
Dryhole:	Y	Wellstatus:	P
Operatorna:	ARCO Western Energy	Countyname:	Contra Costa
Fieldname:	Any Field	Areaname:	Any Area
Section:	23	Township:	01S
Range:	03E	Basemeridi:	MD
Elevation:	Not Reported	Locationde:	Not Reported
Gissourcec:	hud	Comments:	Status Code 006
Leasename:	ROCO-Hannum Trust	Wellnumber:	1
Epawell:	N	Hydraulica:	N
Confidenti:	N	Spuddate:	14-JAN-63
Welldeptha:	6312	Redrillfoo:	0
Abandonedd:	02-FEB-63	Completion:	Not Reported
Directiona:	Unknown	Gissymbol:	PDH
Site id:	CAOG11000232524		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
94514	8	0

Federal EPA Radon Zone for CONTRA COSTA County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 94514

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.500 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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ATTACHMENT B

Agency Records

CCC BYRON AIRPORT (CERSID: 10011013)

Facility Information Accepted Feb 11, 2015

Submitted on 2/11/2015 2:52:06 PM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 2/11/2015 4:47:44 PM by Alexandra McMullen

- Business Activities
- Business Owner/Operator Identification
- Miscellaneous State-Required Documents
  - *HWG Reporting Form 2015* (Adobe PDF, 41KB)

Guidance Messages

- **Warning:**
  1. Business Owner/Operator Identification - The Facility ID for CERSID: 10011013 has changed from: '07000770985' to '07-000-770985'.

Hazardous Materials Inventory Accepted Feb 11, 2015

Submitted on 2/11/2015 2:52:06 PM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 2/11/2015 4:47:51 PM by Alexandra McMullen

- Hazardous Material Inventory (4)
- Site Map (Official Use Only)
  - *Annotated Site Map (Official Use Only)* (Adobe PDF, 451KB)

Emergency Response and Training Plans Accepted Feb 11, 2015

Submitted on 2/11/2015 2:52:06 PM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 2/11/2015 4:47:57 PM by Alexandra McMullen

- Emergency Response/Contingency Plan
  - *Emergency Response/Contingency Plan* (Adobe PDF, 304KB)
- Employee Training Plan
  - Provided In Submital Element: Emergency Response and Training Plans

Aboveground Petroleum Storage Act Accepted Feb 11, 2015

Submitted on 2/11/2015 2:52:06 PM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 2/11/2015 4:48:04 PM by Alexandra McMullen

- Aboveground Petroleum Storage Act Documentation
  - *Aboveground Petroleum Storage Act Documentation* (Adobe PDF, 48KB)

California Environmental Reporting System (CERS) — Business Activities

Site Identification

CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514
County
Alameda

CERS ID
10011013
EPA ID Number
CAL000112340

Submittal Status

Submitted on 2/11/2015 by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted***; Processed on 2/11/2015 by *Alexandra McMullen* for Contra Costa County Health Services Department

Hazardous Materials

Does your facility have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or is regulated under more restrictive inventory local reporting requirements (shown below if present); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	**Yes**

Underground Storage Tank(s) (UST)

Does your facility own or operate underground storage tanks?	**No**

Hazardous Waste

Is your facility a Hazardous Waste Generator?	**Yes**
Does your facility treat hazardous waste on-site?	**No**
Is your facility's treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	**No**
Does your facility consolidate hazardous waste generated at a remote site?	**No**
Does your facility need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	**No**
Does your facility generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	**No**
Is your facility a Household Hazardous Waste (HHW) Collection site?	**No**

Excluded and/or Exempted Materials

Does your facility recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	**No**
Does your facility own or operate ASTs above these thresholds? Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	**Yes**
Does your facility have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	**No**

Additional Information

No additional comments provided.

Facility/Site

CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

CERS ID
10011013

Submittal Status

Submitted on 2/11/2015 by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted***; Processed on 2/11/2015 by *Alexandra McMullen* for Contra Costa County Health Services Department

Identification

CCC PUBLIC WORKS

Operator Phone	Business Phone	Business Fax
(844) 359-8687	(925) 634-0147	(925) 646-5731

Beginning Date	Ending Date	
1/1/2015	12/31/2015	
Dun & Bradstreet	**SIC Code**	**Primary NAICS**
848313052	4581	488119

Facility/Site Mailing Address

550 Sally Ride Drive
Concord, CA 94520

Primary Emergency Contact

Steve Callahan
Title
AIRPORT OPER SPEC

Business Phone	24-Hour Phone	Pager Number
(925) 634-0147	(925) 333-0410	(925) 333-0410

Owner

CCC BYRON AIRPORT
(844) 359-8687
550 Sally Ride Drive
CONCORD, CA 94520

Secondary Emergency Contact

Keith Freitas
Title
Director of Airports

Business Phone	24-Hour Phone	Pager Number
(844) 359-8687	(925) 382-1715	

Billing Contact

Natalie Olesen
(925) 681-4208 natalie.olesen@airport.cccounty.us
550 Sally Ride Dr.
Concord, CA 94520

Environmental Contact

Jacob Allred
(925) 681-4202 jake.allred@airport.cccounty.us
550 Sally Ride Dr.
Concord, CA 94520

Name of Signer	Signer Title	Document Preparer
Keith Freitas	Director of Airports	Natalie Olesen

Additional Information
Tanks listed @ 3000 Armstrong Rd. City renamed street. LL

Locally-collected Fields

Some or all of the following fields may be required by your local regulator(s).

Property Owner

Phone

Mailing Address

,

Assessor Parcel Number (APN)

Number of Employees
1

Facility ID
07-000-770985

CONTRA COSTA
HEALTH SERVICES

2015 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

SITE ID: 07000770985 EPA ID: CAL000112340

FACILITY NAME: CCC Byron Airport

ADDRESS: 500 Eagle Court Byron, CA 94514

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 2, 2015. **Forms submitted after March 2, 2015 may be subject to a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2014** calendar year.

Total Tonnage of Hazardous Waste Shipped Offsite During 2014: 2.25 / Tons

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: [signature] Date: 2/9/15

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 681-4200

CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)

CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID # 1.	CERS ID A1.	DATE OF PLAN PREPARATION/REVISION A2.
07-000-770985	10011013	02/9/15

BUSINESS NAME *(Same as Facility Name or DBA - Doing Business As)* 3.
Contra Costa County - Byron Airport

BUSINESS SITE ADDRESS 103.
500 Eagle Court

BUSINESS SITE CITY 104.		ZIP CODE 105.
Byron	CA	94514

TYPE OF BUSINESS (e.g., Painting Contractor) A3.	INCIDENTAL OPERATIONS (e.g., Fleet Maintenance) A4.
Airport	Self-Fueling, Aircraft Owner Maintenance

THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) A5.

☒ 1. HAZARDOUS MATERIALS; ■ 2. HAZARDOUS WASTES

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) B1.

■ 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
■ 2. CALLING HAZARDOUS WASTE CONTRACTOR
■ 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:

1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) C1.

■ 1. VERBAL WARNINGS;	☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM;	■ 3. TELEPHONE;
☐ 4. PAGERS;	☐ 5. ALARM SYSTEM;	■ 6. PORTABLE RADIO

NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) C2.

■ 1. VERBAL WARNINGS;	☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM;	■ 3. TELEPHONE;
☐ 4. PAGERS;	☐ 5. ALARM SYSTEM;	☐ 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:

AMBULANCE, FIRE, POLICE AND CHP	9-1-1
CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550
NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802
POISON CONTROL CENTER	(800) 222-1222
LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)	(925) 335-3200 C3.
OTHER (Specify): CONTRA COSTA COUNTY - HAZMAT (24 HOUR EMERGENCY) C4.	(925) 335-3232 C5.

NEAREST MEDICAL FACILITY / HOSPITAL NAME: Summit Delta Medical Center C6. (925) 754-6210 C7.

AGENCY NOTIFICATION PHONE NUMBERS:

CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545
REGIONAL WATER QUALITY CONTROL BOARD	(510) 622-2369 C8.
U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193
CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900
U.S. COAST GUARD	(202) 267-2180
CAL/OSHA	(916) 263-2800
STATE FIRE MARSHAL	(916) 445-8200
OTHER (Specify): Director of Airports C9.	925-681-4200 C10.
OTHER (Specify): C11.	( ) C12.

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and. preventing and mitigating associated harm to persons, property, and the environment.)

D1.

- ☑ 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- ☐ 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- ☑ 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- ☑ 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- ☐ 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- ☐ 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- ☐ 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- ☐ 8. STOP PROCESSES AND/OR OPERATIONS;
- ☐ 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- ☐ 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- ☑ 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- ☑ 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- ☑ 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- ☑ 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- ☑ 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- ☑ 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- ☑ 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- ☑ 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- ☐ 21. OTHER (Specify):

D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY): E1.

- ☐ 1. BELLS;
- ☐ 2. HORNS/SIRENS;
- ☑ 3. VERBAL (i.e., SHOUTING);
- ☐ 4. OTHER (Specify):

E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.) E3.

Corner of Eagle Court and Falcon Way

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

☑ EVACUATION ROUTE MAP(S) POSTED AS REQUIRED E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following) F1.

- ☐ 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- ☑ 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify): F2.

Letters of agreement with Contra Costa Fire and Contra Costa County Sheriff's Office.

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., ☒ CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE G1.	LOCATION	CAPABILITY *(If applicable)*
Safety and First Aid	1. ☐ CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2.	G3.
	2. ■ CHEMICAL PROTECTIVE GLOVES	G4. Spill Kit	G5.
	3. ■ CHEMICAL PROTECTIVE BOOTS	G6. Spill Kit	G7.
	4. ■ SAFETY GLASSES / GOGGLES / SHIELDS	G8. Spill Kit	G9.
	5. ■ HARD HATS	G10. With Operations Staff	G11.
	6. ☐ CARTRIDGE RESPIRATORS	G12.	G13.
	7. ■ SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14. On ARFF Vehicle	G15.
	8. ■ FIRST AID KITS / STATIONS	G16. Admin Office, Airport Vehicles	G17.
	9. ☐ PLUMBED EYEWASH FOUNTAIN / SHOWER	G18.	G19.
	10. ■ PORTABLE EYEWASH KITS	G20. Pump House and Tool Shed	G21.
	11. ☐ OTHER	G22.	G23.
	12. ☐ OTHER	G24.	G25.
Fire Fighting	13. ■ PORTABLE FIRE EXTINGUISHERS	G26. 30 around airport	G27.
	14. ☐ FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28.	G29.
	15. ☐ FIRE ALARM BOXES OR STATIONS	G30.	G31.
	16. ■ OTHER	G32. Aircraft rescue and fire fighting vehicle (ARFF)	G33.
Spill Control and Clean-Up	17. ■ ALL-IN-ONE SPILL KIT	G34. Fuel Island, Maint. Hanger, Waste Oil Convault, ARFF	G35.
	18. ■ ABSORBENT MATERIAL	G36. Fuel Island, Maint. hanger, waste oil convault, ARFF	G37.
	19. ■ CONTAINER FOR USED ABSORBENT	G38. Fuel Island, Maint. hanger, waste oil convault, ARFF	G39.
	20. ☐ BERMING / DIKING EQUIPMENT	G40.	G41.
	21. ■ BROOM	G42. Spill Kit	G43.
	22. ■ SHOVEL	G44. Spill Kit	G45.
	23. ☐ SHOP VAC	G46.	G47.
	24. ☐ EXHAUST HOOD	G48.	G49.
	25. ☐ EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. ☐ CHEMICAL NEUTRALIZERS	G52.	G53.
	27. ☐ GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. ☐ SPILL OVERPACK DRUMS	G56.	G57.
	29. ☐ OTHER	G58.	G59.
Communi-cations and Alarm Systems	30. ■ TELEPHONES (Includes cellular)	G60. In office, with Operations Staff	G61.
	31. ☐ INTERCOM / PA SYSTEM	G62.	G63.
	32. ■ PORTABLE RADIOS	G64. Operations staff, operations vehicles	G65.
	33. ☐ AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66.	G67.
Other	34. ☐ OTHER	G68.	G69.
	35. ☐ OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply)

- [x] 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA
- [ ] 2. PROCESS LINES / PIPING
- [ ] 3. LABORATORY
- [ ] 4. WASTE TREATMENT AREA

H1. LOCATIONS (e.g., shop, outdoor shed, forensic lab)

H2. Fueling area, pump house, waste oil convau

H3.

H4.

H5.

Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply)

- [ ] 1. SHELVES, CABINETS AND RACKS
- [x] 2. TANKS (EMERGENCY SHUTOFF)
- [ ] 3. PORTABLE GAS CYLINDERS
- [ ] 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES
- [ ] 5. SPRINKLER SYSTEMS
- [ ] 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)

H6. LOCATIONS

H7. Fueling area, pump house

H8.

H9.

H10.

H11.

H12.

I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- Material Safety Data Sheets;
- Hazard communication related to health and safety;
- Methods for safe handling of hazardous substances;
- Fire hazards of materials / processes;
- Conditions likely to worsen emergencies;
- Coordination of emergency response;
- Notification procedures;
- Applicable laws and regulations;
- Communication and alarm systems;
- Personal protective equipment;
- Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.);
- Decontamination procedures;
- Evacuation procedures;
- Control and containment procedures;
- UST monitoring system equipment and procedures (if applicable).

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) I1.

- [x] 1. FORMAL CLASSROOM; [x] 2. VIDEOS; [ ] 3. SAFETY / TAILGATE MEETINGS;
- [ ] 4. STUDY GUIDES / MANUALS (Specify): _____ I2.
- [x] 5. OTHER (Specify): Emails I3.
- [ ] 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES

Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) J1.

- [ ] 1. NO ATTACHMENTS ARE REQUIRED; *or*
- [ ] 2. THE FOLLOWING DOCUMENTS ARE ATTACHED: J2.

K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED K1.
	2/10/2015
NAME OF SIGNER (print) K2.	TITLE OF SIGNER K3.
Keith Freitas	Director of Airports

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

Aboveground Petroleum Storage Tank Facility Statement

I. FACILITY/BUSINESS INFORMATION

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 [1]

FACILITY NAME (Same as BUSINESS NAME or DBA-Doing Business As) [3]
Contra Costa County – Byron Airport

FACILITY ADDRESS [103]
500 Eagle Ct.

FACILITY CITY [104]		ZIP CODE [105]
Byron	CA	94514

CONTACT NAME [117a]	CONTACT PHONE [118a]
Natalie Olesen	(844) 359-8687

Does the facility have an SPCC plan? ☒ Yes ☐ No [920]
(see reverse for instructions)

Date of last SPCC Plan Revision/Review: 01 / 21 / 2014

II. TOTAL FACILITY CAPACITY (in gallons) [921]

Facility's total aboveground petroleum storage **capacity** for all tanks and containers greater than or equal to 55 gal.: 11,450 gal.
(see reverse for instructions)

Capacity of the largest tank/container that stores petroleum at your facility (in gallons): 10,000 gal.

III. TANK DETAILS for facilities with tanks 10,000 gallons in capacity or more (attach a spread sheet if needed)

Tank ID Number [922]	Contents (Gas, Diesel, etc.) [923]	Capacity (in gallons) [924]	Tank Location [925]	Age of Tank (in years) [926]	Secondary Containment [927]
	Aviation Fuel – 100 LL	10,000	SEE SITE MAP/PLAN FOR TANK LOCATION	15	☒ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

IV. SIGNATURE

I certify under penalty of law that the information submitted is accurate and complete to the best of my knowledge.

SIGNATURE OF OWNER OR TANK FACILITY OPERATOR	PRINTED NAME OF OWNER OR TANK FACILITY OPERATOR [136]	DATE (MM/DD/YYYY) [134]
	Keith Freitas, Director of Airports	03 / 26 / 2014

CCC BYRON AIRPORT (CERSID: 10011013)

Facility Information Accepted Jan 9, 2016

Submitted on 1/6/2016 10:15:30 AM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 1/9/2016 7:34:28 AM by Alexandra McMullen

- Business Activities
- Business Owner/Operator Identification

Hazardous Materials Inventory Accepted Jan 9, 2016

Submitted on 1/6/2016 10:15:30 AM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 1/9/2016 7:34:40 AM by Alexandra McMullen

- Hazardous Material Inventory (4)
- Site Map (Official Use Only)
  - *Annotated Site Map (Official Use Only)* (Adobe PDF, 451KB)
  - *Annotated Site Map (Official Use Only)* (Adobe PDF, 278KB)
- Miscellaneous State-Required Documents
  - *HW GENERATOR REPORTING FORM* (Adobe PDF, 122KB)

Emergency Response and Training Plans Accepted Jan 9, 2016

Submitted on 1/6/2016 10:15:30 AM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 1/9/2016 7:34:52 AM by Alexandra McMullen

- Emergency Response/Contingency Plan
  - *Emergency Response/Contingency Plan* (Adobe PDF, 304KB)
- Employee Training Plan
  - Provided In Submital Element: Emergency Response and Training Plans

Aboveground Petroleum Storage Act Accepted Jan 9, 2016

Submitted on 1/6/2016 10:15:30 AM by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted*** on 1/9/2016 7:35:07 AM by Alexandra McMullen

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  - *Aboveground Petroleum Storage Act Documentation* (Adobe PDF, 48KB)

California Environmental Reporting System (CERS) — Business Activities

Site Identification

CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514
County
Alameda

CERS ID
10011013
EPA ID Number
CAL000112340

Submittal Status

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Submittal was ***Accepted***; Processed on 1/9/2016 by *Alexandra McMullen* for Contra Costa County Health Services Department

Hazardous Materials

Does your facility have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or is regulated under more restrictive inventory local reporting requirements (shown below if present); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	**Yes**

Underground Storage Tank(s) (UST)

Does your facility own or operate underground storage tanks?	**No**

Hazardous Waste

Is your facility a Hazardous Waste Generator?	**Yes**
Does your facility treat hazardous waste on-site?	**No**
Is your facility's treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	**No**
Does your facility consolidate hazardous waste generated at a remote site?	**No**
Does your facility need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	**No**
Does your facility generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	**No**
Is your facility a Household Hazardous Waste (HHW) Collection site?	**No**

Excluded and/or Exempted Materials

Does your facility recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	**No**
Does your facility own or operate ASTs above these thresholds? Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	**Yes**
Does your facility have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	**No**

Additional Information

No additional comments provided.

Facility/Site

CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

CERS ID
10011013

Submittal Status

Submitted on 1/6/2016 by *Jacob Allred* of CCC BYRON AIRPORT (BYRON, CA)
Submittal was ***Accepted***; Processed on 1/9/2016 by *Alexandra McMullen* for Contra Costa County Health Services Department

Identification

CCC PUBLIC WORKS

Operator Phone	Business Phone	Business Fax
(844) 359-8687	(925) 634-0147	(925) 646-5731

Beginning Date	Ending Date	
Dun & Bradstreet	**SIC Code**	**Primary NAICS**
848313052	4581	488119

Facility/Site Mailing Address

550 Sally Ride Drive
Concord, CA 94520

Primary Emergency Contact

Steve Callahan
Title
LEAD AIRPORT OPERATIONS SPECIALIST

Business Phone	24-Hour Phone	Pager Number
(925) 634-0147	(925) 333-0410	(925) 333-0410

Owner

CCC BYRON AIRPORT
(844) 359-8687
550 Sally Ride Drive
CONCORD, CA 94520

Secondary Emergency Contact

Keith Freitas
Title
Director of Airports

Business Phone	24-Hour Phone	Pager Number
(844) 359-8687	(925) 382-1715	

Billing Contact

Natalie Olesen
(925) 681-4208 natalie.olesen@airport.cccounty.us
550 Sally Ride Dr.
Concord, CA 94520

Environmental Contact

Jacob Allred
(925) 681-4202 jake.allred@airport.cccounty.us
550 Sally Ride Dr.
Concord, CA 94520

Name of Signer	Signer Title	Document Preparer
Keith Freitas	Director of Airports	Natalie Olesen

Additional Information
Tanks listed @ 3000 Armstrong Rd. City renamed street. LL

Locally-collected Fields

Some or all of the following fields may be required by your local regulator(s).

Property Owner

Phone

Mailing Address

,

Assessor Parcel Number (APN)

Number of Employees
1

Facility ID
07-000-770985

CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)

CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID # 1.	CERS ID A1.	DATE OF PLAN PREPARATION/REVISION A2.
07-000-770985	10011013	02/9/15

BUSINESS NAME *(Same as Facility Name or DBA - Doing Business As)* 3.
Contra Costa County - Byron Airport

BUSINESS SITE ADDRESS 103.
500 Eagle Court

BUSINESS SITE CITY 104.		ZIP CODE 105.
Byron	CA	94514

TYPE OF BUSINESS (e.g., Painting Contractor) A3.	INCIDENTAL OPERATIONS (e.g., Fleet Maintenance) A4.
Airport	Self-Fueling, Aircraft Owner Maintenance

THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) A5.

☒ 1. HAZARDOUS MATERIALS; ■ 2. HAZARDOUS WASTES

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) B1.

■ 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
■ 2. CALLING HAZARDOUS WASTE CONTRACTOR
■ 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:

1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) C1.

■ 1. VERBAL WARNINGS;	☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM;	■ 3. TELEPHONE;
☐ 4. PAGERS;	☐ 5. ALARM SYSTEM;	■ 6. PORTABLE RADIO

NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) C2.

■ 1. VERBAL WARNINGS;	☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM;	■ 3. TELEPHONE;
☐ 4. PAGERS;	☐ 5. ALARM SYSTEM;	☐ 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:

AMBULANCE, FIRE, POLICE AND CHP	9-1-1
CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550
NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802
POISON CONTROL CENTER	(800) 222-1222
LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)	(925) 335-3200 C3.
OTHER (Specify): CONTRA COSTA COUNTY - HAZMAT (24 HOUR EMERGENCY) C4.	(925) 335-3232 C5.

NEAREST MEDICAL FACILITY / HOSPITAL NAME: Summit Delta Medical Center C6. (925) 754-6210 C7.

AGENCY NOTIFICATION PHONE NUMBERS:

CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545
REGIONAL WATER QUALITY CONTROL BOARD	(510) 622-2369 C8.
U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193
CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900
U.S. COAST GUARD	(202) 267-2180
CAL/OSHA	(916) 263-2800
STATE FIRE MARSHAL	(916) 445-8200
OTHER (Specify): Director of Airports C9.	925-681-4200 C10.
OTHER (Specify): C11.	( ) C12.

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and. preventing and mitigating associated harm to persons, property, and the environment.)

D1.

- ☑ 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- ☐ 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- ☑ 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- ☑ 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- ☐ 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- ☐ 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- ☐ 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- ☐ 8. STOP PROCESSES AND/OR OPERATIONS;
- ☐ 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- ☐ 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- ☑ 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- ☑ 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- ☑ 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- ☑ 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- ☑ 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- ☑ 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- ☑ 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- ☑ 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- ☐ 21. OTHER (Specify):

D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY): E1.

- ☐ 1. BELLS;
- ☐ 2. HORNS/SIRENS;
- ☑ 3. VERBAL (i.e., SHOUTING);
- ☐ 4. OTHER (Specify):

E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.) E3.

Corner of Eagle Court and Falcon Way

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

☑ EVACUATION ROUTE MAP(S) POSTED AS REQUIRED E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following) F1.

- ☐ 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- ☑ 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify): F2.

Letters of agreement with Contra Costa Fire and Contra Costa County Sheriff's Office.

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., ☒ CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE G1.	LOCATION	CAPABILITY *(If applicable)*
Safety and First Aid	1. ☐ CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2.	G3.
	2. ■ CHEMICAL PROTECTIVE GLOVES	G4. Spill Kit	G5.
	3. ■ CHEMICAL PROTECTIVE BOOTS	G6. Spill Kit	G7.
	4. ■ SAFETY GLASSES / GOGGLES / SHIELDS	G8. Spill Kit	G9.
	5. ■ HARD HATS	G10. With Operations Staff	G11.
	6. ☐ CARTRIDGE RESPIRATORS	G12.	G13.
	7. ■ SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14. On ARFF Vehicle	G15.
	8. ■ FIRST AID KITS / STATIONS	G16. Admin Office, Airport Vehicles	G17.
	9. ☐ PLUMBED EYEWASH FOUNTAIN / SHOWER	G18.	G19.
	10. ■ PORTABLE EYEWASH KITS	G20. Pump House and Tool Shed	G21.
	11. ☐ OTHER	G22.	G23.
	12. ☐ OTHER	G24.	G25.
Fire Fighting	13. ■ PORTABLE FIRE EXTINGUISHERS	G26. 30 around airport	G27.
	14. ☐ FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28.	G29.
	15. ☐ FIRE ALARM BOXES OR STATIONS	G30.	G31.
	16. ■ OTHER	G32. Aircraft rescue and fire fighting vehicle (ARFF)	G33.
Spill Control and Clean-Up	17. ■ ALL-IN-ONE SPILL KIT	G34. Fuel Island, Maint. Hanger, Waste Oil Convault, ARFF	G35.
	18. ■ ABSORBENT MATERIAL	G36. Fuel Island, Maint. hanger, waste oil convault, ARFF	G37.
	19. ■ CONTAINER FOR USED ABSORBENT	G38. Fuel Island, Maint. hanger, waste oil convault, ARFF	G39.
	20. ☐ BERMING / DIKING EQUIPMENT	G40.	G41.
	21. ■ BROOM	G42. Spill Kit	G43.
	22. ■ SHOVEL	G44. Spill Kit	G45.
	23. ☐ SHOP VAC	G46.	G47.
	24. ☐ EXHAUST HOOD	G48.	G49.
	25. ☐ EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. ☐ CHEMICAL NEUTRALIZERS	G52.	G53.
	27. ☐ GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. ☐ SPILL OVERPACK DRUMS	G56.	G57.
	29. ☐ OTHER	G58.	G59.
Communi-cations and Alarm Systems	30. ■ TELEPHONES (Includes cellular)	G60. In office, with Operations Staff	G61.
	31. ☐ INTERCOM / PA SYSTEM	G62.	G63.
	32. ■ PORTABLE RADIOS	G64. Operations staff, operations vehicles	G65.
	33. ☐ AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66.	G67.
Other	34. ☐ OTHER	G68.	G69.
	35. ☐ OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply)

- [x] 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA
- [ ] 2. PROCESS LINES / PIPING
- [ ] 3. LABORATORY
- [ ] 4. WASTE TREATMENT AREA

H1. LOCATIONS (e.g., shop, outdoor shed, forensic lab)

H2. Fueling area, pump house, waste oil convau

H3.

H4.

H5.

Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply)

- [ ] 1. SHELVES, CABINETS AND RACKS
- [x] 2. TANKS (EMERGENCY SHUTOFF)
- [ ] 3. PORTABLE GAS CYLINDERS
- [ ] 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES
- [ ] 5. SPRINKLER SYSTEMS
- [ ] 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)

H6. LOCATIONS

H7. Fueling area, pump house

H8.

H9.

H10.

H11.

H12.

I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- Material Safety Data Sheets;
- Hazard communication related to health and safety;
- Methods for safe handling of hazardous substances;
- Fire hazards of materials / processes;
- Conditions likely to worsen emergencies;
- Coordination of emergency response;
- Notification procedures;
- Applicable laws and regulations;
- Communication and alarm systems;
- Personal protective equipment;
- Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.);
- Decontamination procedures;
- Evacuation procedures;
- Control and containment procedures;
- UST monitoring system equipment and procedures (if applicable).

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) I1.

- [x] 1. FORMAL CLASSROOM; [x] 2. VIDEOS; [ ] 3. SAFETY / TAILGATE MEETINGS;
- [ ] 4. STUDY GUIDES / MANUALS (Specify): _____ I2.
- [x] 5. OTHER (Specify): Emails I3.
- [ ] 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES

Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) J1.

- [ ] 1. NO ATTACHMENTS ARE REQUIRED; *or*
- [ ] 2. THE FOLLOWING DOCUMENTS ARE ATTACHED: J2.

K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED K1.
	2/10/2015
NAME OF SIGNER (print) K2.	TITLE OF SIGNER K3.
Keith Freitas	Director of Airports

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

Aboveground Petroleum Storage Tank Facility Statement

I. FACILITY/BUSINESS INFORMATION

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 [1]

FACILITY NAME (Same as BUSINESS NAME or DBA-Doing Business As) [3]
Contra Costa County – Byron Airport

FACILITY ADDRESS [103]
500 Eagle Ct.

FACILITY CITY [104]		ZIP CODE [105]
Byron	CA	94514

CONTACT NAME [117a]	CONTACT PHONE [118a]
Natalie Olesen	(844) 359-8687

Does the facility have an SPCC plan? ☒ Yes ☐ No [920]
(see reverse for instructions)

Date of last SPCC Plan Revision/Review: 01 / 21 / 2014

II. TOTAL FACILITY CAPACITY (in gallons) [921]

Facility's total aboveground petroleum storage **capacity** for all tanks and containers greater than or equal to 55 gal.: 11,450 gal.
(see reverse for instructions)

Capacity of the largest tank/container that stores petroleum at your facility (in gallons): 10,000 gal.

III. TANK DETAILS for facilities with tanks 10,000 gallons in capacity or more (attach a spread sheet if needed)

Tank ID Number [922]	Contents (Gas, Diesel, etc.) [923]	Capacity (in gallons) [924]	Tank Location [925]	Age of Tank (in years) [926]	Secondary Containment [927]
	Aviation Fuel – 100 LL	10,000	SEE SITE MAP/PLAN FOR TANK LOCATION	15	☒ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

IV. SIGNATURE

I certify under penalty of law that the information submitted is accurate and complete to the best of my knowledge.

SIGNATURE OF OWNER OR TANK FACILITY OPERATOR	PRINTED NAME OF OWNER OR TANK FACILITY OPERATOR [136]	DATE (MM/DD/YYYY) [134]
	Keith Freitas, Director of Airports	03 / 26 / 2014

Hazardous Materials And Wastes Inventory Matrix Report

CERS Business/Org. **CCC BYRON AIRPORT**
Facility Name **CCC BYRON AIRPORT**
500 EAGLE CT, BYRON 94514

Chemical Location **10 FT TO THE NE OF MAINTENANCE HANGER**

CERS ID **10011013**
Facility ID **07-000-770985**
Status **Submitted** on 2/11/2015 2:52 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Quantities: Largest Cont.	Quantities: Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
Combustible Liquid, Class III-B	**WASTE, BLENDED HYDROCARBONS** CAS No mixture	**Gallons** State Liquid Type Waste	**250** Storage Container Aboveground Tank Days on Site: 365	**250**	10 Pressue Ambient Temperature Ambient	600 Waste Code 221	- Fire - Chronic health	Hydrocarbon mixture	100 %		mixture

Hazardous Materials And Wastes Inventory Matrix Report

CERS Business/Org. **CCC BYRON AIRPORT**
Facility Name **CCC BYRON AIRPORT**
500 EAGLE CT, BYRON 94514

Chemical Location **100 YDS SOUTHEAST OF ADMINISTRATION BLDG**

CERS ID **10011013**
Facility ID **07-000-770985**
Status **Submitted** on 2/11/2015 2:52 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Quantities: Largest Cont.	Quantities: Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
DOT: 3 - Flammable and Combustible Liquids Flammable Liquid, Class I-B, Other Health Hazard, Irritant	**Aviation Fuel - 100LL** CAS No 8006-61-9	**Gallons** State Liquid Type Mixture	**10000** Storage Container Aboveground Tank Days on Site: 365	**10000**	6000 Pressue Ambient Temperature Ambient	0 Waste Code	- Fire - Chronic health	Hydrocarbon Mixture	100 %		8006-61-9
Combustible Liquid, Class II	**Unleaded Fuel** CAS No 8006-61-9	**Gallons** State Liquid Type Mixture	**1000** Storage Container Aboveground Tank Days on Site: 0	**1000**	0 Pressue > Ambient Temperature > Ambient	0 Waste Code	- Fire - Chronic health	Gasoline Mixtuer (varies by season/supplier)	100 %		8006-61-9

Hazardous Materials And Wastes Inventory Matrix Report

CERS Business/Org. **CCC BYRON AIRPORT**
Facility Name **CCC BYRON AIRPORT**
500 EAGLE CT, BYRON 94514

Chemical Location
4015 Holey Rd.

CERS ID **10011013**
Facility ID **07-000-770985**
Status **Submitted** on 2/11/2015 2:52 PM

DOT Code/Fire Haz. Class	Common Name	Unit	Quantities: Max. Daily	Quantities: Largest Cont.	Quantities: Avg. Daily	Annual Waste Amount	Federal Hazard Categories	Hazardous Components (For mixture only): Component Name	% Wt	EHS	CAS No.
DOT: 3 - Flammable and Combustible Liquids Combustible Liquid, Class II	**DIESEL FUEL** CAS No 68476-34-6	**Gallons** State Liquid Type Mixture	**200** Storage Container Aboveground Tank, Tank Inside Building Days on Site: 365	**200**	100 Pressue Ambient Temperature Ambient	0 Waste Code	- Fire - Chronic health	Diesel Mixture (varies by supplier)	100 %		68476-34-6

Contra Costa County
Health Services Department

Sonny Y

ENVIRONMENTAL HEALTH DIVISION CASE # C930222-H

HAZARDOUS MATERIALS / OCCUPATIONAL HEALTH

Date 2/22/93 Time of Call 1630 Received by Eric ER staff CJ, BB, AA

Relayed by COM1 [ ] other East Diablo Fire

Reported by Chief John Clary (name, phone #, comp.)

Contact Person, phone # (on site) 816-5671 cellular

Incident Location Byron Airport

facility name 500 Eagle Ct site ID# 770985

west county [ ] central county [ ] east county [X] city Byron

Incident Description: Date of Incident On-going Time of Incident [ ]

notification only [ ] facility [ ] pipeline [ ] disposal/abandonment [ ]

highway/vehicle [ ] drug lab [ ] rail road [ ] tank truck [ ] other [ ]

details: Seven drums of waste oil sitting on soil, some spilling 4 bbls near creek
3 other singles scattered nearby

Hazardous Materials Involved: Toxic [X] Corrosive [ ] Flammable [ ] Reactive [ ] AHM [ ]

description: Waste Oil

physical state: solid [ ] liquid [X] gas [ ] material brought back? [ ] manifest ? [ ]

Reported Quantity 350 gal(on)

Actual Quantity

Response: accept notification [ ] advise [ ] emergency [ ] complaint [X]

referral to: (agency, name, phone number)

Other Agencies Notified (N) or On-scene (O/S)

CHP	[ ]	Fire	O/S	Coast Guard	[ ]	DOHS	[ ]
City Police	[ ]	Fish and Game	[ ]	RWQCB	[ ]	Nat Resp Ctr	[ ]
Sheriff	[ ]	State OES	[ ]	BAAQMD	[ ]	Other	[ ]

Time Responded [ ] Time Arrived [ ] Time Departed Scene [ ]

4333 Pacheco Boulevard • Martinez, California 94553 • (510) 646-2286

Entered 5/19/93 AHB

Responsible Party and Property Owner: _____

CASE # [ ]

date	time	Hazardous Materials Incident Report Log	Initials
		Byron Airport 634-0147	
		Charlie V. Voreux - Maintenance worker	
		Harold White - Manager Country 510 Sally Ride Dr. Concord 94520 646-5722.	
3/3/93	16:00	- I spoke with Charlie Voreux. He is building a containment area for the drums. - I recommend lining the bottom with thick polyethylene liners rather than tar paper. - Protect the area from rain. I will write a letter to Mr White ~~to~~ with information for tenants disposing of oil. I also left two labels with Mr Voreux & told him how to fill them out.	
		Elaine C. Hill	
		P.O. 478 Byron CA 94514	

Recommendations _____

Inspected by: _____

Names (organizations) /phone numbers/ titles of person(s) involved:

Contra Costa County
Health Services Department
ENVIRONMENTAL HEALTH DIVISION
HAZARDOUS MATERIALS / OCCUPATIONAL HEALTH

March 4, 1993

Mr. Harold White
Manager of Airports
Contra Costa County Public
Works Department
510 Sally Ride Drive
Concord, CA 94520

Dear Mr. White:

This letter follows my visit to Byron Airport on March 3, 1993. I visited the airport at the request of Chief Clary of East Diablo Fire Department who had previously noticed unlabelled drums of waste oil stored open and dripping at the airport.

I spoke with your employee Charlie Vouaux. He was working on a containment area to better manage the waste oil. I told Mr. Vouaux how to label the drums, and gave him a sample label.

The following are my recommendations for the waste oil area:

- Use a thick Visquene for lining the waste area (10 mil. thick). This is preferable to tar paper.
- Protect the drums and containment area from the rain.
- Locate the drums away from the creek.
- Keep drums closed when not pouring oil. This is a legal requirement of Title of Title 22 California Code of Regulations Section 6622265.173.
- Containment should be large enough to hold 110% of contents of one drum.
- Notify your tenants of the following: (1) Location of the oil drums. (2) They should use a funnel to pour the oil and close up the drum after use. (3) They should minimize spills and drip, use covered buckets to carry the oil. (4) They may not put anything in the other than used motor oil into the drums.

4333 Pacheco Boulevard • Martinez, California 94553 • (510) 646-2286

I am enclosing a brochure of requirements for hazardous waste generator for your information.

I understand that Byron Airport will undergo massive renovation in about two years.

If you have any questions, please feel free to call me.

Sincerely yours,

Elaine C. Wilson

Elaine C. Wilson
Hazardous Materials Specialist

Encl.: a/s

A:PubWorks.EW

ECW/zd

WILLIAM B. WALKER M.D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
HAZARDOUS MATERIALS DIRECTOR

CONTRA COSTA HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS DIVISION

HAZARDOUS WASTE GENERATOR PROGRAM INSPECTION COMPLIANCE REPORT

FACILITY NAME: CCC Public Works Dept. Byron Airport	FACILITY #: 70985	DATE: 4/28/2000	
ADDRESS: 500 Eagle Court (3000 Armstrong) Byron 94514	PROGRAM STATUS CODE: (A-1) A-2 I-1 I-2		
CONTACT PERSON: Bryan Howe (On site - Mark Grosenheider)	GENERATOR ID#: CA: L 000112340		
TITLE: Env. Officer cell first 925-634-0149 - on site	PHONE: 925-646-5722 - office	INSPECTION TYPE: (NORMAL) FOLLOW-UP	SIC: 4581

HAZARDOUS WASTE VIOLATIONS - CALIFORNIA CODE OF REGULATIONS TITLE 22

Enter $12/00 JR

	GENERAL REQUIREMENTS			**USE & MANAGEMENT OF CONTAINERS**	
01	Treatment, Storage, Disposal	66262.10	28	Hazardous Waste Labels	66262.34
02	Haz. Waste Determination	66262.11	29	Container Condition	66265.171
03	EPA Identification Number	66262.12	30	Container Compatibility	66265.172
04	Accumulation Time	66262.34	31	A Container Management -	66265.173
07	Use of Hazardous Waste Manifest	66262.23	32	Weekly Area Inspections	66265.174
			33	Buffer Zone for Special Wastes	66265.176
	RECORDKEEPING & REPORTING OK. - typ.		34	Separation of Incompatibles	66265.177
08	Disposal Documentation on File	66262.40			
10	Biennial Report on File /Submitted	66262.40-41		**HAZARDOUS WASTE STORAGE TANKS**	
11	Waste Analysis on File	66262.40	35	Secondary Containment	66265.193
13	Exception Report	66262.42	36	Spill Prevention	66265.194
			37	Daily Inspections Documented	66265.195
	EMPLOYEE HAZARDOUS MATERIALS TRAINING		38	Leaking or Unfit Tanks Systems	66265.196
14	Employee Training Program	66265.16	39	Ignitable or Reactive Wastes	66265.198
15	Training Documentation	66265.16			
			40	Source Reduction Required (SB14)	
17	Contingency Plan OK. - being but undergoing done	66265.52-56	40a	Source Reduction Plan	
			41	Business Plan Required	
	FACILITY OPERATION		42	UGT Permit Required	
22	Maintenance & Operation of Facility	66265.31	43	Outstanding HWG Invoice	
23	Required Equipment	66265.32	44	Onsite Recycling Notification	
24	Equipment Maintenance & Testing	66265.33	45	Onsite Recycling Activities Appropriate	
25	Communication or Alarm Systems	66265.34			
26	Required Aisle Space	66265.35	50	Other:	
27	Emergency Response Agencies	66265.37			

Hazardous Waste Stream	Waste Code	Annual Qty	Hazardous Waste Stream	Waste Code	Annual Qty
used oil from Tenant 221		700 gal.	Clearwater Oil		
Occasionally, batteries + oil filters collected					
Additional Wastes Listed on Continuation Sheet: Y (N)			Total Annual Tonnage of Hazardous Waste		

CONTRA COSTA COUNTY CLEAN WATER PROGRAM / POLLUTION PREVENTION

Illicit Discharge Observed Y / N			Illicit Connection Observed Y / N		
1. Storm Drain Systems	(G) F P	4. Outdoor Processing Area	G F P	7. Outdoor Parking & Access Roads	(G) F P
2. Housekeeping	(G) F P	5. Outdoor Maintenance Area	G F P	8. Other (describe below)	G F P
3. Outdoor Storage Area	(G) F P	6. Outdoor Wash Area	(G) F P	G = Good F = Fair P = Poor	

NOI Facility: Y (N)	Facility Filed NOI: Y (N) WDID# 5 07S 01 2606	Facility Not Covered - May Require Coverage: Y / N	Facility has NPDES Permit: Y / N Permit #
Storm Water Pollution Prevention Plan Written Plan: (Y) / N	Self Monitoring Implemented: (Y) / N	Self-Certified No Exposure: Y / N	

Pollution Prevention Information Requested	Pollution Prevention Implemented	Green Business Candidate
Y (N)	(Good) / Fair / Poor	Y (N)

OBSERVATIONS – NOTICE TO COMPLY

- See Reverse for Explanations of Violations -

County - runs airport. Only businesses are Bay Area Skydiving and Soli Mega. - Other Tenants are private use planes. Water from washing + oil tank area goes to oil/water separator and back field. Water at fueling operation goes to O/W separator

VIOLATIONS MUST BE CORRECTED BY: 5/28/2000 **NO VIOLATIONS OBSERVED** ☐ on Record

FACILITY IS SUBJECT TO REINSPECTION. DISPUTES TO THIS INSPECTION REPORT MUST BE MADE IN WRITING WITHIN THIRTY DAYS OF THE SIGNATURE DATE.

FACILITY REP. Mark Grosenheder	INSPECTOR ELAINE GLIMME
TITLE Airport Operations Specialist	TITLE HAZARDOUS MATERIALS SPECIALIST
SIGNATURE [signature] DATE 4/28/00	SIGNATURE Elaine C. Glimme DATE 4/28/2000

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INSPECTION CONTINUATION SHEET

UGT ☐ AB 2185 ☐ H.W. GEN ☒ WASTE MIN. ☐

INSPECTION COMMENTS

and to storm water. Housekeeping is excellent.

Contingency Plan / Training Plan is being updated. - Last plan filled out in 1987.

SPCC Plan was unavailable.

~~Batteries~~

Note. - Be sure to keep records for battery pick ups too. -

Business Plan available. -

Note Unleaded gasoline was not on site at the time - tank empty.

Notice to comply:

① One open drum with oily water was found by ~~Bay~~. ② One empty ~~Border~~ truck. - E

④ - S.P.C.C. plan unavailable. - Note that storm water mgmt. plan has S.P.C.C. elements. -

~~3 batteries~~

Within 30 days submit a report indicating how ① & ② have been addressed ECG 4/28/2000

FACILITY NAME CCC Petroleum Bryson Airport

SITE ID # 709855 DATE 4/28/2000 FACILITY INITIALS MJ HEALTH DEPT. REP. INITIALS ECG

WILLIAM B. WALKER M.D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
HAZARDOUS MATERIALS DIRECTOR

CONTRA COSTA HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS DIVISION

HAZARDOUS WASTE GENERATOR PROGRAM INSPECTION COMPLIANCE REPORT

FACILITY NAME: CCC Public Works Dept. Byron Airport	FACILITY #: 70985 DATE: 4/28/2000
ADDRESS: 500 Eagle Court (3000 Armstrong) Byron 94514	PROGRAM STATUS CODE: (A-1) A-2 I-1 I-2
CONTACT PERSON: Bryan Horne (On site - Mark Grosenheider)	GENERATOR ID#: CA: L 000112340
TITLE: Env. Officer PHONE: 925-646-5722-office 925-634-0149-on site	INSPECTION TYPE: (NORMAL) FOLLOW-UP SIC: 4581

HAZARDOUS WASTE VIOLATIONS - CALIFORNIA CODE OF REGULATIONS TITLE 22

	GENERAL REQUIREMENTS			**USE & MANAGEMENT OF CONTAINERS**	
01	___ TREATMENT, STORAGE, DISPOSAL	66262.10	28	___ HAZARDOUS WASTE LABELS	66262.34
02	___ HAZ. WASTE DETERMINATION	66262.11	29	___ CONTAINER CONDITION	66265.171
03	___ EPA IDENTIFICATION NUMBER	66262.12	30	___ CONTAINER COMPATIBILITY	66265.172
04	___ ACCUMULATION TIME	66262.34	31	A CONTAINER MANAGEMENT -	66265.173
07	___ USE OF HAZARDOUS WASTE MANIFEST	66262.23	32	___ WEEKLY AREA INSPECTIONS	66265.174
			33	___ BUFFER ZONE FOR SPECIAL WASTES	66265.176
	RECORDKEEPING & REPORTING of, - sp.		34	___ SEPARATION OF INCOMPATIBLES	66265.177
08	___ DISPOSAL DOCUMENTATION ON FILE	66262.40			
10	___ BIENNIAL REPORT ON FILE /SUBMITTED	66262.40-41		**HAZARDOUS WASTE STORAGE TANKS**	
11	___ WASTE ANALYSIS ON FILE	66262.40	35	___ SECONDARY CONTAINMENT	66265.193
13	___ EXCEPTION REPORT	66262.42	36	___ SPILL PREVENTION	66265.194
			37	___ DAILY INSPECTIONS DOCUMENTED	66265.195
	EMPLOYEE HAZARDOUS MATERIALS TRAINING		38	___ LEAKING OR UNFIT TANKS SYSTEMS	66265.196
14	___ EMPLOYEE TRAINING PROGRAM	66265.16	39	___ IGNITABLE OR REACTIVE WASTES	66265.198
15	___ TRAINING DOCUMENTATION	66265.16			
			40	___ SOURCE REDUCTION REQUIRED (SB14)	
17	___ CONTINGENCY PLAN N/A - but updating being done	66265.52-56	40a	___ SOURCE REDUCTION PLAN	
			41	___ BUSINESS PLAN REQUIRED	
	FACILITY OPERATION		42	___ UGT PERMIT REQUIRED	
22	___ MAINTENANCE & OPERATION OF FACILITY	66265.31	43	___ OUTSTANDING HWG INVOICE	
23	___ REQUIRED EQUIPMENT	66265.32	44	___ ONSITE RECYCLING NOTIFICATION	
24	___ EQUIPMENT MAINTENANCE & TESTING	66265.33	45	___ ONSITE RECYCLING ACTIVITIES APPROPRIATE	
25	___ COMMUNICATION OR ALARM SYSTEMS	66265.34			
26	___ REQUIRED AISLE SPACE	66265.35	50	OTHER:	
27	___ EMERGENCY RESPONSE AGENCIES	66265.37			

HAZARDOUS WASTE STREAM	WASTE CODE	ANNUAL QTY	HAZARDOUS WASTE STREAM	WASTE CODE	ANNUAL QTY
used oil from tenants	221	700 gal.	Chromium 01		
Occasional Lead batteries		+ oil filters collected			
ADDITIONAL WASTES LISTED ON CONTINUATION SHEET: Y (N)			TOTAL ANNUAL TONNAGE OF HAZARDOUS WASTE		

CONTRA COSTA COUNTY CLEAN WATER PROGRAM / POLLUTION PREVENTION

ILLICIT DISCHARGE OBSERVED Y / N	ILLICIT CONNECTION OBSERVED Y / N

1. STORM DRAIN SYSTEMS	(G) F P	4. OUTDOOR PROCESSING AREA	G F P	7. OUTDOOR PARKING & ACCESS ROADS	(G) F P
2. HOUSEKEEPING	(G) F P	5. OUTDOOR MAINTENANCE AREA	G F P	8. OTHER (DESCRIBE BELOW)	G F P
3. OUTDOOR STORAGE AREA	(G) F P	6. OUTDOOR WASH AREA	(G) F P	G = GOOD F = FAIR P = POOR	

NOI FACILITY:	FACILITY FILED NOI	FACILITY NOT COVERED - MAY REQUIRE COVERAGE	FACILITY HAS NPDES PERMIT
Y (N)	Y (N)	Y / N	Y / N
	WDID# 5 60 I 8 0 0 2 6 0 6		PERMIT #

STORM WATER POLLUTION PREVENTION PLAN WRITTEN PLAN: Y / N	SELF MONITORING IMPLEMENTED Y / N	SELF-CERTIFIED NO EXPOSURE Y / N

POLLUTION PREVENTION INFORMATION REQUESTED Y (N)	POLLUTION PREVENTION IMPLEMENTED (GOOD) / FAIR / POOR	GREEN BUSINESS CANDIDATE Y (N)

OBSERVATIONS – NOTICE TO COMPLY

- SEE REVERSE FOR EXPLANATIONS OF VIOLATIONS -

County-run airport. Only businesses are Bay Area Skydiving and Stolz Mega. - Other tenants are private use planes. Water from washing + oil tank area goes to oil/water separator and backfield. Water at fueling operation goes to O/W separator

VIOLATIONS MUST BE CORRECTED BY: 5/28/2000 NO VIOLATIONS OBSERVED ☐ cm

FACILITY IS SUBJECT TO REINSPECTION. DISPUTES TO THIS INSPECTION REPORT MUST BE MADE IN WRITING WITHIN THIRTY DAYS OF THE SIGNATURE DATE.

FACILITY REP.: Mark Grosenheider	INSPECTOR: ELAINE GLIMME
TITLE: Airport Operations Specialist	TITLE: HAZARDOUS MATERIALS SPECIALIST
SIGNATURE: M Grosenheider DATE: 4/28/00	SIGNATURE: Elaine C. Glimme DATE: 4/28/2000

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INSPECTION CONTINUATION SHEET

UGT ☐ AB 2185 ☐ H.W. GEN ☒ WASTE MIN. ☐

INSPECTION COMMENTS

and to storm water. Housekeeping is excellent.

Contingency Plan / Training Plan is being updated. - Last plans filled out in 1997.

SPCC Plan was unavailable.

~~Business Plan~~

Note. - Be sure to keep records for battery pick ups too. -

Business Plan available. -

Note. Unleaded gasoline was not on site at the time: tank empty.

Notice to comply:

(1) One open drum with oily water was found by Bay & One empty Sludge truck. - E

(2). - S.P.C.C. plan unavailable. - Note that Stormwater mgmt. plan has S.P.C.C. elements. -

~~(3) Battery~~

Within 30 days submit a report indicating how (1) & (2) have been addressed ECG 4/28/2000

FACILITY NAME CCC Public Works Byron Airport

SITE ID # 709855 DATE 4/28/2000 FACILITY INITIALS MJ HEALTH DEPT. REP. INITIALS ECG

770985

CASE NUMBER: 00512-01

Contra Costa County Health Services Department

Hazardous Materials Programs

Incident, Notification, and Complaint Report Form

Date: 5/12/00 Type: C (N) I Received By: prl IR Staff: Greg

Time of Call: 1500 Case Index: ____ Reported by: Comm1 or Complaint Referred to:

Direct Page

Clean Water

Referral From ____

Other: ____

Initial Notification Source

Name: Mark Grosenheider

Phone Number: CCC Byron Airport 634-0147

Incident Location

Facility/Other: Contra Costa Byron Airport

Address: 500 Eagle Court

Byron

District: West / Central / (East) / South / Concord

City/Community: BYRON

☐ Incorporated ☐ Unincorporated

Date of Incident: 5/12 **Time of Incident:** ____ Ongoing ☐

Category

☐ Facility
- ☐ Toxic Gas Release
- ☐ Flammable Non-toxic Hazardous Release
- ☒ Spill or Various Plant Upset (Other)
- ☐ Fire or Explosion

☐ Transportation Incident
- ☐ Tank Truck
- ☐ Railroad
- ☐ On Water
- ☐ Pipeline

☐ Storm Drain/Creek
☐ Drug Lab
☐ Disposal or Abandonment
☐ Other ____

Initial Description: have a tanker w/100 gal of jet fuel & is leaking on pavement & some ground contamination → 3' by 1' wide. Clean up is in process. Fire on scene. Contained.

Incident Details **CWS Level:** C 0 1 2 3 ☒ No Action Taken

Time Departed for Scene: ____ Time Arrived on Scene: ____ Time Departed Scene: ____

Wind Speed Direction: ____ Latitude: ____ Longitude: ____ Thomas Bros. Coordinates ____

Hazardous Materials

	Material	Quantity	Physical State
☐ Notify ☐ Fire ☐ Reactive ☐ Press ☐ Acute ☐ Chronic			S L G
☐ Notify ☐ Fire ☐ Reactive ☐ Press ☐ Acute ☐ Chronic			S L G
☐ Notify ☐ Fire ☐ Reactive ☐ Press ☐ Acute ☐ Chronic			S L G

Other Details:

Reponsible Party:

Address: ____ Phone Number: ____

Property Owner (LAN Parcel #):

Address: ____ Phone Number: ____

Referral To Agency ____

Entered 5/12/00 prl

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Facility ID Number: 77-0985

CCC BYRON AIRPORT
SUSAN HILL
550 SALLY RIDE DR
CONCORD CA 94520

Facility Operator, Name, and Address
CONTRA COSTA COUNTY PUB WO
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

This business is operating in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes the Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator
- ☐ Hazardous Waste Treatment On-Site
- ☐ Storage of Hazardous Materials in Underground Tanks **(see attached permit)**
- ☑ Aboveground Petroleum Storage Tanks (SPCC Only)

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature: Lewis G. Pascalli, Jr.

Printed Name: Lewis G. Pascalli, Jr.

Title Director of Hazardous Materials Programs

Date Issued: 07/01/2001

Expiration Date: 06/30/2002

CONTRA COSTA
HEALTH SERVICES

CUPA AUTHORIZATION/PERMIT CONDITIONS

Permit No: 77-0985 Facility: CCC BYRON AIRPORT

In order to maintain the authorization/permit, the business must comply with the following, as applicable :

* Hazardous Materials Business Plan Program, Cal H&S Code Division 20, Chapter 6.95, Article 1 and Title19 CCR and Uniform Fire Code, Article 80.103 (b) and (c).

* Aboveground Petroleum Storage Act-SPCC Plans: Cal H&S Code Division 20, Chapter 6.67 and 40 CFR 112.

* Hazardous Waste Generator Program: Cal H&S Code Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Div. 4.5 .

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address	Facility Operator, Name, and Address
CCC BYRON AIRPORT SUSAN HILL 550 SALLY RIDE DR CONCORD CA 94520	CCC BYRON AIRPORT CCC BYRON AIRPORT 500 EAGLE CT BYRON, CA 94514

This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature 

Title Director of Hazardous Materials Programs

Printed name Lewis G. Pascalli, Jr.

Date Issued 07/01/2002

Expiration Date 06/30/2004

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility: CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Aboveground Petroleum Storage Act SPCC Plans: CHSC Division 20, Chapter 6.67 and 40 CFR 112.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS

4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

HAZARDOUS WASTE GENERATOR INSPECTION

Generator Name: CCC Byron Airport Site I.D. Number 70985

Program Status: ☑Active ☐Inactive ☐RCRA-SQG ☐RCRA-LQG ☐Non-RCRA ☐None

Inspection Type: ☑Routine ☐Follow-up ☐Complaint ☐Joint ☐Multi-media ☐Referred to: _____

VIOLATIONS* (Title 22 California Code of Regulations/Chapter 6.5 California Health and Safety Code)

General Requirements

__	Treatment, Storage, Disposal	66262.10
__	Hazardous Waste Determination	66262.11
__	EPA Identification Number	66262.12
__	Accumulation Time	66262.34
__	Use of Hazardous Waste Manifests	66262.23

Record-Keeping & Reporting

__	Disposal Documentation on File	66262.40
__	Biennial Report on File/Submittal	66262.40-41
__	Waste Analysis on File	66262.40
__	Exception Reporting	66262.42

Hazardous Waste Handler Training

__	Employee Training Program OK	66265.16
X	Training Documentation	66265.16

__	**Contingency Plan** OK	66265.52-56

Facility Operation

__	Maintenance & Operation	66265.31
__	Required Equipment	66265.32
__	Equipment Maintenance & Testing	66265.33
__	Communications or Alarm System	66265.34
__	Required Aisle Space	66265.35
__	Emergency Response Agencies	66265.37

Use & Management of Containers

__	Hazardous Waste Labels	66262.34
__	Container Condition	66265.171
__	Container Compatibility	66265.172
__	Container Management	66265.173
__	Weekly Area Inspections	66265.174
__	Buffer zone for Special Wastes	66265.176
__	Separation of Incompatibles	66265.177

Hazardous Waste Storage Tanks

__	Secondary Containment	66265.193
__	Spill Prevention	66265.194
__	Documented Daily Inspections	66265.195
__	Leaking or Unfit Tanks Systems	66265.196
__	Ignitable or Reactive Waste	66265.198

Enter 6/11/03 JR

Miscellaneous

__ Source Reductions (SB 14)
__ On-site Recycling Notifications
__ On-site Recycling Activities

Other: _____

*See back of page for regulatory citations

☐Green Business Program candidate

Waste Code	Hazardous Waste Stream	Annual Quantity (Tons)
221	Waste oil	<5T (1-2.5T/yr)

Total Annual Tonnage of Hazardous Waste Generated 2.5T ☐**No Violations Observed**

Violations/Corrections

Please submit documentation of training

Violations must be corrected by: Aug 1, 03 **Violation Summary:** ☐Class I ☐Class II ☐Minor

Site Representative's Signature DNA Date 6/5/03 Specialist's Signature [signature] Date 06/05/03

Total Time for Review and Inspection (in 15 minute increments): 1hr

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALETI, JR., ESQ.
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

CLEAN WATER PROGRAM/POLLUTION PREVENTION

Facility Name Contra Costa County Phone No. (925) 634-0147
Facility Address 500 Eagle Ct Byron 94514. SIC Code
Illicit Discharge Observed ☐Yes ☒No Illicit Connection Observed ☐Yes ☒No

1. Storm Drain Systems	(G) F P	5. Outdoor Maintenance Area	(G) F P
2. Housekeeping	(G) F P	6. Outdoor Wash Area	(G) F P — oil-H_2O Seperator
3. Outdoor Storage Area	(G) F P	7. Outdoor Parking & Access Roads	(G) F P
4. Outdoor Processing Area	G F P	8. Other (Describe Below)	G F P
↳ None		G = Good F=Fair P=Poor	

NOI Facility ☒Yes ☐No Facility Filed NOI ☒Yes ☐No WDID# 5B07500-2606
Facility Not Covered – May Require Coverage ☐Yes ☐No
Facility has NPDES Permit ☐Yes ☐No If yes, Permit #

Storm Water Pollution Prevention Plan Written Plan: ☒Yes ☐No Reviewed SWPPP on-site - good
Self Monitoring Implemented ☐Yes ☐No
Self-Certified No Exposure ☐Yes ☐No

Pollution Prevention Information Requested ☐Yes ☐No
Pollution Prevention Implemented ☐Good ☐Fair ☐Poor NA
Green Business Candidate ☐Yes ☐No

Violations/Corrections/BMPs
(See reverse for explanations of BMPs)

Facility is an airport - good housekeeping, Wash Pad for airport has an oil & Water Seperator.

4 above ground Tanks
1-W.O. 250 gal 1000 - empty
10,000 AV gas 200 gal diesel (for H_2O Pump)

Violations Must Be Corrected by: **No Violations Observed** ☒
Facility is subject to reinspection. Disputes to this inspection report must be made in writing within thirty days of the signature date.

Facility Representative's Signature Doreen R Ruess Date 6/5/03
Specialist's Signature Lisa Loyet Date 06/05/03

• Contra Costa Community Substance Abuse Services • Contra Costa Emergency Medical Services • Contra Costa Environmental Health • Contra Costa Health Plan •
• Contra Costa Hazardous Materials Programs • Contra Costa Mental Health • Contra Costa Public Health • Contra Costa Regional Medical Center • Contra Costa Health Centers •

WILLIAM B. WALKER, M. D.
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CONTRA COSTA HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS

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Ph (925) 646-2286
Fax (925) 646-2073

INSPECTION COVER SHEET

Facility Name Contra Costa County - Byron Airport
Address 500 Eagle Ct
City Byron State CA Zip 94514
EPA I.D. Number CAL 000112340 Site I.D. No. 70985
Contact Ms Arens Title County Airport Environ. Manager
Phone Number (925) 646-5722 Inspection Date(s) 06/05/03

Program(s): (check all that apply)

- [X] Hazardous Materials Release Response Plan
- [X] Hazardous Waste Generator
- [ ] Underground Storage Tank (UST)
- [X] Aboveground Petroleum Storage Tank (AST)
- [ ] Tiered Permitting
- [ ] Green Business
- [X] Clean Water
- [X] Cal/ARP

REPRESENTATIVES PRESENT:

Name	Title	Organization
Sue Loyd	HMS	CCHS
Mr Crossheider	Ops Specialist	Byron Airport
Ms Arens	Env. Manager	Byron Airport

Additional Comments: _____

This report may identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC) or the California Code of Regulations (CCR). The Violations may be described in more detail on an attached inspection sheet.

Failure to correct observed violations within the scheduled period provided may result in Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) citing you for continuing and/or additional violations. Issuance of this Inspection Report does not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted.

Eileen R Arens 6/5/03
Consent to inspect given by Date

Hazardous Materials Specialist 06/05/03
Date

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

HAZARDOUS MATERIALS RELEASE RESPONSE & INVENTORY PROGRAM
BUSINESS PLAN VALIDATION & SITE INSPECTION REPORT

Facility Name: CCC Byron Airport Site I.D. Number 70985

Program Status: ☑Active ☐Inactive ☐Referred to _____

Inspection Type: ☑Routine ☐Follow-up ☐Complaint ☐Joint ☐Multi-media

General Business Plan Requirements
(CCR Sect. 2729.1 & HSC Sect. 25503.5)
__Business Plan Submitted
__Business Plan by Due Date

Owner/Operator Identification Page
(CCR Sect. 2729.2(a)(1) & HSC Sect. 25503.3(a))
__Reporting Period
__Business Information
__Owner Information
__Emergency Contact Information
__Extremely Hazardous Materials
__Number of Employees
__Total Pounds of Hazardous Materials

Chemical Description Page
(CCR Sect. 2729.2(a)(2) & HSC Sect. 25503.3(a) & 25509)
__Chemical Location
__Fire Code Classes
__Type
__Physical State
__Federal Hazard Categories
__State Waste Code
__Days on Site
__Largest Container
__Units
__Maximum Daily Amount
__Annual Waste Amount
__Storage Container
__Storage Pressure
__Storage Temperature
__Hazardous Components
__Conversion to Pounds
__All Hazardous Materials, greater than threshold quantities, reported

Site Layout & Facility Diagrams
(CCR Sect. 2729.2(a)(3) & HSC Sect. 25517.5(a); Sect. 25518)
__Site Layout & Facility Diagram Submitted
__Details Complete and Accurate

Entered 6/11/03 JR

Emergency Response & Evacuation Plan
(CCR Sect. 2731 & HSC Sect. 2550.4(b))
__Emergency Response/Evacuation Plan
__Notification & Alarm Procedures Submitted
__Evacuation Procedures
__Emergency Procedures
__Emergency Equipment
__Emergency Response Procedures
__Other

Employee Training Requirements
(CCR Sect. 2732 & HSC Sect. 25504(c))
__Training Plan Submitted
X Training Conducted & Documented
__Other

Enforcement Action (HSC Sect. 25514-25516.2)
☐Informal ☐Administrative ☐Civil ☐Criminal

Violations/Corrections

Please submit training documentation

Violations Must Be Corrected By: Aug 1, 03 **No Violations Observed** ☐

Site Representative's Signature [signature] Date 6/5/03 Specialist's Signature [signature] Date 06/05/03

Total Time for Review and Inspection (in 15 minute increments): 1H

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS

4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

HAZARDOUS WASTE GENERATOR INSPECTION

Generator Name: Byron Airport Site I.D. Number 70985

Program Status: ☐Active ☐Inactive ☐RCRA-SQG ☐RCRA-LQG ☐Non-RCRA ☐None

Inspection Type: ☐Routine ☑Follow-up ☐Complaint ☐Joint ☐Multi-media ☐Referred to:_____

VIOLATIONS* (Title 22 California Code of Regulations/Chapter 6.5 California Health and Safety Code)

General Requirements

__ Treatment, Storage, Disposal	66262.10
__ Hazardous Waste Determination	66262.11
__ EPA Identification Number	66262.12
__ Accumulation Time	66262.34
__ Use of Hazardous Waste Manifests	66262.23

Record-Keeping & Reporting

__ Disposal Documentation on File	66262.40
__ Biennial Report on File/Submittal	66262.40-41
__ Waste Analysis on File	66262.40
__ Exception Reporting	66262.42

Hazardous Waste Handler Training

__ Employee Training Program	66265.16
__ Training Documentation	66265.16

__ **Contingency Plan** 66265.52-56

Facility Operation

__ Maintenance & Operation	66265.31
__ Required Equipment	66265.32
__ Equipment Maintenance & Testing	66265.33
__ Communications or Alarm System	66265.34
__ Required Aisle Space	66265.35
__ Emergency Response Agencies	66265.37

Use & Management of Containers

__ Hazardous Waste Labels	66262.34
__ Container Condition	66265.171
__ Container Compatibility	66265.172
__ Container Management	66265.173
__ Weekly Area Inspections	66265.174
__ Buffer zone for Special Wastes	66265.176
__ Separation of Incompatibles	66265.177

Hazardous Waste Storage Tanks

__ Secondary Containment	66265.193
__ Spill Prevention	66265.194
__ Documented Daily Inspections	66265.195
__ Leaking or Unfit Tanks Systems	66265.196
__ Ignitable or Reactive Waste	66265.198

Miscellaneous

__ Source Reductions (SB 14)
__ On-site Recycling Notifications
__ On-site Recycling Activities

Other:

*See back of page for regulatory citations

☐Green Business Program candidate

Enter 8/18/03 JR

Waste Code	Hazardous Waste Stream	Annual Quantity (Tons)

Total Annual Tonnage of Hazardous Waste Generated_____ ☐**No Violations Observed**

Violations/Corrections

All Violations Corrected

Violations must be corrected by:_____ **Violation Summary:** ☐Class I ☐Class II ☐Minor

Site Representative's Signature_____ Date____ Specialist's Signature Sax Date 08/18/03

Total Time for Review and Inspection (in 15 minute increments): 1 unit Page 1 of 1

Employee Training Log

Employee Signature	Employee Name	Job Title	Date of Training	Trainer's Initials
Doreen R. Arens	Doreen Arens	Environ. & Comm. Relations	6/18/03	DRA
Ed Asbert	Ed Asbert	Airport Operations Specialist	6/18/03	DRA
Steve Callahan	Steve Callahan	Airport Operations Specialist	6/18/03	DRA
K.C. Coyle	K.C. Coyle	Supervisor of Operations	6/18/03	DRA
Diane Favero	Diane Favero	Airport Secretary	6/18/03	DRA
Keith Freitas	Keith Freitas	Acting Director of Airports	6/18/03	DRA
Mark Grosenheider	Mark Grosenheider	Airport O[illegible]tions Specialist	6/18/03	DRA
Byron J. Hill	Sue Hill	Accounting Technician	6/18/03	DRA
Mike Ivy	Mike Ivy	Airport Operations Specialist	6/18/03	DRA
Kim Jeffries	Kim Jeffries	Real Properties Technician	6/18/03	DRA
Yohei Kakuda	Yohei Kakuda	Airport Operations Technician	6/18/03	DRA
Mario Loya	Mario Loya	Airport Operations Specialist	6/18/03	DRA
Ron Richman	Ron Richman	Airport Operations Specialist	6/18/03	DRA
Bill Stockdale	Bill Stockdale	Airport Operations Specialist	6/18/03	DRA
Rob Wangan	Rob Wangan	Airport Operations Technician	6/18/03	DRA

Description of Training:

Initial Training on the Hazardous Material Contingency Plan for Byron Airport

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
LEWIS G. PASCALLI, JR., ESQ.
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

HAZARDOUS MATERIALS RELEASE RESPONSE & INVENTORY PROGRAM
BUSINESS PLAN VALIDATION & SITE INSPECTION REPORT

Facility Name: Byron Airport Site I.D. Number _____

Program Status: ☐Active ☐Inactive ☐Referred to _____

Inspection Type: ☐Routine ☑Follow-up ☐Complaint ☐Joint ☐Multi-media

General Business Plan Requirements
(CCR Sect. 2729.1 & HSC Sect. 25503.5)
__Business Plan Submitted
__Business Plan by Due Date

Owner/Operator Identification Page
(CCR Sect. 2729.2(a)(1) & HSC Sect. 25503.3(a))
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__Number of Employees
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__Fire Code Classes
__Type
__Physical State
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__State Waste Code
__Days on Site
__Largest Container
__Units
__Maximum Daily Amount
__Annual Waste Amount
__Storage Container
__Storage Pressure
__Storage Temperature
__Hazardous Components
__Conversion to Pounds
__All Hazardous Materials, greater than threshold quantities, reported

Site Layout & Facility Diagrams
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__Details Complete and Accurate

Enter 8/18/03 JR

Emergency Response & Evacuation Plan
(CCR Sect. 2731 & HSC Sect. 2550.4(b))
__Emergency Response/Evacuation Plan
__Notification & Alarm Procedures Submitted
__Evacuation Procedures
__Emergency Procedures
__Emergency Equipment
__Emergency Response Procedures
__Other

Employee Training Requirements
(CCR Sect. 2732 & HSC Sect. 25504(c))
__Training Plan Submitted
__Training Conducted & Documented
__Other

Enforcement Action (HSC Sect. 25514-25516.2)
☐Informal ☐Administrative ☐Civil ☐Criminal

Violations/Corrections

all violations corrected
See previous file

Violations Must Be Corrected By: _____ **No Violations Observed** ☐

Site Representative's Signature [signature] Date 08/18/03 Specialist's Signature [signature] Date 08/18/03

Total Time for Review and Inspection (in 15 minute increments): 1-Unit Page 1 of 1

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address	Facility Operator, Name, and Address
CCC BYRON AIRPORT **SUSAN HILL** **550 SALLY RIDE DR** **CONCORD CA 94520**	**CCC BYRON AIRPORT** **CCC BYRON AIRPORT** **500 EAGLE CT** **BYRON, CA 94514**

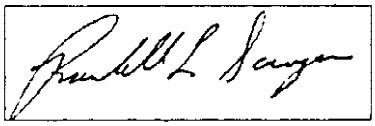
This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature 

Title Dir of Hazardous Materials Programs

Printed name Randall L. Sawyer

Date Issued 07/01/2004

Expiration Date 06/30/2005

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility: CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Aboveground Petroleum Storage Act SPCC Plans: CHSC Division 20, Chapter 6.67 and 40 CFR 112.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

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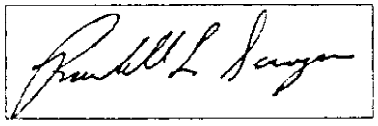
Signature 

Title Dir of Hazardous Materials Programs

Printed name Randall L. Sawyer

Date Issued 07/01/2005

Expiration Date 06/30/2006

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CONTRA COSTA HEALTH SERVICES

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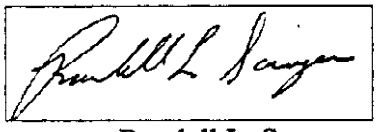
Signature 

Printed name Randall L. Sawyer

Title Dir of Hazardous Materials Programs

Date Issued 07/01/2006

Expiration Date 06/30/2007

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

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WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR
RANDALL L. SAWYER
DIRECTOR

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

CONTRA COSTA
HEALTH SERVICES

INSPECTION COVER SHEET

Facility Name CCC Byron Airport

Address 500 Eagle Ct

City Byron State CA Zip 94514

EPA I.D. Number CAL 000112340 Site I.D. No. 70985

Contact Mario Loya Title Airport Operations Spec.

Phone Number 925/634-0147 Inspection Date(s) 3/13/07

Program(s): (check all that apply)

- X Hazardous Materials Release Response Plan
- X Hazardous Waste Generator
- __ Underground Storage Tank (UST)
- __ Aboveground Petroleum Storage Tank (AST)
- __ Tiered Permitting
- __ Green Business
- X Clean Water
- __ Cal/ARP

REPRESENTATIVES PRESENT:

Name	Title	Organization
Sonny Khoo	HMS	CCC HSD
Mario Loya	Airport Ops. Spec.	CCC Byron Airport

Additional Comments: _____

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3-13-07 — Consent to inspect given by — Date

3/13/07 — Hazardous Materials Specialist — Date

William B. Walker, M. D.
Health Services Director

Randall L. Sawyer
Director

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
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94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

CONTRA COSTA HEALTH SERVICES

HAZARDOUS WASTE GENERATOR INSPECTION

Generator Name: CC Byron Airport Site I.D. Number _____

Program Status: ☒Active ☐Inactive ☐RCRA-SQG ☐RCRA-LQG ☐Non-RCRA ☐None

Inspection Type: ☒Routine ☐Follow-up ☐Complaint ☐Joint ☐Multi-media ☐Referred to: _____

VIOLATIONS* (Title 22 California Code of Regulations/Chapter 6.5 California Health and Safety Code)

General Requirements

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Miscellaneous

__ Source Reductions (SB 14)
__ On-site Recycling Notifications
__ On-site Recycling Activities

Other: _____

*See back of page for regulatory citations

☐Green Business Program candidate

Waste Code	Hazardous Waste Stream	Annual Quantity (Tons)
221	waste oil	1256 (.50T)

Total Annual Tonnage of Hazardous Waste Generated _____ ☒**No Violations Observed**

Violations/Corrections

good housekeeping

Violations must be corrected by: _____ **Violation Summary:** ☐Class I ☐Class II ☐Minor

Site Representative's Signature _____ Date 3-13-07. Specialist's Signature _____ Date 3/13/07

Total Time for Review and Inspection (in 15 minute increments): 2

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR

RANDALL L. SAWYER
DIRECTOR

HAZARDOUS MATERIALS PROGRAMS

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CONTRA COSTA HEALTH SERVICES

INSPECTION COVER SHEET

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Address 500 Eagle Ct

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EPA I.D. Number CAL 000112340 Site I.D. No. 70985

Contact Mario Loya Title Airport Operations Spec.

Phone Number 925/634-0147 Inspection Date(s) 3/13/07

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3-13-07
Consent to inspect given by: Date

3/13/07
Hazardous Materials Specialist Date

William B. Walker, M.D.
Health Services Director

Randall L. Sawyer
Director

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS

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BUSINESS PLAN VALIDATION & SITE INSPECTION REPORT

Facility Name: Cce Byron Airport Site I.D. Number 70985

Program Status: X Active ☐ Inactive ☐ Referred to _____

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__Total Pounds of Hazardous Materials

Chemical Description Page
(CCR Sect. 2729.2(a)(2) & HSC Sect. 25503.3(a) & 25509)
__Chemical Location
__Fire Code Classes
__Type
__Physical State
__Federal Hazard Categories
__State Waste Code
__Days on Site
__Largest Container
__Units
__Maximum Daily Amount
__Annual Waste Amount
__Storage Container
__Storage Pressure
__Storage Temperature
__Hazardous Components
__Conversion to Pounds
__All Hazardous Materials, greater than threshold quantities, reported

Site Layout & Facility Diagrams
(CCR Sect. 2729.2(a)(3) & HSC Sect. 25517.5(a); Sect. 25518)
__Site Layout & Facility Diagram Submitted
__Details Complete and Accurate

Emergency Response & Evacuation Plan
(CCR Sect. 2731 & HSC Sect. 25504(b))
__Emergency Response/Evacuation Plan
__Notification & Alarm Procedures Submitted
__Evacuation Procedures
__Emergency Procedures
__Emergency Equipment
__Emergency Response Procedures
__Other

Employee Training Requirements
(CCR Sect. 2732 & HSC Sect. 25504(c))
__Training Plan Submitted
__Training Conducted & Documented
__Other

Enforcement Action (HSC Sect. 25514-25516.2)
☐ Informal ☐ Administrative ☐ Civil ☐ Criminal

Violations/Corrections

yearly SWPP training ~~appear~~ includes hazmat training, spill response
gasoline tank is empty (not used

Violations Must Be Corrected By: _____ X **No Violations Observed**

Site Representative's Signature [signature] Date 3-13-07 Specialist's Signature [signature] Date 3/13/07

Total Time for Review and Inspection (in 15 minute increments): 6

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address	Facility Operator, Name, and Address
CCC BYRON AIRPORT **SUSAN HILL** **550 SALLY RIDE DR** **CONCORD CA 94520**	**CCC BYRON AIRPORT** **CCC BYRON AIRPORT** **500 EAGLE CT** **BYRON, CA 94514**

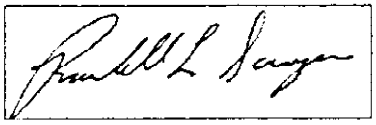
This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature 

Title Dir of Hazardous Materials Programs

Printed name Randall L. Sawyer

Date Issued 07/01/2007

Expiration Date 06/30/2008

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS
FACILITY INFORMATION 2008

BUSINESS OWNER/OPERATOR IDENTIFICATION

#770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

RECEIVED
MAR 03 2008
Contra Costa Health
Hazardous Page ___ of ___

I. IDENTIFICATION

FACILITY ID# 07-000 7709851	BEGINNING DATE 100: 01/01/08	ENDING DATE 101: 12/31/08	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: Contra Costa County - Byron Airport		BUSINESS PHONE 102: 925-634-0147	
BUSINESS SITE ADDRESS 103: 500 Eagle Court		BUSINESS FAX 102a: 925-513-0749	
BUSINESS SITE CITY 104: Byron	CA	ZIP CODE 105: 94514	COUNTY 108: Contra Costa
DUN & BRADSTREET 106: 848313052		PRIMARY SIC 107: 4581	PRIMARY NAICS 107a: 488119
BUSINESS MAILING ADDRESS 108a: 550 Sally Ride Drive			
BUSINESS MAILING CITY 108b: Concord	STATE 108c: CA	ZIP CODE 108d: 94520	
BUSINESS OPERATOR NAME 109: Contra Costa County		BUSINESS OPERATOR PHONE 110: 925-646-5722	

II. BUSINESS OWNER

OWNER NAME 111: Contra Costa County	OWNER PHONE 112: 925-646-5722	
OWNER MAILING ADDRESS 113: 550 Sally Ride Drive		
OWNER MAILING CITY 114: Concord	STATE 115: CA	ZIP CODE 116: 94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: Mike Schreiber	CONTACT PHONE 118: 925-646-5722	
CONTACT MAILING ADDRESS 119: 550 Sally Ride Drive	CONTACT EMAIL 119a:	
CONTACT MAILING CITY 120: Concord	STATE 121: CA	ZIP CODE 122: 94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: Mark Grosenheider	NAME 128: Kenton "KC" Coyle
TITLE 124: Airport Operations Specialist	TITLE 129: Airport Operations Manager
BUSINESS PHONE 125: 925-634-0147	BUSINESS PHONE 130: 925-646-5722
24-HOUR PHONE 126: 925-646-5722	24-HOUR PHONE 131: 925-646-5722
CELL # 127: 925-383-1390	CELL # 132: N/A

ADDITIONAL LOCALLY COLLECTED INFORMATION:

Number of Employees: 15	**Total Pounds of Hazardous Materials:** 63,335		
Invoice Contact Name: Susan Hill	**Date of Ownership:** 1989		
Invoice Contact Address: 550 Sally Ride Drive			
Invoice City: Concord	**Invoice State:** CA	**Invoice ZIP:** 94520	**Invoice Telephone:** 925-646-5722

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134: 3/3/2008	NAME OF DOCUMENT PREPARER 135: Mike Schreiber
NAME OF SIGNER (print) 136: Mike Schreiber	TITLE OF SIGNER 137: Administrative Intern	

UPCF (10/05)

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2008

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards sourtheast of the Administration Building

CHEMICAL LOCATION CONFIDENTIAL 202
EPCRA YES ___ NO X

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5

MAP# (optional) 203 #1

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100LL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER ☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: 246

Maximum Daily Amount in pounds: 60,000 Lbs.

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2008

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County - Byron. Airport

CHEMICAL LOCATION 201
100 yards sourtheast of Administration Building

CHEMICAL LOCATION CONFIDENTIAL 202
EPCRA YES___ NO X

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203 X

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210
Class 1 Flammable Liquid

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 0 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: 246

Maximum Daily Amount in pounds: 0 Lbs.

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2008

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Road

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO X 202

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203 #2

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 200 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) 221 ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: 246

Maximum Daily Amount in pounds: 1,460 Lbs.

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2008

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County - Byron Airport

CHEMICAL LOCATION 201
10 feet to the northeast of the Owner Maintenance Hanger

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO X 202

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203 #3

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
N/A

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	440	221

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION 246

Maximum Daily Amount in pounds: 1,875 Lbs.

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MAR 03 2008

Contra Costa Health
Hazardous Materials

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2008
BUSINESS ACTIVITIES

SITE #770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	0	7		0	0	0		7	7	0	9	8	5	1	EPA ID # (Hazardous Waste Only) 2 CAL000112340

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) Contra Costa County - Byron Airport 3

BUSINESS SITE ADDRESS 500 Eagle Court 103

BUSINESS SITE CITY Byron 104 | CA | ZIP CODE 94514 105

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	BUSINESS OWNER/OPERATOR IDENTIFICATION HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY UST TANK (one page per tank)
D. ABOVE GROUND PETROLEUM STORAGE Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	☒ YES ☐ NO 8	NO FORM REQUIRED A SPCC plan is required.
E. HAZARDOUS WASTE Generate hazardous waste? WASTE OIL ONLY!	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

N/A

Employee Training Program

Training Coordinator: Barrett M. Schreiber

Day Telephone#: (925) 646-5722 (24-hour facility)

1. Every employee will be trained in the following:
   a. The facility's Contingency Plan.
   b. Proper handling and storage techniques associated with the Hazardous Materials located on-site.
   c. Proper use and maintenance of both Emergency Response and Personal Protective equipment.
   d. The human and environmental health hazards associated with the hazardous material on-site. This will include reviewing Material Safety and Data Sheets (MSDS).
   e. Emergency response training and simple spill remediation.
   f. The location, operations and maintenance of fire extinguishers and spill control equipment.
   g. Facility shutdown procedures.
   h. The location of the facility's Contingency Plan.
2. Refresher training will be given annually by management.
3. New employees will be trained immediately upon hire.
4. Employees receiving training will so attest by signing and dating the following training log. All training records will be continuously maintained on-site.

Employee Training Log

Employee Signature	Employee Name	Job Title	Date of Training	Trainer's Initials
	Barrett M. Schreiber	Administrative Intern		
	Ed Asbert	Airport Operations Specialist	2/20/08	
	Steve Callahan	Airport Operations Specialist		
	K.C. Coyle	Supervisor of Operations	2/20/08	
	Beth Lee	Airport Business Development Manager		
	Keith Freitas	Director of Airports	2/20/08	
	Mark Grosenheider	Airport Operations Specialist	2/20/08	
	Sue Hill	Accounting Technician		
	Mike Ivy	Airport Operations Specialist	2/19/08	
	Julie Conti	Real Properties Technician		
	Juan Valdivia	Airport Operations Technician		
	Mario Santos	Airport Operations Technician		
	Natalie Olesen	Airport Secretary		
	Bill Stockdale	Airport Operations Specialist		
	Rob Wangan	Airport Operations Technician		

Description of Training:

Initial: Training on the Hazardous Materials Contingency plan for Byron Airport

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

CAL000112340
EPA Hazardous Waste Generator ID#

770985
Contra Costa County Facility ID #

This document will be kept in:

Airport Operations Office – Administration Building

Date of Plan: February 20,2008

Emergency Coordinator:	Mark Grosenheider / Michael Ivy
Day Telephone #:	(925) 634-0147
Cell Telephone #:	(925) 383-1390
Alternate Emergency Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1713
Alternate Emergency Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1715

Emergency Coordinators are familiar with all aspects of the facility. These designated persons have unrestricted access to the facility and have the authority to make decisions during an emergency.

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

CAL000112340
EPA Hazardous Waste Generator ID#

770985
Contra Costa County Facility ID #

This document will be kept in:

Airport Operations Office – Administration Building

Date of Plan: February 20,2008

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Alternate Emergency Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1715

Emergency Coordinators are familiar with all aspects of the facility. These designated persons have unrestricted access to the facility and have the authority to make decisions during an emergency.

Emergency Response Plan

In the event of a fire or a threatening Hazardous Materials release follow these emergency procedures immediately:

Assess the incident. Immediately and briefly assess the situation. Attempt to extinguish the fire or contain the threatening hazardous material spill if it can be done safely.

Evacuate the premises. If the fire or spill cannot be safely brought under control by on-site personnel, immediately evacuate the premises. Evacuate all personnel and customers from the premises by announcing: "THERE IS A (FIRE/HAZARDOUS MATERIALS SPILL) IN PROGRESS. PLEASE LEAVE THE PREMISES IMMEDIATELY THROUGH THE NEAREST SAFE EXIT." Make this announcement in a loud clear voice. Upon evacuating the premises, employees will meet at: The corner of Eagle Court and Falcon Way

Once employees meet at the designated assembly location, all employees will be accounted for and await further instructions.

Look Around. Before leaving, quickly look around to ensure that all others have vacated the premises, particularly those who might be working in remote areas of the premises. Assist or direct assistance to anyone having difficulty in evacuating.

Call for Help. DIAL 911. Give the following information:

- Your Name and Telephone Number
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment

Inform the dispatcher if anyone is trapped. Stay on the phone and be prepared to answer questions concerning the situation (e.g., spill characteristics, source, quantities, and extent of area affected). If the telephones at the administration building are not usable, the nearest available telephones are located at: Bay Area Skydiving, 6900 Falcon Way, Byron, CA 94514

Help Injured Persons. Help all injured persons as much as possible.

Report to Emergency Responders. The emergency coordinator shall report to emergency response personnel immediately upon their arrival. The emergency coordinator shall provide the emergency response personnel with any information or assistance they request.

Immediately Notify. If the emergency situation is determined by the Emergency Coordinator to be a threat to human health or the environment, the Contra Costa County Health Services Department (CCCHSD), the State Office of Emergency Services (State O.E.S.), and the County O.E.S. must be immediately notified. Notify the CCCHSD at: (925) 646-1112, the State O.E.S. at: (800) 852-7550, and the County O.E.S at: (925) 228-5000. Be prepared to answer questions concerning the emergency situation.

Re-entry. Do not re-enter the premises until re-entry approval has been given by Fire Department or other authorized Emergency Personnel.

Submit. Submit a written follow-up spill notification to the State O.E.S. and the County Health Services Department. The report must include the following information:

- Name and Telephone Number of Reporter
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment
- Estimated Quantities and Disposition of Recovered Material

Emergency Response Equipment. The emergency response equipment located on-site consists of the following:

- Fire Extinguishers
    - 30 located throughout the airport
- First Aid Kit
    - Administration Building
    - 1 in each airport vehicle

- Spill Control Equipment On-Site
    - Spill Kit which includes absorbent materials and shovels
- Location of Spill Equipment
    - Fuel Island, 100 yards southeast of the Administration Building
- Other Emergency Response Equipment
    - ARFF (Aircraft Rescue and Fire Fighting) truck

Following an Emergency, all Emergency Response Equipment must be restored to readiness.

Spill Response. If the spill response can be performed safely by on-site personnel, the following measures should be taken:

- Spill response personnel must utilize the appropriate personal protection.
- Stop the spill at its source to prevent the spill from increasing.
- Place the appropriate absorbent materials over the spilled materials and contain the boundaries of the spill.
- Special care must be taken to prevent the spill from reaching storm drains or unpaved areas.

The spill materials, along with the contaminated Spill Control Equipment, must be placed in an appropriate container and labeled as hazardous waste.

HAZARDOUS MATERIALS HANDLING, STORAGE AND DISPOSAL PROCEDURES

Contra Costa County-Buchanan Field and Byron Airports

SCOPE

This procedure applies to the Contra Costa County Airport System employees and pertains to the handling, storage and disposal of hazardous material.

PURPOSE

To provide general guidelines and procedures for the handling of hazardous materials. The procedure covers the following topics: handling, storage and disposal of hazardous material

PROGRAM

A. Definitions

1. Hazardous Characteristics: Are those distinguishing traits that identify waste as dangerous to the environment in accordance with CFR Part 261, Subpart C.
2. Ignitability: (40 CFR 261.21) under normal contiditions the wastes may ignite. Ignitable waste has an EPA waste code D001.
3. Corrosively: (40CFR 261.22) the ability of wastes to corrode steel, or wastes that have a pH lower than 2 to higher than 12.5. Corrosive wastes have an EPA waste code D002
4. Reactivity: (40 CFR 261.23) under normal conditions the waste is unstable and may explode, react violently with air, or produces toxic fumes, gases and vapors when mixed with water or when subjected to heat or pressure. Reactive wastes have an EPA waste code D003.
5. Toxicity: (40 DFR 261.24) includes wastes that when subjected to Toxic Characterize Leaching Procedure (TCPL) the extract contains any of the contaminates listed in Table I, 40 CFR Part 261.24
6. EPA waste codes for toxic wastes range from D004 to D043.

B. Satellite Accumulation Areas: Accumulation of as much as 55 gallons of hazardous waste or one quart of acutely hazardous waste is allowable in containers at or near the point of generation where accumulated under 40 CFR 262.34c.

C. Handling and Storage of Hazardous Waste

1. Waste containers:

a. Must be made of materials compatible with the waste being collected;
b. Must be of the appropriate size for the amount of waste to be stored;
c. Must be kept closed during storage, except when adding or removing waste;
d. Must be maintained in good condition (e.g. to avoid leaks)

D. Labeling of Waste Containers:

a. must have contents of container;
b. must have accumulation date;
c. Must use the standard label determined by the Airport Operations office.

WILLIAM B. WALKER, M. D.
HEALTH SERVICES DIRECTOR
RANDALL L. SAWYER
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS

4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

2008 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

RECEIVED
MAR 03 2008
Contra Costa Health
Hazardous Materials

FACILITY/SITE ID: CCC BYRON AIRPORT/770985
500 EAGLE CT
BYRON 94514

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE SIGNIFICANTLY CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 3, 2008. **Forms postmarked after March 3, 2008 will be assessed a 50% late filling fee.**
• Do not send payments at this time. • Retain a copy for your records.

1. Determine how much hazardous waste your business generated during the **2007** calendar year.

Total Tonnage of Hazardous Waste Generated: Waste Oil ONLY

2007 HAZARDOUS WASTE GENERATOR CATEGORIES

Quantity of Hazardous Waste Generated	Fee Category #
Less than 5 tons	1
5 or more tons, but less than 25 tons	2
25 or more tons, but less than 50 tons	3
50 or more tons, but less than 250 tons	4
250 or more tons, but less than 500 tons	5
500 or more tons, but less than 1,000 tons	6
1,000 or more tons, but less than 2,000 tons	7
2,000 or more tons	8
Used Oil Only - See instructions on reverse	10

1. Using the table above, determine the Fee Category for your business. Categories will be verified during inspections. Discrepancies may result in additional fees and penalties.

Category: 10 KB

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: _____ Date: Jan 31, 2008

Print Name: Barrett M. Schreiber

Title: Administrative Intern Phone # (925) 646-5722

Forms postmarked after March 3, 2008 will be assessed a 50% late filling fee.
• Do not send payments at this time. • Retain a copy for your records.

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address	Facility Operator, Name, and Address
CCC BYRON AIRPORT **SUSAN HILL** **550 SALLY RIDE DR** **CONCORD CA 94520**	**CCC BYRON AIRPORT** **CCC BYRON AIRPORT** **500 EAGLE CT** **BYRON, CA 94514**

This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature Randall L. Sawyer

Title Dir of Hazardous Materials Programs

Printed name Randall L. Sawyer

Date Issued 07/01/2008

Expiration Date 06/30/2009

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS
FACILITY INFORMATION 2009

BUSINESS OWNER/OPERATOR IDENTIFICATION

SITE #770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

RECEIVED
JAN 16 2009
Contra Costa Health
Hazardous Materials

I. IDENTIFICATION

FACILITY ID# 07 0000 770985 1	BEGINNING DATE 100: 01/01/09	ENDING DATE 101: 12/31/09	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: CONTRA COSTA COUNTY - BYRON ARPT		BUSINESS PHONE 102: 925-634-0147	
BUSINESS SITE ADDRESS 103: 500 EAGLE COURT		BUSINESS FAX 102a: 925-513-0741	
BUSINESS SITE CITY 104: BYRON	CA	ZIP CODE 105: 94514	COUNTY 108: CONTRA COSTA
DUN & BRADSTREET 106: 848313052		PRIMARY SIC 107: 4581	PRIMARY NAICS 107a: 488119
BUSINESS MAILING ADDRESS 108a: 550 SALLY RIDE DRIVE			
BUSINESS MAILING CITY 108b: CONCORD		STATE 108c: CA	ZIP CODE 108d: 94520
BUSINESS OPERATOR NAME 109: CONTRA COSTA COUNTY		BUSINESS OPERATOR PHONE 110: 925-646-5722	

II. BUSINESS OWNER

OWNER NAME 111: CONTRA COSTA COUNTY	OWNER PHONE 112: 925-646-5722	
OWNER MAILING ADDRESS 113: 550 SALLY RIDE DRIVE		
OWNER MAILING CITY 114: CONCORD	STATE 115: CA	ZIP CODE 116: 94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: MIKE SCHREIBER	CONTACT PHONE 118: 925-646-5722	
CONTACT MAILING ADDRESS 119: 550 SALLY RIDE DRIVE	CONTACT EMAIL 119a: mschr@airport.cccounty.us	
CONTACT MAILING CITY 120: CONCORD	STATE 121: CA	ZIP CODE 122: 94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: MARK GROSENHEIDER / MIKE LUEY	NAME 128: KENTON "KC" COYLE
TITLE 124: AIRPORT OPERATION SPECIALISTS	TITLE 129: SUPERVISOR OF AIRPORT OPS.
BUSINESS PHONE 125: 925-634-0147	BUSINESS PHONE 130: 925-646-5722
24-HOUR PHONE 126: 925-646-5722	24-HOUR PHONE 131: 925-646-5722
CELL # 127: 925-383-1390	CELL # 132: 925-382-1713

ADDITIONAL LOCALLY COLLECTED INFORMATION:

Number of Employees: 15	Total Pounds of Hazardous Materials: 63335		
Invoice Contact Name: SUE HILL	Date of Ownership: 1989		
Invoice Contact Address: 550 SALLY RIDE DR			
Invoice City: CONCORD	Invoice State: CA	Invoice ZIP: 94520	Invoice Telephone: 925-646-5722

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
Mike Schreiber	1/14/2009	MIKE SCHREIBER
NAME OF SIGNER (print) 136: MIKE SCHREIBER	TITLE OF SIGNER 137: AIRPORT MANAGEMENT SPECIALIST	

UPCF (10/05)

1/27

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2009

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Road – Pump House

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES ___ NO X 202

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) 211 ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) 214 ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS

LARGEST CONTAINER 215
200

FED HAZARD CATEGORIES (Check all that apply) 216 ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) 221 ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224 ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225 ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1	226	227	☐ Yes ☐ No 228	229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds:** 1,460 **Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ **Yes** ☐ **No**

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2009

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CONTRA COSTA COUNTY – BYRON AIRPORT

CHEMICAL LOCATION 201
10ft to the NE of the owner maintenance Hgr

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES ___ NO ✓ 202

FACILITY ID # 0 7 [illegible] 0 0 0 [illegible] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
BLENDED HYDROCARBONS

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
WASTE OIL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
NA

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☑ c. WASTE 211

RADIOACTIVE ☐ Yes ☑ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☑ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	440	221

UNITS* (Check one item only) ☑ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☑ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☑ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☑ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds:** 1,875 **Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☑ **Yes** ☐ **No**

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2009

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 YDS SE of Admin. Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO ✓ 202

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☑ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210
Class 1 Flammable Liquid

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☑ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☑ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) ☑ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☑ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) ☑ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 0 222

STORAGE CONTAINER ☑ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☑ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☑ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds: 0 Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☐ Yes ☒ No

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2009

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
CONTRA COSTA COUNTY – BYRON AIRPORT

CHEMICAL LOCATION 201
100 YDS SE OF THE ADMINISTRATION BLDG

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO_X 202

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
BLENDED HYDROCARBONS

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
AVIATION FUEL – 100LL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (See appendix 6 of CUPA packet) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds:** 60,000 **Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ **Yes** ☐ **No**

ITE #770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

RECEIVED
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Contra Costa Health
Hazardous Materials

UNIFIED PROGRAM CONSOLIDATED FO
FACILITY INFORMATION 2009
BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	07 0 00 770985 1	EPA ID # (Hazardous Waste Only) CAL000112340 2
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)	CONTRA COSTA COUNTY - BYRON ARPT. 3	
BUSINESS SITE ADDRESS	500 EAGLE COURT 103	
BUSINESS SITE CITY	BYRON 104	CA ZIP CODE 94514 105

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...		If Yes, please complete these pages of the UPCF....
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☑ YES ☐ NO 4	BUSINESS OWNER/OPERATOR IDENTIFICATION HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☑ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☑ NO 5	UST FACILITY UST TANK (one page per tank)
D. ABOVE GROUND PETROLEUM STORAGE Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	☑ YES ☐ NO 8	A SPCC plan is required.
E. HAZARDOUS WASTE Generate hazardous waste?	☑ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☑ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☑ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☑ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☑ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☑ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	☐ YES ☑ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☑ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

William B. Walker, M. D.
Health Services Director
Randall L. Sawyer
Director

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

CONTRA COSTA HEALTH SERVICES

HAZARDOUS WASTE GENERATOR INSPECTION

Generator Name: CCC - Byron Airport Site I.D. Number 270985

Program Status: ☒Active ☐Inactive ☐RCRA-SQG ☐RCRA-LQG ☐Non-RCRA ☐None

Inspection Type: ☒Routine ☐Follow-up ☐Complaint ☐Joint ☐Multi-media ☐Referred to:_____

VIOLATIONS* (Title 22 California Code of Regulations/Chapter 6.5 California Health and Safety Code)

General Requirements		**Use & Management of Containers**	
(1) X Treatment, Storage, Disposal	66262.10	__ Hazardous Waste Labels	66262.34
__ Hazardous Waste Determination	66262.11	__ Container Condition	66265.171
__ EPA Identification Number	66262.12	__ Container Compatibility	66265.172
__ Accumulation Time	66262.34	(2) X Container Management	66265.173
__ Use of Hazardous Waste Manifests	66262.23	__ Weekly Area Inspections	66265.174
		__ Buffer zone for Special Wastes	66265.176
Record-Keeping & Reporting		__ Separation of Incompatibles	66265.177
__ Disposal Documentation on File	66262.40		
__ Biennial Report on File/Submittal	66262.40-41	**Hazardous Waste Storage Tanks**	
__ Waste Analysis on File	66262.40	__ Secondary Containment	66265.193
__ Exception Reporting	66262.42	__ Spill Prevention	66265.194
		__ Documented Daily Inspections	66265.195
Hazardous Waste Handler Training		__ Leaking or Unfit Tanks Systems	66265.196
__ Employee Training Program	66265.16	__ Ignitable or Reactive Waste	66265.198
__ Training Documentation	66265.16		
		Miscellaneous	
__ **Contingency Plan**	66265.52-56	__ Source Reductions (SB 14)	
		__ On-site Recycling Notifications	
Facility Operation		__ On-site Recycling Activities	
__ Maintenance & Operation	66265.31	**Other:** 411	
__ Required Equipment	66265.32		
__ Equipment Maintenance & Testing	66265.33	*See back of page for regulatory citations	
__ Communications or Alarm System	66265.34		
__ Required Aisle Space	66265.35	☐Green Business Program candidate	
__ Emergency Response Agencies	66265.37		

Waste Code	Hazardous Waste Stream	Annual Quantity (Tons)
	Waste Oil	400 gal
	Filters	55 gal

Total Annual Tonnage of Hazardous Waste Generated .25 tons ☐**No Violations Observed**

Violations/Corrections

(1) Saw flourescent tubes & refrigerators in dumpster - need to communicate w/ lessors about correct haz waste disposal.

(2) Put "waste" gas by fuel farm in 2nd contain + label it gasoline

Violations must be corrected by: 4/30/09 **Violation Summary:** ☐Class I ☐Class II ☐Minor

Site Representative's Signature _____ Date 3/31/09 Specialist's Signature _____ Date 3/31/09

Total Time for Review and Inspection (in 15 minute increments): 10

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR
RANDALL L. SAWYER
DIRECTOR

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
Fax (925) 646-2073

CONTRA COSTA
HEALTH SERVICES

INSPECTION COVER SHEET

Facility Name CCC Byron Airport

Address 500 Eagle CT

City Byron State CA Zip 94514

EPA I.D. Number _____ Site I.D. No. 170985

Contact Keith Title 646-5722

Phone Number or 634-0147 Inspection Date(s) 3/3/09

Program(s): (check all that apply)

- ☒ Hazardous Materials Release Response Plan
- ☐ Hazardous Waste Generator
- ☐ Underground Storage Tank (UST)
- ☐ Aboveground Petroleum Storage Tank (AST)
- ☐ Tiered Permitting
- ☒ Green Business
- ☐ Clean Water
- ☐ Cal/ARP

REPRESENTATIVES PRESENT:

Name	Title	Organization
Mike Ivey	Firefighter	CCC Airport
Lacey Friedma		CCCFSD

Additional Comments: _____

This report may identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC) or the California Code of Regulations (CCR). The Violations may be described in more detail on an attached inspection sheet.

Failure to correct observed violations within the scheduled period provided may result in Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) citing you for continuing and/or additional violations. Issuance of this Inspection Report does not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted.

Consent to inspect given by _____ Date _____

Hazardous Materials Specialist _____ Date _____

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR
RANDALL L. SAWYER
DIRECTOR

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CONTRA COSTA HEALTH SERVICES

CLEAN WATER PROGRAM/POLLUTION PREVENTION

Facility Name CCC Byron Airport Phone No. 634 0147
Facility Address 500 Eagle CT SIC Code 4581

Illicit Discharge Observed ☐Yes ☒No Illicit Connection Observed ☐Yes ☒No

1. Storm Drain Systems	G F P	5. Outdoor Maintenance Area	G F P N/A
2. Housekeeping	G F P	6. Outdoor Wash Area	G F P N/A
3. Outdoor Storage Area	G F P	7. Outdoor Parking & Access Roads	G F P
4. Outdoor Processing Area	G F P	8. Other (Describe Below)	G F P

G = Good F=Fair P=Poor

NOI Facility ☒Yes ☐No Facility Filed NOI ☒Yes ☐No WDID# 5B07100260G
Facility Not Covered – May Require Coverage ☐Yes ☐No
Facility has NPDES Permit ☐Yes ☐No If yes, Permit #

Storm Water Pollution Prevention Plan Written Plan: ☒Yes ☐No
Self Monitoring Implemented ☒Yes ☐No 1X per year
Self-Certified No Exposure ☐Yes ☐No

Pollution Prevention Information Requested ☐Yes ☒No
Pollution Prevention Implemented ☐Good ☒Fair ☐Poor
Green Business Candidate ☐Yes ☒No

Violations/Corrections/BMPs
(See reverse for explanations of BMPs)

A/1

SWPPP onsite
Have wash rack w/sump
Do Sampling from creek 1X year Keith 634 6572
(where does this drain go? ↘ by ACeT)
Improvement needs to be made regarding AV Fuel
Line from tank to Pump lying above ground and above storm drain

Violations Must Be Corrected by: 4/31/09 **No Violations Observed** ☐
Facility is subject to reinspection. Disputes to this inspection report must be made in writing within thirty days of the signature date.

Facility Representative's Signature [signature] Date 9/21/09
Specialist's Signature [signature] Date 3/31/09

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR
RANDALL L. SAWYER
DIRECTOR

CONTRA COSTA
HEALTH SERVICES

HAZARDOUS MATERIALS PROGRAMS
4333 Pacheco Boulevard
Martinez, California
94553-2229
Ph (925) 646-2286
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HAZARDOUS MATERIALS RELEASE RESPONSE & INVENTORY PROGRAM
BUSINESS PLAN VALIDATION & SITE INSPECTION REPORT

Facility Name: CCC Byron Airport Site I.D. Number *H0985

Program Status: ~~Active~~ ☐ Inactive ☐ Referred to _____

Inspection Type: ~~Routine~~ ☐ Follow-up ☐ Complaint ☐ Joint ☐ Multi-media

General Business Plan Requirements
(CCR Sect. 2729.1 & HSC Sect. 25503.5)
__Business Plan Submitted
__Business Plan by Due Date

Owner/Operator Identification Page
(CCR Sect. 2729.2(a)(1) & HSC Sect. 25503.3(a))
__Reporting Period
__Business Information
__Owner Information
__Emergency Contact Information
__Extremely Hazardous Materials
__Number of Employees
__Total Pounds of Hazardous Materials

Chemical Description Page
(CCR Sect. 2729.2(a)(2) & HSC Sect. 25503.3(a) & 25509)
__Chemical Location
__Fire Code Classes
__Type
__Physical State
__Federal Hazard Categories
__State Waste Code
__Days on Site
__Largest Container
__Units
__Maximum Daily Amount
__Annual Waste Amount
__Storage Container
__Storage Pressure
__Storage Temperature
__Hazardous Components
__Conversion to Pounds
__All Hazardous Materials, greater than threshold quantities, reported

Site Layout & Facility Diagrams
(CCR Sect. 2729.2(a)(3) & HSC Sect. 25517.5(a); Sect. 25518)
__Site Layout & Facility Diagram Submitted
__Details Complete and Accurate

Emergency Response & Evacuation Plan
(CCR Sect. 2731 & HSC Sect. 25504(b))
__Emergency Response/Evacuation Plan
__Notification & Alarm Procedures Submitted
__Evacuation Procedures
1 X Emergency Procedures
__Emergency Equipment
__Emergency Response Procedures
__Other

Employee Training Requirements
(CCR Sect. 2732 & HSC Sect. 25504(c))
__Training Plan Submitted
__Training Conducted & Documented
__Other

Enforcement Action (HSC Sect. 25514-25516.2)
☐ Informal ☐ Administrative ☐ Civil ☐ Criminal

All

Violations/Corrections

1 need to modify AV Fuel line above ground Above Ground unleaded tank not in use storm drain

They Do Ehs Haz Mat/Fire training in Salt Lake City includes Spills

Added new map

Violations Must Be Corrected By: 4/31/09 ☐ **No Violations Observed**

Site Representative's Signature _____ Date 3/31/09 Specialist's Signature _____ Date 3/31/09

Total Time for Review and Inspection (in 15-minute increments): 10 Page 4 of 4

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4333 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address	Facility Operator, Name, and Address
CCC BYRON AIRPORT SUSAN HILL 550 SALLY RIDE DR CONCORD CA 94520	CCC BYRON AIRPORT CCC BYRON AIRPORT 500 EAGLE CT BYRON, CA 94514

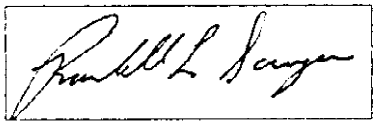
This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature 

Printed name Randall L. Sawyer

Title Dir of Hazardous Materials Programs

Date Issued 07/01/2009

Expiration Date 06/30/2010

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

CONTRA COSTA
HEALTH SERVICES

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JAN 16 2009
Contra Costa Health
Hazardous Materials

2009 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY/SITE ID: CCC BYRON AIRPORT / 770985
500 EAGLE CT ,
BYRON

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE SIGNIFICANTLY CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 2, 2009. **Forms postmarked after March 2, 2009 will be assessed a 50% late filling fee.**
• Do not send payments at this time. • Retain a copy for your records.

Determine how much hazardous waste your business generated during the **2008** calendar year.

Total Tonnage of Hazardous Waste Generated: WASTE OIL ONLY

2008 HAZARDOUS WASTE GENERATOR CATEGORIES

Quantity of Hazardous Waste Generated
Less than 5 tons
5 or more tons, but less than 12 tons
12 or more tons, but less than 25 tons
25 or more tons, but less than 50 tons
50 or more tons, but less than 250 tons
250 or more tons, but less than 500 tons
500 or more tons, but less than 1,000 tons
1,000 or more tons, but less than 2,000 tons
2,000 or more tons
Used Oil Only - See instructions on reverse

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: [signature] Date: JAN 14, 2009

Print Name: MIKE SCHREIBER

Title: ARBORIST MANAGEMENT SPECIALIST Phone # (925) 646-5722

Forms postmarked after March 2, 2009 will be assessed a 50% late filling fee.
• Do not send payments at this time. • Retain a copy for your records.

CONTRA COSTA
HEALTH SERVICES

RECEIVED

FEB 1 1 2010

Contra Costa Health
Hazardous Materials

2010 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY/SITE ID:

SITE #770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

EPA ID # CAL000112340

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 1, 2010. **Forms postmarked after March 1, 2010 will be assessed a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

This form helps the Hazardous Materials Program establish your hazardous waste fees each year. Fees are based on two criteria: tonnage of waste generated, less exempt wastes, and CUPA inspection requirements.

Determine how much hazardous waste your business generated during the 2009 calendar year.

1a	**Total** Tonnage of Hazardous Waste Generated	2.502
1b	Tons of **recycled** used oil	2.502
1c	Tons of **recycled** used filters (oil and/or fuel)	0
1d	Hazardous waste tonnage subject to fees *(Subtract lines 1b and 1c from line 1a)*	0

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: [signature] Date: 2/9/2010

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 646-5722

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS
4585 PACHECO BLVD., SUITE 100
MARTINEZ, CA 94553
(925) 335-3200

Please contact the Hazardous Materials Programs if you have questions.

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

RECEIVED
FEB 1 1 2010
Contra Costa Health
Hazardous Materials

CAL000112340
EPA Hazardous Waste Generator ID#

07 000 770985
Contra Costa County Facility ID #

This document will be kept in:

Airport Operations Office – Administration Building

Date of Plan: February 21, 2003

Emergency Coordinator:	Michael Ivy/Rusty Milburn
Day Telephone #:	(925) 634-0147
Cell Telephone #:	(925) 383-1390
Alternate Emergency Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1713
Alternate Emergency Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1715

Emergency Coordinators are familiar with all aspects of the facility. These designated persons have unrestricted access to the facility and have the authority to make decisions during an emergency.

Confidential Information

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

Emergency Coordinator:	Michael Ivy/Rusty Millburn
Day Telephone #:	(925) 634-0147 / (925) 383-1390 cell
Night Telephone#:	(925) 646-5722 (24-hour facility)
Address:	500 Eagle Court, Byron, CA 94514

Alternate

Emergency Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 382-1713
Address:	550 Sally Ride Drive, Concord, CA 94520

Training Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 382-1713
Address:	550 Sally Ride Drive, Concord, CA 94520

Emergency Response Plan

In the event of a fire or a threatening Hazardous Materials release follow these emergency procedures immediately:

Assess the incident. Immediately and briefly assess the situation. Attempt to extinguish the fire or contain the threatening hazardous material spill if it can be done safely.

Evacuate the premises. If the fire or spill cannot be safely brought under control by on-site personnel, immediately evacuate the premises. Evacuate all personnel and customers from the premises by announcing: "THERE IS A (FIRE/HAZARDOUS MATERIALS SPILL) IN PROGRESS. PLEASE LEAVE THE PREMISES IMMEDIATELY THROUGH THE NEAREST SAFE EXIT." Make this announcement in a loud clear voice. Upon evacuating the premises, employees will meet at: The corner of Eagle Court and Falcon Way

Once employees meet at the designated assembly location, all employees will be accounted for and await further instructions.

Look Around. Before leaving, quickly look around to ensure that all others have vacated the premises, particularly those who might be working in remote areas of the premises. Assist or direct assistance to anyone having difficulty in evacuating.

Call for Help. DIAL 911. Give the following information:

- Your Name and Telephone Number
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment

Inform the dispatcher if anyone is trapped. Stay on the phone and be prepared to answer questions concerning the situation (e.g., spill characteristics, source, quantities, and extent of area affected). If the telephones at the administration building are not usable, the nearest available telephones are located at: Bay Area Skydiving, 6900 Falcon Way, Byron, CA 94514

Help Injured Persons. Help all injured persons as much as possible.

Report to Emergency Responders. The emergency coordinator shall report to emergency response personnel immediately upon their arrival. The emergency coordinator shall provide the emergency response personnel with any information or assistance they request.

Immediately Notify. If the emergency situation is determined by the Emergency Coordinator to be a threat to human health or the environment, the Contra Costa County Health Services Department (CCCHSD), the State Office of Emergency Services (State O.E.S.), and the County O.E.S. must be immediately notified. Notify the CCCHSD at: (925) 335-3232, the State O.E.S. at: (800) 852-7550, and the County O.E.S at: (925) 228-5000. If the spill contains hazardous waste also notify Cal/EPA-DTSC at: (800) 698-6942. Be prepared to answer questions concerning the emergency situation.

Re-entry. Do not re-enter the premises until re-entry approval has been given by Fire Department or other authorized Emergency Personnel.

Submit. Submit a written follow-up spill notification to the State O.E.S. and the County Health Services Department. The report must include the following information:

- Name and Telephone Number of Reporter
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment
- Estimated Quantities and Disposition of Recovered Material

Emergency Response Equipment. The emergency response equipment located on-site consists of the following:

- Fire Extinguishers
    - 30 located throughout the airport
- First Aid Kit
    - Administration Building

    - 1 in each airport vehicle
- Spill Control Equipment On-Site
    - Spill Kit which includes absorbent materials and shovels
- Location of Spill Equipment
    - Fuel Island, 100 yards southeast of the Administration Building
- Other Emergency Response Equipment
    - ARFF (Aircraft Rescue and Fire Fighting) truck

Following an Emergency, all Emergency Response Equipment must be restored to readiness.

Spill Response. If the spill response can be performed safely by on-site personnel, the following measures should be taken:

- Spill response personnel must utilize the appropriate personal protection.
- Stop the spill at its source to prevent the spill from increasing and entering into the storm drain system.
- Place the appropriate absorbent materials over the spilled materials and contain the boundaries of the spill.
- Special care must be taken to prevent the spill from reaching storm drains or unpaved areas.

The spill materials, along with the contaminated Spill Control Equipment, must be placed in an appropriate container and labeled as hazardous waste.

Employee Training Program

Training Coordinator: Kenton "K.C." Coyle

Day Telephone#: (925) 646-5722 (24-hour facility)

1. Every employee will be trained in the following:
   a. The facility's Contingency Plan.
   b. Proper handling, storage and spill prevention techniques associated with the Hazardous Materials located on-site.
   c. Proper use and maintenance of both Emergency Response and Personal Protective equipment.
   d. The human and environmental health hazards associated with the hazardous material on-site. This will include reviewing Material Safety and Data Sheets (MSDS).
   e. Emergency response training and simple spill remediation.
   f. The location, operations and maintenance of fire extinguishers and spill control equipment.
   g. Facility shutdown procedures.
   h. The location of the facility's Contingency Plan.
   i. Evacuation and re-entry procedures
   j. Chemical spills mitigation and prevention.
   k. Safe methods for storage and handling of materials.
   l. Procedures for rescue and containment.
   m. Procedures for shutdown of operations.
2. Refresher training will be given annually by management.
3. New employees will be trained immediately upon hire.
4. Employees receiving training will so attest by signing and dating the following training log. All training records will be continuously maintained on-site.

Employee Training Log

Employee Signature	Employee Name	Job Title	Date of Training	Trainer's Initials

Description of Training:

Initial: Training on the Hazardous Materials Contingency plan for Byron Airport

RECEIVED
FEB 11 2010
Contra Costa Health
Hazardous Materials

SITE #770985
CCC BYRON AIRPORT
500 EAGLE CT
BYRON

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS
FACILITY INFORMATION 2010

BUSINESS OWNER/OPERATOR IDENTIFICATION

Page ___ of ___

I. IDENTIFICATION

FACILITY ID# 1: 07 000 77098 5	BEGINNING DATE 100: 01/01/10	ENDING DATE 101: 12/31/10	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: Contra Costa County - Byron Airport		BUSINESS PHONE 102: (925) 634-0147	
BUSINESS SITE ADDRESS 103: 500 Eagle Court		BUSINESS FAX 102a: (925) 513-0749	
BUSINESS SITE CITY 104: Byron	CA	ZIP CODE 105: 94514	COUNTY 108: Contra Costa
DUN & BRADSTREET 106: 848313052		PRIMARY SIC 107: 4581	PRIMARY NAICS 107a: 488119
BUSINESS MAILING ADDRESS 108a: 550 Sally Ride Drive			
BUSINESS MAILING CITY 108b: Concord		STATE 108c: CA	ZIP CODE 108d: 94520
BUSINESS OPERATOR NAME 109: Contra Costa County		BUSINESS OPERATOR PHONE 110: (925) 646-5722	

II. BUSINESS OWNER

OWNER NAME 111: Contra Costa County	OWNER PHONE 112: (925) 646-5722	
OWNER MAILING ADDRESS 113: 550 Sally Ride Drive		
OWNER MAILING CITY 114: Concord	STATE 115: CA	ZIP CODE 116: 94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: Natalie Olesen	CONTACT PHONE 118: (925) 646-5722	
CONTACT MAILING ADDRESS 119: 550 Sally Ride Drive	CONTACT EMAIL 119a: noles@airport.cccounty.us	
CONTACT MAILING CITY 120: Concord	STATE 121: CA	ZIP CODE 122: 94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: Mike Ivy/Rusty Milburn	NAME 128: Kenton."KC" Coyle
TITLE 124: Airport Operations Specialist	TITLE 129: Airport Operations Manager
BUSINESS PHONE 125: (925) 634-0147	BUSINESS PHONE 130: (925) 646-5722
24-HOUR PHONE 126: (925) 646-5722	24-HOUR PHONE 131: (925) 646-5722
CELL # 127: (925) 383-1390	CELL # 132: (925) 382-1713

ADDITIONAL LOCALLY COLLECTED INFORMATION:

Number of Employees: 14 **Total Pounds of Hazardous Materials:** 63,335 ll
Invoice Contact Name: Sue Hill **Date of Ownership:** 1989
Invoice Contact Address: 550 Sally Ride Drive
Invoice City: Concord **Invoice State:** CA **Invoice ZIP:** 94520 **Invoice Telephone:** (925) 646-5722

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
	2/9/2010	Natalie Olesen
NAME OF SIGNER (print) 136: Keith Freitas	TITLE OF SIGNER 137: Director of Airports	

UPCF (10/05)

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2010

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
10 ft. to the NE of the owner maintenance hangar

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO_X_ 202

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
N/A

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (optional) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	600	221

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds: 1875 Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ Yes ☐ No

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2010

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA YES___ NO_X_ 202

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (optional) 210
Class 1 flammable liquid

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
0

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds: 0 Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ Yes ☐ No

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2010

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Rd.

CHEMICAL LOCATION CONFIDENTIAL 202
EPCRA YES___ NO_X__

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (optional) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 200 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds: 1,460 Lbs.** 246
Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ Yes ☐ No

CONTRA COSTA HEALTH SERVICES – HAZARDOUS MATERIALS PROGRAMS
UNIFIED PROGRAM CONSOLIDATED FORM
BUSINESS PLAN 2010

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ADD ☐DELETE ☐REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL 202
EPCRA YES___ NO_X_

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100 LL

208 Regulated Substance? ☐ Yes ☒ No

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES : include physical & health characteristics (optional) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	Regulated Substance	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION: **Maximum Daily Amount in pounds: 60,000 Lbs.** 246

Is this inventory part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒ Yes ☐ No

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2010
BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	0	7		0	0	0		7	7	0	9	8	5	1	EPA ID # (Hazardous Waste Only) CAL000112340	2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) Contra Costa County – Byron Airport 3

BUSINESS SITE ADDRESS 500 Eagle Court 103

BUSINESS SITE CITY Byron 104 | CA | ZIP CODE 94514 105

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page (OES Form 2730).

Does your facility...		If Yes, please complete these pages of the UPCF....
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	BUSINESS OWNER/OPERATOR IDENTIFICATION HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY UST TANK (one page per tank)
D. ABOVE GROUND PETROLEUM STORAGE Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks or containers.	☒ YES ☐ NO 8	A SPCC plan is required.
E. HAZARDOUS WASTE Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., **HEALTH SERVICES DIRECTOR** • RANDALL L. SAWYER, **DIRECTOR**

Aboveground Petroleum Storage Tanks Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
Byron Airport	770985	5/25/10

INSPECTION TYPE: (Routine / Follow-Up / Other)	VIOLATION CLASSIFICATIONS: M = Minor, Cl I = Major, Cl II = Medium / Repeat Minor	TOTAL QUANTITY
Routine		10k + 250 gal + 220 gal

Date facility began operations:	Date of initial SPCC Plan:	Date of current SPCC Plan:	FACILITY CAPACITY/CLASSIFICATION
> 10 years		2009	☐ EXEMPT ☐ < 10,000 ☒ ≥ 10,000 Qualified Facility: ☐ Tier I ☐ Tier II

Code of Federal Regulations (CFR) Title 40, Chapter 1, Subpart D, Part 112
California Health & Safety Code (HSC) Division 20, Chapter 6.67, Section 2570

Viol Code	Authority	Violation Description	Viol Class	Violation Due Date/ Violation Corrected
AS01	CFR 112.3	Failed to prepare a SPCC Plan		
AS02	CFR 112.5(a)(d)	Failed to review or amend SPCC Plan		
AS03	CFR 112.3(e)	SPCC Plan not available onsite		
AS04	CFR 112.7(e)	Failed to conduct inspections & tests in accordance with written procedures		
AS05	CFR 112.7(e)	Failed to maintain records of inspections, tests and/or procedures		
AS06	CFR 112.7(e)	Record of inspections or tests not signed by supervisor or inspector		
		SPCC PLAN ELEMENTS – Pursuant to 25270.4.5(a), 25270.12(a) / The SPCC Plan is missing the following elements:		
AS07	CFR 112.6(a)(1), (b)(1)	Self-certification for Tier I or II Qualified Facility		
AS08	CFR 112.3(d) & CFR 112.6(b)(4)	Professional Engineer certification		
AS09	CFR 112.5(b)	Documentation of 5-year review & evaluation of the SPCC Plan		
AS10	CFR 112.7(f)	Training program		
AS11	CFR 112.5(a), CFR 112.6(a)(2), (b)(2)	Amendments required within 6 months of change/certification of technical amendments		
AS12	CFR 112.7, CFR 112.6(a)	Management authorization of resource commitment to implement the SPCC Plan		
AS13	CFR 112.7(a)(3)	Diagram with location & contents of regulated containers, transfer stations & connecting pipes		
AS14	CFR 112.7(a)(3)	Type of oil & storage capacity for each container		
AS15	CFR 112.7(a)(3)	Discharge prevention measures; procedures for routine handling		
AS16	CFR 112.7(a)(3)	Countermeasures for discovery, response & cleanup		
AS17	CFR 112.7(a)(3)	Required contact list & phone numbers		
		GENERAL SPCC REQUIREMENTS – Pursuant to 25270.4.5(a), 25270.5 & 25270.12(a)		
AS18	CFR 112.8(c)(4), (c)(5), (d)(1)	Failed to provide corrosion protection		
AS19	CFR 112.8(c)(1)	Containers not compatible with materials stored		
AS20	CCR 112.5(a), (d)	Failed to implement SPCC Plan review changes and/or amendment changes within 6 months		
AS21	CFR 112.7(f)	Failed to train oil-handling personnel in operation & maintenance of equipment to prevent discharges		
AS22	CCR 112.7(f)(3)	Failed to conduct annual spill prevention briefings		
AS23	CFR 112.7(d)	Failed to prepare an oil contingency plan or provide written control/removal commitments		
		FACILITY INSPECTION – Pursuant to 25270.4.5, 25270.5 & 25270.12(a)		
AS24	H&SC 25270.4.5(b)	Failed to meet provisions of conditional exemption 25270.4.5(b)		
AS25	CFR 112.7(g)	Facility security not adequate		
AS26	CFR 112.7(c)	Clean-up materials not readily available		
AS27	CFR 112.8(c)	Tank in poor condition/leaking		
AS28	CFR 112.8(c)(8)	Overfill protection procedures or devices missing, not maintained or inoperative		
AS29	CFR 112.8(c)(11)	Portable/mobile containers not positioned to prevent a discharge		
AS30	CFR 112.7(h)	Loading/unloading rack does not drain to containment		
AS31	CFR 112.8(b)(c)	Facility drainage not functioning, or improperly operated or engineered		
AS32	CFR 112.8(a), CFR 112.7(c)	Failed to provide appropriate containment or diversionary structures to prevent discharge		
AS33	CFR 112.8(c)	Secondary containment inadequate to contain capacity of largest container plus precipitation		
AS34	CFR 112.8(c)(10)	Failed to remove accumulation of oil in secondary containment		
AS35	CFR 112.8	Secondary containment valve(s) not closed		
AS36	CFR 1123	Failed to implement SPCC Plan element:		
AS37	—	Other:		

Total Time for Review and Inspection (in 15 minute increments): 10 ☐ No Violations Observed

Facility Rep Initials page 3 CC Hazmat Initials [signature] Date 5/25/10

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

CONTINUATION SHEET

Program: ☐ UST ☒ BP ☐ HW ☐ TP ☐ SWP ☒ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
Byron Airport	770985	5/25/10

Comments:

HWG:- Waste oil, used fuel filters, and used absorbent
No Violations Noted

HMMBP:- 10 k AV gas
- 200 gal unleaded for generator
- Waste oil 250 gal.
No Violations Noted

Above ground tanks:
- 10 k Av. Gas
- 200 gallon generator
- 250 gallon waste oil
* SPCC on File
No Violations Noted.

Facility Rep Initials [signature] | CC Hazmat Rep Initials [signature] | Date 5/25/10

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Storm Water Discharge Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
Byron Airport	770985	5/25/10

INSPECTION TYPE: Regular / Follow-Up	SIC CODE / NAICS	NOI Facility	WDID # or NPDES Permit #
Regular	4581	☒ Yes ☐ No	5B071002606

Minor: Correct within 30 days **Class I Violation**: Cease activity/mitigate immed.
Class II: Correct within 10 business days/before the next rain (whichever 1st)

Contra Costa Co. Code, Title 10 Public Works and Flood Control, Division 1014 Stormwater Management and Discharge Control; California Porter-Cologne Water Quality Control Act and Federal Clean Water Act incorporated by reference

Viol Code	Authority	Requirement	Viol Class	Violation Due Date/ Violation Corrected
SW01	1014-4.006	Illicit discharge to the Contra Costa County stormwater system. **"Illicit discharge" means any discharge to the county's stormwater system that is not composed entirely of stormwater,** except a discharge in compliance with a NPDES permit.		
SW02	1014-4.008	Discharge that results in or contributes to a violation of the Contra Costa County NPDES permit.		
SW03	1014-4.010	Unlawful drainage connection to the Contra Costa County stormwater system.		
SW04	1014-4.012(a)	Any person engaging in activities that may result in pollutants entering the county's stormwater system shall undertake all practicable measures to reduce such pollutants.		
SW05	1014-4.012(b)	No person shall throw, deposit, leave, or keep trash (discarded objects) in or upon any street, alley, sidewalk, business place, creek, stormwater system, fountain, pool, lake, stream, river or any other body of water, or upon any public or private parcel of land, except in containers or in lawfully established waste disposal facilities.		
SW06	1014-4.012(d)	Facility cleans paved parking lots, paved areas of gasoline stations, paved private roads, or related stormwater systems as frequently and thoroughly as practicable in a manner that does not result in the discharge of pollutants to the county's stormwater system.		
SW07	1014-4.012(g)	Facility complies with any and all applicable **Best Management Practices** adopted by any federal, state or local agency.		
SW08	1014-4.016(c)	Facility maintains a notification procedure, trains personnel in the procedures, and personnel make notifications of any release or suspected release of pollutants to the Contra Costa County Stormwater system.		
SW09	1014-4.016(c)	Facility takes all necessary steps to ensure the discovery, containment, and clean up of any release constituting an illicit discharge to the Contra Costa County stormwater system.		

Viol Code	Authority	Notice of Intent Facilities	Viol I / II	Viol Due Date/ Viol Corrected
SW10	1014-4.012(f)	Notice of intent filed with State Water Quality Control Board		
SW11	1014-4.012(h)	Facility has a Storm Water Pollution Prevention Plan (SWPPP).		
SW12	1014.4.012(f)	Facility has submitted the results of annual storm water runoff analyses to the State Water Quality Control Board.		

	Best Management Practices	Exist, Recommended or (f/u Inspxn) Implemented
BMP 1	Outdoor storage of materials with a potential for polluting (chemicals, wastes, equipment etc.) moved indoors; alternatively, materials raised above the ground and covered to prevent contact with run-off and rain.	
BMP 2	Vehicle and equipment washing located away from drains or any area with a potential for run-off to the County stormwater system.	
BMP 3	Adequate spill control and spill mitigation materials are available (e.g. absorbents, rags, booms, oil absorbent pads, etc).	
BMP 4	Minimal spills in storage area. All spills promptly addressed to prevent discharge to soil or surface water.	
BMP 5	Secondary containment in place for hazardous materials/wastes storage tanks and containers.	
BMP 6	Facility personnel are trained in the SWPPP and/or SPCC (Spill Prevention, Control and Countermeasures).	
BMP 7	Other existing or recommended BMPs (see continuation sheet for description).	

ENTERED

Total Time for Review and Inspection (in 15 minute increments): 2 ☐ No Violations Observed

Facility Rep Initials	CC Hazmat Rep Initials	Date
		5/25/10

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CONTINUATION SHEET

Program: ☐ UST ☒ BP ☐ HW ☐ TP ☐ SWP ☒ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
Byron Airport	770985	5/25/10

Comments:

HWG:- Waste oil, used fuel filters, and used absorbent
No violations noted

HMMBP:- 10 K AV gas
- 200 gal unleaded for generator
- waste oil 250 gal.
No violations noted

Above ground tanks:
- 10 K AV. gas
- 200 gallon generator
- 250 gallon waste oil
* SPCC on file
No violations noted.

Facility Rep Initials [signature] | CC Hazmat Rep Initials [signature] | Date 5/25/10

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Hazardous Waste Inspection/Compliance Checklist (page 1 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
Byron Airport	770985	5/25/10

INSPECTION TYPE	VIOLATION CLASSIFICATIONS	EPA ID
~~INSPECTION~~ TYPE Routine / Follow-Up / Other	M = Minor Cl I = Major Cl II = Medium / Repeat Minor	CAL000112340

California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 10, §66001 et al
California Health and Safety Code (HSC), Division 20, Chapter 6.5, §25100 et al
Code of Federal Regulations (CFR) Title 40, Chapter 1, Part 260 et al

Disposal Documents Reviewed For Year:	HW Gen Rpt Form On File? ☑ Yes ☐ No	Total Annual Tonnage of All Hazardous Waste Generated: 1.2

CA State Waste Code if applicable, Federal Code(s)	Hazardous Waste Stream	Annual Quantity (Tons)
	Used fuel filters	.1
	Used oil	1.0
	Used Absorbent	.1
	Additional Wastes on Continuation Sheet? ☐ Yes ☑ No	

Generator Status:
☐ RCRA-LQG > 1,000 kg/month ☐ CA-LQG > 1,000 kg/month ☐ CA-SQG > 100 to < 1,000 kg/month ☑ CA-CESQG < 100 kg/month ☐ Episodic LQG

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW01	HSC 25189.5	HSC 25189.5	Disposal, treatment or storage at unauthorized location		
HW02	CCR 22 66262.11	CCR 22 66262.11	Hazardous Waste Determination		
HW03	CCR 22 66262.12	CCR 22 66262.12	Obtain & maintain a valid EPA ID Number (DTSC Form 1358)		
HW04	CFR 66262.34(d)	—	Accumulation time may not exceed 180 days (Unless waste shipped 200 or more miles, no more than 270 days)		
HW05	—	CCR 22 66262.34(a)	Accumulation time may not exceed 90 days		
HW06	CCR 22 67450.1	CCR 22 67450.1	Notify CUPA for eligible onsite treatment.		
HW07	HSC 25163(a)	HSC 25163(a)	Lawful transportation of hazardous waste		
			RECORDKEEPING & REPORTING		
HW08	CCR 22 66262.20	CCR 22 66262.20	Properly Complete Manifest		
HW09	CCR 22 66262.23	CCR 22 66262.23	Send manifest copy to DTSC, P.O. Box 400, Sacramento, CA 95812		
HW10	HSC 25160.2	HSC 25160.2	Properly complete consolidated manifest		
HW11	CCR 22 66262.40	CCR 22 66262.40	Keep waste manifests and/or consolidated manifests for 3 years		
HW12	—	CCR 22 66262.40-41	Biennial Report (RCRA LQG Only)		
HW13	HSC 25123.3	CCR 22 66262.42	File manifest Exception Report with DTSC		
HW14	HSC 25143.10	HSC 25143.10	Biennial Excluded Recyclable Materials Report		
HW15	HSC 25143.2(f) & CCR 22 66261.2(g)	HSC 25143.2(f) & CCR 22 66261.2(g)	Maintain adequate records demonstrating claim of exemption for Excluded Recyclable Material		
HW16	CCR 22 66262.40(c)	CCR 22 66262.40(c)	Keep copies of analytical results, waste analysis records, or waste determination results for 3 years		
HW17	CCR 22 66266.130(c)(5)	CCR 22 66266.130(c)(5)	Keep disposal receipts for 3 years for drained used oil filters and/or drained fuel filters		
HW18	—	CCR 22 67100.1	SB14 – Hazardous Waste Source Reduction Evaluation Review Plan		
			HAZARDOUS WASTE HANDLER TRAINING		
HW19	40 CFR 262.34(d)(5)(iii)	CCR 22 66265.16	Employee training program adequate.		
HW20	—	CCR 22 66265.16	Training Documentation		
HW21	—	CCR 22 66265.16	Training Conducted Annually		
HW22	40 CFR 262.34(d)(5)(ii)	—	Post Emergency Response Plan by telephone.		
HW23	40 CFR 262.34(d)(5)(i)	CCR 22 66265.55	Have an emergency coordinator on call or available during emergency.		
HW24	—	CCR 22 66265.51-55	Contingency Plan Completed		

Facility Rep Initials	CC Hazmat Rep Initials	Date
Case		5/25/10

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Hazardous Waste Inspection/Compliance Checklist (page 2 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
Byron Airport	770985	5/25/10

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW25	40 CFR 262.34(d)(5)(iv)	CCR 22 66265.51	Properly carry out contingency plan during an emergency.		
			FACILITY OPERATION		
HW26	40 CFR 265.31, Via 262.34(d)(4)	CCR 22 66265.31	Maintain and/or operate facility to prevent release or fire		
HW27	40 CFR 265.32(c) Via 262.34(d)(4)	CCR 22 66265.32	Spill/fire control equipment available.		
HW28	40 CFR 265.32(a) & (b) Via 262.34(d)(4)	CCR 22 66265.32	Facility equipped with internal communication or alarm.		
HW29	40 CFR 265.33(c) Via 262.34(d)(4)	CCR 22 66265.33	Equipment properly maintained and tested		
HW30	40 CFR 265.35, Via 262.34(d)(4)	CCR 22 66265.35	Maintain adequate aisle space		
HW31	—	CCR 22 66265.37	Arrangements with response agencies		
			HAZARDOUS WASTE TANKS & CONTAINERS		
HW32	CCR 22 66262.34(f)	—	Properly label/date hazardous waste container and/or tank.		
HW33	CCR 22 66262.34	CCR 22 66262.34	Proper Markings including start date and composition		
HW34	HSC 25143.9(a)	HSC 25143.9(a)	Proper label on Excluded Recyclable Materials		
			HAZARDOUS WASTE CONTAINERS		
HW35	CFR 265.171, Via 262.34(d)(2)	CCR 22 66265.171	Container in good condition		
HW36	CFR 265.172, Via 262.34(d)(2)	CCR 22 66265.172	Container and/or liner compatible		
HW37	CFR 265.173, Via 262.34(d)(2)	CCR 22 66265.173	Containers are kept closed		
HW38	CFR 265.174, Via 262.34(d)(2)	CCR 22 66265.174	Conduct weekly inspections		
HW39	—	CCR 22 66265.176	Buffer zone for ignitable wastes		
HW40	CFR 265.177, Via 262.34(d)(2)	CCR 22 66265.177	Properly separate incompatible wastes		
HW41	CCR 22 66261.7(e)(f)(i)	CCR 22 66261.7(e)(f)(i)	Properly manage containers or inner liners removed from containers greater than 5 gallons (Accumulation time not to exceed one year)		
			HAZARDOUS WASTE TANK SYSTEMS		
HW42	CFR 262.34, Via 262.34(d)(2)	CCR 22 66265.190	Tank in good condition		
HW43	—	CCR 22 66265.191(a) & (e)	Complete annual integrity assessment for HW tank system without secondary containment.		
HW44	—	CCR 22 66265.191(a) or 66265.192(a)	Failed to obtain a PE assessment for hazardous waste (HW) tank system.		
HW45	Check local FD	CCR 22 66265.193(a)	Failed to provide proper secondary containment and/or leak detection for HW tank system.		
HW46	CFR 265.201, Via 262.34(d)(2)	CCR 22 66265.194(a)	Failed to use proper spill/overfill prevention controls and practices.		
HW47	CFR 265.20 (c) Via 262.34(d)(2)	CCR 22 66265.194	Comply with tank standards which include: two feet of freeboard (where applicable), shut off for waste feed line, & daily inspections of waste levels		
HW48	—	CCR 22 66265.195(c)	Failed to inspect and/or document daily HW tank system inspections.		
HW49	—	CCR 22 6265.196(e)(1) or (3)	Notify DTSC when a release to environment occurred from HW tank system.		
HW50	CCR 22 67383.3	CCR 22 66265.197 CCR 22 67383.3	Properly complete and/or document closure for a hazardous waste tank.		
HW51	—	—	Other:		

Observations:

No issues Noted.

Total Time for Review and Inspection (in 15 minute increments): 10

☒ ~~No Violations Observed~~

Facility Rep Initials	CC Hazmat Rep Initials	Date
page 3		5/25/10

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CONTINUATION SHEET

Program: ☐ UST ☒ BP ☐ HW ☐ TP ☐ SWP ☒ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
Byron Airport	770985	5/25/10

Comments:

HWG:- Waste oil, used fuel filters, and used absorbent
No violations Noted

HMMBP:- 10 k AV gas
- 200 gal unleaded for generator
- waste oil 250 gal.
No violations noted

Above ground tanks:
- 10 k AV gas
- 200 gallon generator
- 250 gallon waste oil
* SPCC on file
No violations Noted.

Facility Rep Initials	CC Hazmat Rep Initials	Date
		5/25/10

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Hazardous Materials Business Plan Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
Byron Airport	770985	5/25/10

INSPECTION TYPE: Routine / Follow-Up / Other

VIOLATION CLASSIFICATIONS: M = Minor Cl I = Major Cl II = Medium / Repeat Minor

California Code of Regulations, Title 19, Division 2, Chapter 4, §2620 et al; Title 27, Div 1, Subdiv. 2, Chap. 1, Part II
California Health and Safety Code, Division 20, Chapter 6.95, §25404, §25500-25520

Viol Code	Authority	Requirement	Viol Class	Violation Due Date/ Violation Corrected
BP01	19CCR 2729.2	Adequate submission / completion of Business Activities & Owner / Operator Identification Forms.		
BP02	19CCR 2729.2	Adequate submission / completion of chemical inventory forms.		
BP03	19CCR 2729.4	Maximum quantity of all hazardous materials stored on site in reportable quantities are listed in the HMBP.		
BP04	19CCR 2729.5	Original signature on inventory forms for acutely hazardous materials ≥ Threshold Planning Quantities.		
BP05	19CCR 2729.2	Adequate submission / completion of site map.		
BP06	H&SC 25504	Adequate submission / completion / retention of written Emergency Response Plan.		
BP07	27CCR 15210 & H&SC 25404	Full and timely payment of the HMBP program annual fee.		
BP08	H&SC 25503.5	HMBP is maintained on-site or is accessible.		
BP09	H&SC 25504(c) & 19CCR 2732	Initial employee training program for hazardous materials/emergency response implemented and adequate.		
BP10	H&SC 25504(c) & 19CCR 2732	Annual hazardous materials/emergency response refresher component of the employee training program implemented and adequate.		
BP11	19CCR 2731(c) & H&SC 25503(e)(1)	Procedures in place to mitigate, prevent or abate hazards to persons, property or the environment from a release or threatened release of hazardous materials. **See back for Best Management Practices (BMP).**		
BP12	—	Other:		

See back for Best Management Practices (BMP)

Observation:

10 K av. gas, 250 gallon w.o., 200 gallons untreated in gen. room.

No issues noted.

Total Time for Review and Inspection (in 15 minute increments): 10 ☒ No Violations Observed

Facility Rep Initials page 3 | CC Hazmat Initials [signature] | Date 5/25/10

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CONTINUATION SHEET

Program: ☐ UST ☒ BP ☐ HW ☐ TP ☐ SWP ☒ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
Byron Airport	770985	5/25/10

Comments:

HWG:- Waste oil, used fuel filters, and used absorbent
No violations Noted

HMMBP:- 10 k AU gas
- 200 gal unleaded for generator
- waste oil 250 gal.
No violations Noted

Above ground tanks:
- 10 k AU. Gas
- 200 gallon generator
- 250 gallon waste oil
* SPCC on File
No violations Noted.

Facility Rep Initials	CC Hazmat Rep Initials	Date
		5/25/10

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INSPECTION COVER SHEET

FACILITY NAME	FACILITY ADDRESS	INSPECTION DATE
Byron Airport	500 Eagle ct.	5/25/10
Contact Name Michael IVY	**EPA ID**	**SITE ID**
Contact Telephone 634-0147	CAL000112340	770985

Program(s): (check all that apply)

☒ Hazardous Materials Release Response Plan / Business Plan (BP)	☐ Tiered Permitting (TP)
☒ Hazardous Waste Generator (HW)	☐ Green Business (GB)
☐ Underground Storage Tank (UST)	☒ Storm Water Program (SWP)
☒ Aboveground Petroleum Storage Act (APSA)	☐ California Accidental Release Prevention Program (CalARP)

CUPA Permit Current: Yes ☒ No ☐

REPRESENTATIVES PRESENT:

Name	Title	Organization
Michael Ivy	Airport op. spec.	Facility
Tod Holsman	Specialist	CCHMP

Facility Description/Comments:

Airport facility; HWG, 2185, ACT, and SW programs. Very clean facility.

This report may identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC), the California Code of Regulations (CCR), Code of Federal Regulations (CFR), or Contra Costa County Code (CCC). A person who receives a Notice to Comply (NTC) detailing a minor violation shall have not more than 30 days from the date of the NTC in which to correct any violation cited. Within five working days of correcting the violation, an authorized representative shall sign the NTC certifying the violation(s) have been corrected and return the NTC to Contra Costa Health Services Hazardous Materials Programs (CCHSHMP).

Failure to correct observed violations within the scheduled period provided may result in CCHSHMP citing the facility for continuing and/or additional violations. Issuance of this Inspection Report does not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted.

Consent includes inspecting hazardous material/waste handling areas, taking photographs, reviewing and copying documents, questioning personnel and sampling activities to determine compliance with applicable laws and regulations.

Facility Rep ~~Michael Ivy~~ Consent to inspect given by	Facility Rep Signature Michael Ivy	Date 5/25/10
CC Hazmat Rep T. Holsman	CC Hazmat Signature	Date 5/25/10

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

Aboveground Petroleum Storage Tank Facility Statement

I. FACILITY/BUSINESS INFORMATION

FACILITY ID # 0 7 - 0 0 0 - 7 7 0 9 8 5 [1]

FACILITY NAME (Same as BUSINESS NAME or DBA-Doing Business As) [3]

Contra Costa County – Byron Airport

RECEIVED

FACILITY ADDRESS [103]

500 Eagle Ct.

MAR 0 2 2011

FACILITY CITY [104]: Byron

CA

ZIP CODE [105]: 94514

Contra Costa Health Hazardous Materials

CONTACT NAME [117a]: Natalie Olesen

CONTACT PHONE [118a]: (925) 646-5722

Does the facility have an SPCC plan? ☒ Yes ☐ No [920]
(see reverse for instructions)

Date of last SPCC Plan Revision/Review: 02 / 28 / 2011

II. TOTAL FACILITY CAPACITY (in gallons) [921]

Facility's total aboveground petroleum storage **capacity** for all tanks and containers greater than or equal to 55 gal.: 10,450 gal.
(see reverse for instructions)

Capacity of the largest tank/container that stores petroleum at your facility (in gallons): 10,000 gal.

III. TANK DETAILS for facilities with tanks 10,000 gallons in capacity or more (attach a spread sheet if needed)

Tank ID Number [922]	Contents (Gas, Diesel, etc.) [923]	Capacity (in gallons) [924]	Tank Location [925]	Age of Tank (in years) [926]	Secondary Containment [927]
	Aviation Fuel – 100 LL	10,000	SEE SITE MAP/PLAN FOR TANK LOCATION	12	☒ Yes ☐ No
				12	☐ Yes ☐ No
				16	☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

IV. SIGNATURE

I certify under penalty of law that the information submitted is accurate and complete to the best of my knowledge.

SIGNATURE OF OWNER OR TANK FACILITY OPERATOR	PRINTED NAME OF OWNER OR TANK FACILITY OPERATOR [136]	DATE (MM/DD/YYYY) [134]
	Keith Freitas, Director of Airports	03 / 01 / 2011

110985

RECEIVED
MAR 0 2 2011
Contra Costa Health
Hazardous Materials

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

CAL000112340
EPA Hazardous Waste Generator ID#

07 000 770985
Contra Costa County Facility ID #

This document will be kept in:

Airport Operations Office – Administration Building

Date of Plan: February 28, 2011

Emergency Coordinator:	Michael Ivy/Juan Valdivia
Day Telephone #:	(925) 634-0147
Cell Telephone #:	(925) 383-1390
Alternate Emergency Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1713
Alternate Emergency Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1715

Emergency Coordinators are familiar with all aspects of the facility. These designated persons have unrestricted access to the facility and have the authority to make decisions during an emergency.

Confidential Information

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

Emergency Coordinator:	Michael Ivy/Juan Valdivia
Day Telephone #:	(925) 634-0147 / (925) 383-1390 cell
Night Telephone#:	(925) 646-5722 (24-hour facility)
Address:	500 Eagle Court, Byron, CA 94514

Alternate	
Emergency Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 382-1713
Address:	550 Sally Ride Drive, Concord, CA 94520

Training Coordinator:	K.C. Coyle
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 382-1713
Address:	550 Sally Ride Drive, Concord, CA 94520

Emergency Response Plan

In the event of a fire or a threatening Hazardous Materials release follow these emergency procedures immediately:

Assess the incident. Immediately and briefly assess the situation. Attempt to extinguish the fire or contain the threatening hazardous material spill if it can be done safely.

Evacuate the premises. If the fire or spill cannot be safely brought under control by on-site personnel, immediately evacuate the premises. Evacuate all personnel and customers from the premises by announcing: "THERE IS A (FIRE/HAZARDOUS MATERIALS SPILL) IN PROGRESS. PLEASE LEAVE THE PREMISES IMMEDIATELY THROUGH THE NEAREST SAFE EXIT." Make this announcement in a loud clear voice. Upon evacuating the premises, employees will meet at: The corner of Eagle Court and Falcon Way
Once employees meet at the designated assembly location, all employees will be accounted for and await further instructions.

Look Around. Before leaving, quickly look around to ensure that all others have vacated the premises, particularly those who might be working in remote areas of the premises. Assist or direct assistance to anyone having difficulty in evacuating.

Call for Help. DIAL 911. Give the following information:

- Your Name and Telephone Number
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment

Inform the dispatcher if anyone is trapped. Stay on the phone and be prepared to answer questions concerning the situation (e.g., spill characteristics, source, quantities, and extent of area affected). If the telephones at the administration building are not usable, the nearest available telephones are located at: Bay Area Skydiving, 6900 Falcon Way, Byron, CA 94514

Help Injured Persons. Help all injured persons as much as possible.

Report to Emergency Responders. The emergency coordinator shall report to emergency response personnel immediately upon their arrival. The emergency coordinator shall provide the emergency response personnel with any information or assistance they request.

Immediately Notify. If the emergency situation is determined by the Emergency Coordinator to be a threat to human health or the environment, the Contra Costa County Health Services Department (CCCHSD), the California Emergency Management Agency (CalEMS), and the County O.E.S. must be immediately notified. Notify the CCCHSD at: (925) 335-3232, CalEMS at: (800) 852-7550, and the County O.E.S at: (925) 228-5000. If the spill contains hazardous waste also notify Cal/EPA-DTSC at: (800) 698-6942. Be prepared to answer questions concerning the emergency situation.

Re-entry. Do not re-enter the premises until re-entry approval has been given by Fire Department or other authorized Emergency Personnel.

Submit. Submit a written follow-up spill notification to the State O.E.S. and the County Health Services Department. The report must include the following information:

- Name and Telephone Number of Reporter
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment
- Estimated Quantities and Disposition of Recovered Material

Emergency Response Equipment. The emergency response equipment located on-site consists of the following:

- Fire Extinguishers
    - 30 located throughout the airport
- First Aid Kit
    - Administration Building

    - 1 in each airport vehicle
- Spill Control Equipment On-Site
    - Spill Kit which includes absorbent materials and shovels
- Location of Spill Equipment
    - Fuel Island, 100 yards southeast of the Administration Building
- Other Emergency Response Equipment
    - ARFF (Aircraft Rescue and Fire Fighting) truck

Following an Emergency, all Emergency Response Equipment must be restored to readiness.

Spill Response. If the spill response can be performed safely by on-site personnel, the following measures should be taken:

- Spill response personnel must utilize the appropriate personal protection.
- Stop the spill at its source to prevent the spill from increasing and entering into the storm drain system.
- Place the appropriate absorbent materials over the spilled materials and contain the boundaries of the spill.
- Special care must be taken to prevent the spill from reaching storm drains or unpaved areas.

The spill materials, along with the contaminated Spill Control Equipment, must be placed in an appropriate container and labeled as hazardous waste.

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

FACILITY INFORMATION 2011

RECEIVED
MAR 02 2011
Contra Costa Health
Hazardous Materials

BUSINESS OWNER/OPERATOR IDENTIFICATION

I. IDENTIFICATION

FACILITY ID# 07 0000 77098 5 [1]	BEGINNING DATE [100] 01/01/11	ENDING DATE [101] 12/31/11	
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) [3] Contra Costa County – Byron Airport		BUSINESS PHONE [102] (925) 634-0147	
BUSINESS SITE ADDRESS [103] 500 Eagle Ct.		BUSINESS FAX [102a] (925) 513-0749	
BUSINESS SITE CITY [104] Byron	CA	ZIP CODE [105] 94514	COUNTY [108] Contra Costa
DUN & BRADSTREET [106] 848313052		PRIMARY SIC [107] 4581	PRIMARY NAICS [107a] 488119
BUSINESS MAILING ADDRESS [108a] 550 Sally Ride Drive			
BUSINESS MAILING CITY [108b] Concord		STATE [108c] CA	ZIP CODE [108d] 94520
BUSINESS OPERATOR NAME [109] Contra Costa County		BUSINESS OPERATOR PHONE [110] (925) 646-5722	

II. BUSINESS OWNER

OWNER NAME [111] Contra Costa County	OWNER PHONE [112] (925) 646-5722	
OWNER MAILING ADDRESS [113] 550 Sally Ride Drive		
OWNER MAILING CITY [114] Concord	STATE [115] CA	ZIP CODE [116] 94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME [117] Natalie Olesen	CONTACT PHONE [118] (925) 646-5722	
CONTACT MAILING ADDRESS [119] 550 Sally Ride Drive	CONTACT EMAIL [119a] noles@airport.cccounty.us	
CONTACT MAILING CITY [120] Concord	STATE [121] CA	ZIP CODE [122] 94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME [123] Mike Ivy/Juan Valdivia	NAME [128] Kenton "KC" Coyle
TITLE [124] Airport Operations Specialists	TITLE [129] Airport Operations Manager
BUSINESS PHONE [125] (925) 634-0147	BUSINESS PHONE [130] (925) 646-5722
24-HOUR PHONE [126] (925) 646-5722	24-HOUR PHONE [131] (925) 646-5722
CELL # [127] (925) 383-1390	CELL # [132] (925) 382-1713

ADDITIONAL LOCALLY COLLECTED INFORMATION: [133]

Number of Employees: 14 **Total Pounds of Hazardous Materials:** 63,335 el

Invoice Contact Name: Sue Hill **Date of Ownership: 1989**

Invoice Contact Address: 550 Sally Ride Drive

Invoice City: Concord **Invoice State: CA** **Invoice ZIP: 94520** **Invoice Telephone: (925) 646-5722**

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE [134]	NAME OF DOCUMENT PREPARER [135]
	3/1/2011	Natalie Olesen
NAME OF SIGNER (print) [136] Keith Freitas	TITLE OF SIGNER Director of Airports	[137]

ENTERED

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2011

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 3 of 7

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100 LL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 10,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	227	☐ Yes ☐ No 228	229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: *60,000* Lbs.** 246

Is this inventory item part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒Yes ☐ No

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2011

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 4 of 7

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Rd.

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 200 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	227	☐ Yes ☐ No 228	229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,460 Lbs.** 246

Is this inventory item part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒Yes ☐ No

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2011

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 5 of 7

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Class 1 flammable liquid

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 0 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 0 Lbs.** 246

Is this inventory item part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒Yes ☐ No

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2011

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 6 of 7

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
10 ft. to the NE of the owner maintenance hangar

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
N/A

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	600	221

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	227	☐ Yes ☐ No 228	229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,875 Lbs.** 246

Is this inventory item part of the above ground storage requirements where a Spill Prevention Control and Countermeasure Plan is required? ☒Yes ☐ No

If EPCRA, Please Sign Here

UPCF (Rev. 12/2007)

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2011
BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	0	7		0	0	0		7	7	0	9	8	5		1	EPA ID # (Hazardous Waste Only) CAL000112340 2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) Contra Costa County – Byron Airport 3

BUSINESS SITE ADDRESS 500 Eagle Ct. 103

BUSINESS SITE CITY Bryon 104 | CA | ZIP CODE 94514 105

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility...	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
D. ABOVEGROUND PETROLEUM STORAGE Own or operate ASTs above these thresholds: Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks **or containers**.	☒ YES ☐ NO 8	A SPCC Plan is required
E. HAZARDOUS WASTE Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

CONTRA COSTA
HEALTH SERVICES

RECEIVED
MAR 02 2011
Contra Costa Health
Hazardous Materials

2011 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY/SITE ID: 770985
CCC Byron Airport
500 Eagle Ct.
Byron

EPA ID: CAL000112340

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by April 1, 2011. **Forms postmarked after April 1, 2011 may be subject to a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2010** calendar year.

Total Tonnage of Hazardous Waste Shipped Offsite During 2010: 1.83 / Tons

PLEASE NOTE: USED OIL IS NO LONGER EXEMPT

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: _____ Date: 3/1/2011

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 646-5722

Forms postmarked after April 1, 2011 may be subject to a 50% late filing fee.

- Do not send payments at this time.
- Retain a copy for your records.

CONTRA COSTA HEALTH SERVICES

CERTIFIED UNIFIED PROGRAM AGENCY

Contra Costa Health Services - Hazardous Materials Programs

4585 Pacheco Blvd, Martinez, CA 94553

UNIFIED HAZARDOUS WASTE AND HAZARDOUS MATERIALS MANAGEMENT REGULATORY PROGRAM

Annual Business Authorization/Permit

Permit Number: 77-0985

Mailing Address

SUSAN HILL
CCC BYRON AIRPORT
550 SALLY RIDE DR
CONCORD CA 94520

Facility Operator, Name, and Address

CCC BYRON AIRPORT
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

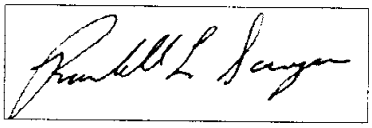
This business is permitted in the following CUPA Programs:

- ☑ Hazardous Material Business Plan/Hazardous Materials Management Plan (includes Uniform Fire Code, Article 80)
- ☐ California Accidental Release Plan (CalARP)/Accidental Release Plan (ARP)
- ☑ Hazardous Waste Generator.
- ☐ Hazardous Waste Treatment on site
- ☐ Storage of Hazardous Materials in Underground Tanks. (see attached permit)
- ☑ Aboveground Petroleum Storage Tanks(SPCC only).

☐ New ☑ Annual ☐ Other ☐ Renewal

AUTHORIZATION

This document is issued based on the condition that the applicant and the facility is in compliance with all applicable rules, regulations and laws pertaining to these CUPA programs. Failure to comply with all applicable codes and regulations will null and void this authorization/permit. See attached conditions of approval for each CUPA Program.

Signature 

Printed name Randall L. Sawyer

Title Dir of Hazardous Materials Programs

Date Issued 07/01/2011

Expiration Date 06/30/2012

Retain a copy of the operating permit and all conditions and attachments, including monitoring plans, at the facility.

PERMIT CONDITIONS

Permit No: 77-0985 Facility CCC BYRON AIRPORT

In order to maintain the operating permit, the permit holder must comply with all regulatory requirements, to include, but not all inclusive of the number items below:

* The unified program agency or CUPA fee shall be paid for per county or city ordinance and/or state law, whichever is the more strict.
* Hazardous Materials Business Plan Program, CHSC Division 20, Chapter 6.95, Article 1 and Title 19 CCR.
  1. Changes in the hazardous materials inventory which include the handling of a previously undisclosed or handling double the amount of a previously disclosed hazardous material must be reported to the CUPA or Participating Agency (PA) within thirty (30) days.
  2. Major changes in the business plan, including the change of name or phone number of 24 hour emergency contacts, must be reported to the CUPA or PA within thirty (30) days.
* Hazardous Waste Generator Program: CHSC Division 20, Chapter 6.5 Articles 1-13, Section 25100 et seq., and Title 22 CCR Chapter 20.

CONTRA COSTA
HEALTH SERVICES

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Contra Costa Health
Hazardous Materials

2012 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY/SITE ID: Site #770985
Contra Costa County – Byron Airport
500 Eagle Ct.
Byron, CA 94514

EPA ID: CAL000112340

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 1, 2012. **Forms postmarked after March 1, 2012 may be subject to a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2011** calendar year.

Total Tonnage of Hazardous Waste Shipped Offsite During 2011: 1.47 / Tons

PLEASE NOTE: USED OIL IS NO LONGER EXEMPT

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: _____ Date: 2/2/2012

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 646-5722

Forms postmarked after March 1, 2012 may be subject to a 50% late filing fee.

- Do not send payments at this time.
- Retain a copy for your records.

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

Aboveground Petroleum Storage Tank Facility Statement

I. FACILITY/BUSINESS INFORMATION

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 [1]

FACILITY NAME (Same as BUSINESS NAME or DBA-Doing Business As) [3]

Contra Costa County – Byron Airport

FACILITY ADDRESS [103]

500 Eagle Ct.

FACILITY CITY [104]

Byron

CA

ZIP CODE [105]

94514

CONTACT NAME [117a]

Natalie Olesen

CONTACT PHONE [118a]

(925) 646-5722

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Hazardous Materials

Does the facility have an SPCC plan? ☒ **Yes** ☐ **No**
(see reverse for instructions)

Date of last SPCC Plan Revision/Review:
10 / 10 / 2011

II. TOTAL FACILITY CAPACITY (in gallons)

[921]

Facility's total aboveground petroleum storage **capacity** for all tanks and containers greater than or equal to 55 gal.: 10,450 gal.
(see reverse for instructions)

Capacity of the largest tank/container that stores petroleum at your facility (in gallons): 10,000 gal.

III. TANK DETAILS for facilities with tanks 10,000 gallons in capacity or more (attach a spread sheet if needed)

[922] Tank ID Number	[923] Contents (Gas, Diesel, etc.)	[924] Capacity (in gallons)	[925] Tank Location	[926] Age of Tank (in years)	[927] Secondary Containment
	Aviation Fuel – 100 LL	10,000	SEE SITE MAP/PLAN FOR TANK LOCATION	13	☒ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

IV. SIGNATURE

I certify under penalty of law that the information submitted is accurate and complete to the best of my knowledge.

SIGNATURE OF OWNER OR TANK FACILITY OPERATOR	PRINTED NAME OF OWNER OR TANK FACILITY OPERATOR [136]	DATE (MM/DD/YYYY) [134]
	Keith Freitas, Director of Airports	02/02/2012

770985

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

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Contra Costa Health
Hazardous Materials

CAL000112340
EPA Hazardous Waste Generator ID#

07 000 770985
Contra Costa County Facility ID #

This document will be kept in:

Airport Operations Office – Administration Building

Date of Plan: January 25, 2012

Emergency Coordinator:	Michael Vitalich
Day Telephone #:	(925) 634-0147
Cell Telephone #:	(925) 383-1390
Alternate Emergency Coordinator:	Steve Callahan / Mark Grosenheider
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 383-1384 / (925) 348-0750
Alternate Emergency Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Cell Telephone #:	(925) 382-1715

Emergency Coordinators are familiar with all aspects of the facility. These designated persons have unrestricted access to the facility and have the authority to make decisions during an emergency.

Confidential Information

Hazardous Materials Contingency Plan

For

Contra Costa County – Byron Airport

500 Eagle Court

Byron, California 94514

(925) 634-0147

Emergency Coordinator:	Michael Vitalich
Day Telephone #:	(925) 634-0147 / (925) 383-1390 cell
Night Telephone#:	(925) 646-5722 (24-hour facility)
Address:	500 Eagle Court, Byron, CA 94514

Alternate

Emergency Coordinator:	Steve Callahan / Mark Grosenheider
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 383-1384 / (925) 347-0750
Address:	550 Sally Ride Drive, Concord, CA 94520

Training Coordinator:	Keith Freitas
Day Telephone #:	(925) 646-5722 (24-hour facility)
Night Telephone#:	(925) 382-1715
Address:	550 Sally Ride Drive, Concord, CA 94520

Emergency Response Plan

In the event of a fire or a threatening Hazardous Materials release follow these emergency procedures immediately:

Assess the incident. Immediately and briefly assess the situation. Attempt to extinguish the fire or contain the threatening hazardous material spill if it can be done safely.

Evacuate the premises. If the fire or spill cannot be safely brought under control by on-site personnel, immediately evacuate the premises. Evacuate all personnel and customers from the premises by announcing: "THERE IS A (FIRE/HAZARDOUS MATERIALS SPILL) IN PROGRESS. PLEASE LEAVE THE PREMISES IMMEDIATELY THROUGH THE NEAREST SAFE EXIT." Make this announcement in a loud clear voice. Upon evacuating the premises, employees will meet at: The corner of Eagle Court and Falcon Way

Once employees meet at the designated assembly location, all employees will be accounted for and await further instructions.

Look Around. Before leaving, quickly look around to ensure that all others have vacated the premises, particularly those who might be working in remote areas of the premises. Assist or direct assistance to anyone having difficulty in evacuating.

Call for Help. DIAL 911. Give the following information:

- Your Name and Telephone Number
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment

Inform the dispatcher if anyone is trapped. Stay on the phone and be prepared to answer questions concerning the situation (e.g., spill characteristics, source, quantities, and extent of area affected). If the telephones at the administration building are not usable, the nearest available telephones are located at: Bay Area Skydiving, 6900 Falcon Way, Byron, CA 94514

Help Injured Persons. Help all injured persons as much as possible.

Report to Emergency Responders. The emergency coordinator shall report to emergency response personnel immediately upon their arrival. The emergency coordinator shall provide the emergency response personnel with any information or assistance they request.

Immediately Notify. If the emergency situation is determined by the Emergency Coordinator to be a threat to human health or the environment, the Contra Costa County Health Services Department (CCCHSD), the California Emergency Management Agency (CalEMS), and the County O.E.S. must be immediately notified. Notify the CCCHSD at: (925) 335-3232, CalEMS at: (800) 852-7550, and the County O.E.S at: (925) 228-5000. If the spill contains hazardous waste also notify Cal/EPA-DTSC at: (800) 698-6942. Be prepared to answer questions concerning the emergency situation.

Re-entry. Do not re-enter the premises until re-entry approval has been given by Fire Department or other authorized Emergency Personnel.

Submit. Submit a written follow-up spill notification to the State O.E.S. and the County Health Services Department. The report must include the following information:

- Name and Telephone Number of Reporter
- Name and Address of the Facility
- Time and Type of Incident
- Name and Quantity of Materials Involved
- Extent of Injuries
- Possible Hazards to Human Health and the Environment
- Estimated Quantities and Disposition of Recovered Material

Emergency Response Equipment. The emergency response equipment located on-site consists of the following:

- Fire Extinguishers
    - 30 located throughout the airport
- First Aid Kit
    - Administration Building

    - 1 in each airport vehicle
- Spill Control Equipment On-Site
    - Spill Kit which includes absorbent materials and shovels
- Location of Spill Equipment
    - Fuel Island, 100 yards southeast of the Administration Building
- Other Emergency Response Equipment
    - ARFF (Aircraft Rescue and Fire Fighting) truck

Following an Emergency, all Emergency Response Equipment must be restored to readiness.

Spill Response. If the spill response can be performed safely by on-site personnel, the following measures should be taken:

- Spill response personnel must utilize the appropriate personal protection.
- Stop the spill at its source to prevent the spill from increasing and entering into the storm drain system.
- Place the appropriate absorbent materials over the spilled materials and contain the boundaries of the spill.
- Special care must be taken to prevent the spill from reaching storm drains or unpaved areas.

The spill materials, along with the contaminated Spill Control Equipment, must be placed in an appropriate container and labeled as hazardous waste.

Chevron

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Contra Costa Health
Hazardous Materials

Our Family of Brands

Chevron Corporation
145 S. State College
Brea, CA 92821
P.O. Box 2292
Brea, CA 92821-2922

February 3, 2012

Contra Costa Health Services/Hazardous Materials Program
4585 Pacheco Blvd., Suite 100
Martinez, CA 94553

Inspector Lacey Friedman

This letter is in response to the inspection report issued on September 1, 2011 to Chevron Station #94306, located at 795 Oak Grove Rd. Concord, CA 94518.

Below is our response regarding the 2 items noted in the attached inspection report.

- BP01 Observed 24 hour contact phone number or Business Owner (800-231-0623) Operator page is not adequate for this use/purpose. Upon calling the number the "operator" said this number could not contact employee of the station at any time of day – instead operator said it was for Chevron notification after 9-1-1 had been called. Recommend this number be a 24 hour contact for station manager. Additionally Emergency Response binder "Operational + Emergency Assistance Contact List" should include CC Haz Mat number 925-335-3232 for spill, etc.

    - The Chevron Emergency Information Center is used for all station related emergencies. The on call person is able to get in contact with the appropriate person need to address the emergency. Per your inspection report dated 11/9/2011, you, Inspector Lacey Friedman rechecked the e Chevron Emergency Information Center and found it to be adequate.
    - In addition the CC Haz Mat number was added to the "Operational + Emergency Assistance Contact List".

- BP10 Noted employee Haz Mat Business Plan training not conducted for 2 employees present.

    - The Designated Operator Facility Employee Training Log was on site at the time of the inspection. The employees in question had been trained in 2010 and one year had not gone by requiring training. The employees were listed on the 2010 log. All of the logs have been put together to avoid this situation in the future. Enclosed are the training logs that were on site at the time of inspection.

Please contact me directly if you have any questions or concerns.

Sincerely,

Andrea Vilchis
UST Compliance Coordinator
Chevron Stations Inc.
145 S. State College., Suite 400
Brea, CA 92821
Office Phone (714) 671-3223
Cell Phone (714) 253-2476
Fax (866) 420-0335
(Please use fax cover)
Mailto: AVilchis@Chevron.com

Enclosed Documents: A copy of the notice dated 9/1/2011 & 11/9/2011; Designated Operator Training Log (4 pages)

BUSINESS NAME: Chevron Station# 94306

ADDRESS: 795 OAK GROVE RD. CONCORD, CA 94518

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Contra Costa Health Materials

Employees must sign this form to prove they received their INITIAL and/or ANNUAL Training

PRINT EMPLOYEE NAME	EMPLOYEE SIGNATURE	DATE OF TRAINING	TYPE OF TRAINING Check One	
			Initial	Annual Training
Maria Dorila		10/27/11	☒	☐
Omar H. Rivera Gil		9-4-11	☒	☐
Susan M. Hopwood		5-23-11	☐	☒
Reynaldo S. Castro			☐	☐
Rosemarie Racela			☐	☐
Milagros Bungansay		9-14-11	☐	☒
Deep Kaur		9-16-11	☐	☑
Reynaldo Castro		9-16-11	☐	☑
Rosemarie Racela		9-16-11	☐	☑
			☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
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			☐	☐
			☐	☐

Document prepared by: CHEVRON PRODUCTS COMPANY

BUSINESS NAME: Chevron Station #

ADDRESS: 795 Oak Grove Rd. Concord Ca. 94518

Employees must sign this form to document they have received their INITIAL and/or ANNUAL Training

PRINT EMPLOYEE NAME	EMPLOYEE SIGNATURE	DATE OF TRAINING	TYPE OF TRAINING Check One	
			Initial	Annual Refresher
Susan Hollywood	Susan Hollywood	01-15-10	☐	☑
Milagros D. Bungancy	Mbungancy	8/6/10	☐	☑
ANDREA ANGITER		8/6/10	☑	☐
Esteban J		8/25/10	☐	☐
Julio Gutierrez	Julio Gut	8/25-10	☐	☐
Aiman Ebrahim	Aiman Ebrahim	8/25-10	☐	☐
REYNALDO CASTRO	R. Castro	9-28-10	☐	☐
Rosendo D Pacia	[redacted]	9-28-10	☐	☐
Milagros Bungancy	Mbungancy	9-28-10	☐	☐
Esteban Vazquez		9-28-10	☐	☐
Alfred Williams	Alfred Williams	9-28-10	☐	☐
			☐	☐
			☐	☐
			☐	☐
			☐	☐
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			☐	☐

Document prepared by: CHEVRON PRODUCTS COMPANY, Retail HES
Cert revised 1/07

Designated Operator Facility Employee Training Log
Chevron #94306

Section 2715 of Title 23, California Code of Regulations, requires that Designated Underground Storage Tank Operators provide training to facility employees who have responsibilities associated with the operation and/or maintenance of underground storage tank (UST) systems. This training must be provided by July 1, 2005, and every 12 months thereafter. For facility employees hired after July 1, 2005, the initial training must be provided within 30 days of the date of hire. At least one of the facility employees present during operating hours must have current training. This training must include, but is not limited to, the following items as specified in 23 CCR Sections 2715(f)(1) and (2):

- ☑ Operation of the UST system in a manner consistent with the facility's Best Management Practices;
- ☑ The employee's role with regard to UST monitoring equipment as specified in the written UST Monitoring Plan;
- ☑ The employee's role with regard to spills and overfills as specified in the written UST Response Plan;
- ☑ Name(s) of contact person(s) for emergencies and monitoring equipment alarms;
- ☑ For facilities that are not routinely staffed, facility employee responsibilities as specified in the training program approved by the local UST regulatory agency.

Employee Name (Print)	Employee Signature	Hire Date	Designated Operator Signature	Training Date
Susan Hopwood	Susan Hopwood	8/13/18	5016850	5-23-11
Mike Cerda	Mike Cerda	4/21/11	5016950	6-27-11
Omar H. Bimrao	Omar H. Bimrao	4/27/11	5016980	8-4-11
Milagros Punzalan	Milagros Punzalan	03-01-02	5016850	9-14-11
Reynaldo Cortez	Reynaldo Cortez	07-10-06		
Josemarie Nacu	Josemarie Nacu	01-02-04		11
Deep Kaur	Deep Kaur	08-07-11	5016850	9-16

Underground Storage Tank Auditing

Employee Training Log

Chevron Station # 1723/94306

Employee Name Print	Employee Signature	Hire Date	Training Date	CA Designated Operator or Station Manager Signature
STACIE PALMA		07-05-05	06-04-09	
REYNALDO CASTRO	R. S. Castro	7-10-06	06-04-09	
ROSE DE VILLA	Rose de Villa	6-15-01	7-[illegible]-09	
Hilario S Buncamay		3-01-02	7-[illegible]-09	
Rosemarie Placela		01-07-08	7-[illegible]-09	
Ricardelio Pagsay		03-14-05	7-[illegible]-09	
PERCIVAL BRONES		12-12-07	7-[illegible]-09	
ROSALINDA D. LLAGAS		2/12/08	5-[illegible]-10	
Brian M. Hopkins		10/08/08	5-[illegible]-10	
ANDREA ANGHEL		8/10	8-[illegible]-10	
Esteban		07-07-08	9-25-10	
Julio Gutierrez		07-02-08	9-25-10	
Aiman Ibrahim		07-02-10	9-25-10	
REYNALDO CASTRO	R. S. Castro	7-10-06	9-28-10	
ROSEMARIE PLACLA		9-02-08	9-28-10	
Hilario Buncamay		03-01-02	9-28-10	
Esteban Vazquez		07-07-08	9-28-10	
Alfred Williams		9-26-10	9-28-10	
ROSE DE VILLA	Rose de Villa	6-15-01	1-26-11	

Note California Stations: Effective January 1, 2005 in accordance with California Code of Regulations, Title 23, Section 2715(c) - (f), the individual(s) listed above have received the employee training elements by the Designated UST Operator(s).

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

FACILITY INFORMATION 2012

BUSINESS OWNER/OPERATOR IDENTIFICATION

I. IDENTIFICATION

FACILITY ID# 07 000 7709851	BEGINNING DATE 100: 01/01/11	ENDING DATE 101: 12/31/11		
BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3: Contra Costa County – Byron Airport		BUSINESS PHONE 102: (925) 634-0147		
BUSINESS SITE ADDRESS 103: 500 Eagle Ct.		BUSINESS FAX 102a: (925) 513-0749		
BUSINESS SITE CITY 104: Byron	CA	ZIP CODE 105: 94514	COUNTY 108: Contra Costa	
DUN & BRADSTREET 106: 848313052		PRIMARY SIC 107: 4581	PRIMARY NAICS 107a: 488119	
BUSINESS MAILING ADDRESS 108a: 550 Sally Ride Drive				
BUSINESS MAILING CITY 108b: Concord		STATE 108c: CA	ZIP CODE 108d: 94520	
BUSINESS OPERATOR NAME 109: Contra Costa County		BUSINESS OPERATOR PHONE 110: (925) 646-5722		

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Hazardous Materials

II. BUSINESS OWNER

OWNER NAME 111: Contra Costa County	OWNER PHONE 112: (925) 646-5722	
OWNER MAILING ADDRESS 113: 550 Sally Ride Drive		
OWNER MAILING CITY 114: Concord	STATE 115: CA	ZIP CODE 116: 94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117: Natalie Olesen	CONTACT PHONE 118: (925) 646-5722	
CONTACT MAILING ADDRESS 119: 550 Sally Ride Drive	CONTACT EMAIL 119a: natalie.olesen@airport.cccounty.us	
CONTACT MAILING CITY 120: Concord	STATE 121: CA	ZIP CODE 122: 94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: Keith Freitas	NAME 128: Steve Callahan & Mark Grosenheider
TITLE 124: Director of Airports	TITLE 129: Lead Airport Operations Specialists
BUSINESS PHONE 125: (925) 646-5722	BUSINESS PHONE 130: (925) 634-0147
24-HOUR PHONE 126: (925) 646-5722	24-HOUR PHONE 131: (925) 646-5722
CELL # 127: (925) 382-1715	CELL # 132: (925) 383-1384 / (925) 348-0750

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Number of Employees: 13 **Total Pounds of Hazardous Materials: ~~63,335~~ 74,000 AM**

Invoice Contact Name: Raj Singh **Date of Ownership: 1989**

Invoice Contact Address: 550 Sally Ride Drive

Invoice City: Concord **Invoice State: CA** **Invoice ZIP: 94520** **Invoice Telephone: (925) 646-5722**

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
	2/2/2012	Natalie Olesen
NAME OF SIGNER (print) 136: Keith Freitas	TITLE OF SIGNER 137: Director of Airports	

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page _3_ of _8_

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100 LL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 60,000 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ADD ☐DELETE ☐REVISE 200 | Page 4 of 8

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Rd.

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
68476-34-6

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☒ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: ~~1,460~~ 1,300 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page _5_ of _8_

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
10 ft. to the NE of the owner maintenance hangar

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	600	221

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☒ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: ~~1,875~~ 7,500 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page _6_ of _8_

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-8

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
0

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 0 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2012

BUSINESS ACTIVITIES

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	0	7		0	0	0		7	7	0	9	8	5		1	EPA ID # (Hazardous Waste Only) CAL000112340 2

BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) Contra Costa County – Byron Airport 3

BUSINESS SITE ADDRESS 500 Eagle Ct. 103

BUSINESS SITE CITY Bryon 104 | CA | ZIP CODE 94514 105

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility...	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
D. ABOVEGROUND PETROLEUM STORAGE Own or operate ASTs above these thresholds: Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks **or containers.**	☒ YES ☐ NO 8	A SPCC Plan is required
E. HAZARDOUS WASTE Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste.	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.

F. LOCAL REQUIREMENTS 15

(You may also be required to provide additional information by your CUPA or local agency.)

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

Hazardous Materials Business Plan Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
CONTRA COSTA COUNTY - BYRON AIRPORT	770985	03/13/2012

INSPECTION TYPE: (Routine) / Follow-Up / Other

VIOLATION CLASSIFICATIONS: M = Minor Cl I = Major Cl II = Medium / Repeat Minor

California Code of Regulations, Title 19, Division 2, Chapter 4, §2620 et al; Title 27, Div 1, Subdiv. 2, Chap. 1, Part II
California Health and Safety Code, Division 20, Chapter 6.95, §25404, §25500-25520

Viol Code	Authority	Requirement	Viol Class	Violation Due Date/ Violation Corrected
BP01	19CCR 2729.2	Adequate submission / completion of Business Activities & Owner / Operator Identification Forms.		
BP02	19CCR 2729.2	Adequate submission / completion of chemical inventory forms.		
BP03	19CCR 2729.4	Maximum quantity of all hazardous materials stored on site in reportable quantities are listed in the HMBP.		
BP04	19CCR 2729.5	Original signature on inventory forms for acutely hazardous materials ≥ Threshold Planning Quantities.		
BP05	19CCR 2729.2	Adequate submission / completion of site map.		
BP06	H&SC 25504	Adequate submission / completion / retention of written Emergency Response Plan.		
BP07	27CCR 15210 & H&SC 25404	Full and timely payment of the HMBP program annual fee.		
BP08	H&SC 25503.5	HMBP is maintained on-site or is accessible.		
BP09	H&SC 25504(c) & 19CCR 2732	Initial employee training program for hazardous materials/emergency response implemented and adequate.		
BP10	H&SC 25504(c) & 19CCR 2732	Annual hazardous materials/emergency response refresher component of the employee training program implemented and adequate.		
BP11	19CCR 2731(c) & H&SC 25503(e)(1)	Procedures in place to mitigate, prevent or abate hazards to persons, property or the environment from a release or threatened release of hazardous materials. **See back for Best Management Practices (BMP).**		
BP12	—	Other:		

See back for Best Management Practices (BMP)

Observation: CCHSHMP reviewed the 2012 Hazardous Materials Busines plan while onsite. Minor changes were made to the "largest container" size on the following materials: ① Aviation Fuel; ② Diesel Fuel; ③ Waste Oil.

An emergency response/contingency plan was available onsite for review. Employee training documentation on the emergency response/contingency plan was available. The last employee training was conducted in January/February 2012.

A site map is on file with CCHSHMP.

No violations observed.

Total Time for Review and Inspection (in 15 minute increments): 12 ☐ Notice to Comply ☐ Notice of Violation ☒ No Violations Observed

Facility Rep Initials NDO CC Hazmat Initials MAK Date 03/13/2012

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

INSPECTION COVER SHEET

FACILITY NAME	FACILITY ADDRESS	INSPECTION DATE
CONTRA COSTA COUNTY - BYRON AIRPORT	500 EAGLE COURT BYRON, CA 94514	03/13/2012
Contact Name NATALIE OLESEN	EPA ID CAL000112340	SITE ID 770985
Contact Telephone (925) 646-5722		

Program(s): (check all that apply)

[X] Hazardous Materials Release Response Plan / Business Plan (BP)	[ ] Tiered Permitting (TP)
[X] Hazardous Waste Generator (HW)	[ ] Green Business (GB)
[ ] Underground Storage Tank (UST)	[X] Storm Water Program (SWP)
[X] Aboveground Petroleum Storage Act (APSA)	[ ] California Accidental Release Prevention Program (CalARP)

CUPA Permit Current: Yes [X] No [ ]

REPRESENTATIVES PRESENT:

Name	Title	Organization
MATT KAUFMANN	HAZ MAT SPEC.	CCHSHMP.
ADAM SPRINGER	HAZ MAT SPEC.	CCHSHMP
NATALIE OLESEN	AIRPORT OFFICE ASSISTANT	CONTRA COSTA COUNTY AIRPORT
BETH LEE	ASSISTANT DIRECTOR	" "
MICHAEL VITALICH	AIRPORT OPS SPEC.	" "

Facility Description/Comments: CCHSHMP is onsite to conduct the following routine inspections: ① HMBP; ② HWG; ③ APSA; ④ SWP.

ISSUANCE OF NOTICES:

A **NOTICE TO COMPLY** or **NOTICE OF VIOLATION** is issued to identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC), the California Code of Regulations (CCR), Code of Federal Regulations (CFR), or Contra Costa County Code (CCC). The facility may be subject to reinspection at any time by Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) to ensure that observed violations cited on the Notices are corrected. Failure to correct violations within the scheduled period provided may result in CCHSHMP citing the facility for continuing or additional violations. Issuances of Notices do not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted. (See back)

CONSENT:

Consent includes inspecting hazardous material/waste handling areas, taking photographs, reviewing and copying documents, questioning personnel and sampling activities to determine compliance with applicable laws and regulations.

Facility Rep Natalie Olesen (Consent to inspect given by)	Facility Rep Signature Natalie Olesen	Date 3/13/12
CC Hazmat Rep MATT KAUFMANN	CC Hazmat Signature	Date 03/13/2012

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 5 of 8

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
10 ft. to the NE of the owner maintenance hangar

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER ~~1,000~~ 250g 215
MLP 03/13/2012

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	600	221

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☒ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,875 Lbs.** 246

If EPCRA, Please Sign Here:

ENTERED

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 4 of 8

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Rd.

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
68476-34-6

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER ~~1,000~~ 200 g MLA 05/13/2012 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☒ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,460 Lbs.** 246

If EPCRA, Please Sign Here:

ENTERED

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2012

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page 3 of 8

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1 | MAP# (optional) 203 | GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100 LL

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER ~~1,000~~ 10,000 215
MAN 03/13/12

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon Mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 60,000 Lbs.** 246

If EPCRA, Please Sign Here:

ENTERED

CONTRA COSTA HEALTH SERVICES

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Hazardous Waste Inspection/Compliance Checklist (page 1 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
CONTRA COSTA COUNTY - BYRON AIRPORT	770985	03/13/2012

INSPECTION TYPE	VIOLATION CLASSIFICATIONS	EPA ID
Routine / Follow-Up / Other	M = Minor Cl I = Major Cl II = Medium / Repeat Minor	CAL000112340

California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 10, §66001 et al
California Health and Safety Code (HSC), Division 20, Chapter 6.5, §25100 et al
Code of Federal Regulations (CFR) Title 40, Chapter 1, Part 260 et al

Disposal Documents Reviewed For Year:	HW Gen Rpt Form On File?	Total Annual Tonnage of All Hazardous Waste Generated:
2011	X Yes ☐ No	1.98 TONS. IN 2011

CA State Waste Code if applicable, Federal Code(s)	Hazardous Waste Stream	Annual Quantity (Tons)
221	WASTE OIL	492 G = 1.85 TONS
223	WASTE OIL/FUEL FILTERS	0.13 TONS
	Additional Wastes on Continuation Sheet? ☐ Yes X No	

Generator Status:
☐ RCRA-LQG > 1,000 kg/month ☐ CA-LQG > 1,000 kg/month X CA-SQG > 100 to < 1,000 kg/month ☐ CA-CESQG < 100 kg/month ☐ Episodic LQG

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW01	HSC 25189.5	HSC 25189.5	Disposal, treatment or storage at unauthorized location		
HW02	**CCR 22 66262.11**	**CCR 22 66262.11**	**Hazardous Waste Determination**		
HW03	CCR 22 66262.12	CCR 22 66262.12	Obtain & maintain a valid EPA ID Number (DTSC Form 1358)		
HW04	**CFR 66262.34(d)**	—	**Accumulation time may not exceed 180 days (Unless waste shipped 200 or more miles, no more than 270 days)**		
HW05	—	CCR 22 66262.34(a)	Accumulation time may not exceed 90 days		
HW06	**CCR 22 67450.1**	**CCR 22 67450.1**	**Notify CUPA for eligible onsite treatment.**		
HW07	HSC 25163(a)	HSC 25163(a)	Lawful transportation of hazardous waste		
			RECORDKEEPING & REPORTING		
HW08	CCR 22 66262.20	CCR 22 66262.20	Properly Complete Manifest		
HW09	**CCR 22 66262.23**	**CCR 22 66262.23**	**Send manifest copy to DTSC, P.O. Box 400, Sacramento, CA 95812**		
HW10	HSC 25160.2	HSC 25160.2	Properly complete consolidated manifest		
HW11	**CCR 22 66262.40**	**CCR 22 66262.40**	**Keep waste manifests and/or consolidated manifests for 3 years**		
HW12	—	CCR 22 66262.40-41	Biennial Report (RCRA LQG Only)		
HW13	**HSC 25123.3**	**CCR 22 66262.42**	**File manifest Exception Report with DTSC**		
HW14	HSC 25143.10	HSC 25143.10	Biennial Excluded Recyclable Materials Report		
HW15	**HSC 25143.2(f) & CCR 22 66261.2(g)**	**HSC 25143.2(f) & CCR 22 66261.2(g)**	**Maintain adequate records demonstrating claim of exemption for Excluded Recyclable Material**		
HW16	CCR 22 66262.40(c)	CCR 22 66262.40(c)	Keep copies of analytical results, waste analysis records, or waste determination results for 3 years		
HW17	**CCR 22 66266.130(c)(5)**	**CCR 22 66266.130(c)(5)**	**Keep disposal receipts for 3 years for drained used oil filters and/or drained fuel filters**		
HW18	—	CCR 22 67100.1	SB14 – Hazardous Waste Source Reduction Evaluation Review Plan		
			HAZARDOUS WASTE HANDLER TRAINING		
HW19	**40 CFR 262.34(d)(5)(iii)**	**CCR 22 66265.16**	**Employee training program adequate.**		
HW20	—	CCR 22 66265.16	Training Documentation		
HW21	—	**CCR 22 66265.16**	**Training Conducted Annually**		
HW22	40 CFR 262.34(d)(5)(ii)	—	Post Emergency Response Plan by telephone.		
HW23	**40 CFR 262.34(d)(5)(i)**	**CCR 22 66265.55**	**Have an emergency coordinator on call or available during emergency.**		
HW24	—	CCR 22 66265.51-55	Contingency Plan Completed		

ENTERED

Facility Rep Initials	CC Hazmat Rep Initials	Date
NDO	MMK	03/13/2012

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Hazardous Waste Inspection/Compliance Checklist (page 2 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
CONTRA COSTA COUNTY – BYRON AIRPORT	~~77~~ 985	03/13/2012

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW25	**40 CFR 262.34(d)(5)(iv)**	**CCR 22 66265.51**	**Properly carry out contingency plan during an emergency.**		
			FACILITY OPERATION		
HW26	**40 CFR 265.31, Via 262.34(d)(4)**	**CCR 22 66265.31**	**Maintain and/or operate facility to prevent release or fire**		
HW27	40 CFR 265.32(c) Via 262.34(d)(4)	CCR 22 66265.32	Spill/fire control equipment available.		
HW28	**40 CFR 265.32(a) & (b) Via 262.34(d)(4)**	**CCR 22 66265.32**	**Facility equipped with internal communication or alarm.**		
HW29	40 CFR 265.33(c) Via 262.34(d)(4)	CCR 22 66265.33	Equipment properly maintained and tested		
HW30	**40 CFR 265.35, Via 262.34(d)(4)**	**CCR 22 66265.35**	**Maintain adequate aisle space**		
HW31	—	CCR 22 66265.37	Arrangements with response agencies		
			HAZARDOUS WASTE TANKS & CONTAINERS		
HW32	**CCR 22 66262.34(f)**	—	**Properly label/date hazardous waste container and/or tank.**		
HW33	CCR 22 66262.34	CCR 22 66262.34	Proper Markings including start date and composition		
HW34	**HSC 25143.9(a)**	**HSC 25143.9(a)**	**Proper label on Excluded Recyclable Materials**		
			HAZARDOUS WASTE CONTAINERS		
HW35	**CFR 265.171, Via 262.34(d)(2)**	**CCR 22 66265.171**	**Container in good condition**		
HW36	CFR 265.172, Via 262.34(d)(2)	CCR 22 66265.172	Container and/or liner compatible		
HW37	**CFR 265.173, Via 262.34(d)(2)**	**CCR 22 66265.173**	**Containers are kept closed**		
HW38	CFR 265.174, Via 262.34(d)(2)	CCR 22 66265.174	Conduct weekly inspections		
HW39	—	**CCR 22 66265.176**	**Buffer zone for ignitable wastes**		
HW40	CFR 265.177, Via 262.34(d)(2)	CCR 22 66265.177	Properly separate incompatible wastes		
HW41	**CCR 22 66261.7(e)(f)(i)**	**CCR 22 66261.7(e)(f)(i)**	**Properly manage containers or inner liners removed from containers greater than 5 gallons (Accumulation time not to exceed one year)**		
			HAZARDOUS WASTE TANK SYSTEMS		
HW42	**CFR 262.34, Via 262.34(d)(2)**	**CCR 22 66265.190**	**Tank in good condition**		
HW43	—	CCR 22 66265.191(a) & (e)	Complete annual integrity assessment for HW tank system without secondary containment.		
HW44	—	**CCR 22 66265.191(a) or 66265.192(a)**	**Failed to obtain a PE assessment for hazardous waste (HW) tank system.**		
HW45	Check local FD	CCR 22 66265.193(a)	Failed to provide proper secondary containment and/or leak detection for HW tank system.		
HW46	**CFR 265.201, Via 262.34(d)(2)**	**CCR 22 66265.194(a)**	**Failed to use proper spill/overfill prevention controls and practices.**		
HW47	CFR 265.20 (c) Via 262.34(d)(2)	CCR 22 66265.194	Comply with tank standards which include: two feet of freeboard (where applicable), shut off for waste feed line, & daily inspections of waste levels		
HW48	—	**CCR 22 66265.195(c)**	**Failed to inspect and/or document daily HW tank system inspections.**		
HW49	—	CCR 22 6265.196(e)(1) or (3)	Notify DTSC when a release to environment occurred from HW tank system.		
HW50	**CCR 22 67383.3**	**CCR 22 66265.197 CCR 22 67383.3**	**Properly complete and/or document closure for a hazardous waste tank.**		
HW51	—	—	Other:		

Observations: CCHSHMP observed waste oil (250 gallon double-wall ConVault) onsite properly labeled. There is one x 55 gallon drum containing waste oil/fuel filters. Labeling was adequate. Storage was safe.

No violations observed.

Total Time for Review and Inspection (in 15 minute increments): 6	☐ Notice to Comply	☐ Notice of Violation	☒ No Violations Observed
Facility Rep Initials NDO	CC Hazmat Rep Initials MAK	Date 03/13/2012	

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Aboveground Petroleum Storage Tanks Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
Contra Costa County Airports Division — Byron Airport	770985	3/13/12

INSPECTION TYPE: (Routine / Follow-Up / Other)	VIOLATION CLASSIFICATIONS: M = Minor, Cl I = Major, Cl II = Medium / Repeat Minor	TOTAL QUANTITY
		11,505

Date facility began operations:	Date of initial SPCC Plan:	Date of current SPCC Plan:	FACILITY CAPACITY/CLASSIFICATION
		9/4/03	☐ EXEMPT ☐ < 10,000 ☒ ≥ 10,000 Qualified Facility: ☐ Tier I ☐ Tier II

Code of Federal Regulations (CFR) Title 40, Chapter 1, Subpart D, Part 112
California Health & Safety Code (HSC) Division 20, Chapter 6.67, Section 25270

Viol Code	Authority	Violation Description	Viol Class	Violation Due Date/ Violation Corrected
AS01	**CFR 112.3**	**Failed to prepare a SPCC Plan**		
AS02	CFR 112.5(a)(d)	Failed to review or amend SPCC Plan		
AS03	**CFR 112.3(e)**	**SPCC Plan not available onsite**		
AS04	CFR 112.7(e)	Failed to conduct inspections & tests in accordance with written procedures		
AS05	**CFR 112.7(e)**	**Failed to maintain records of inspections, tests and/or procedures**		
AS06	CFR 112.7(e)	Record of inspections or tests not signed by supervisor or inspector		
		SPCC PLAN ELEMENTS – Pursuant to 25270.4.5(a), 25270.12(a) / The SPCC Plan is missing the following element(s):		
AS07	CFR 112.6(a)(1), (b)(1)	Self-certification for Tier I or II Qualified Facility		
AS08	**CFR 112.3(d) & CFR 112.6(b)(4)**	**Professional Engineer certification**		
AS09	CFR 112.5(b)	Documentation of 5-year review & evaluation of the SPCC Plan		
AS10	**CFR 112.7(f)**	**Training program**		
AS11	CFR 112.5(a), CFR 112.6(a)(2), (b)(2)	Amendments required within 6 months of change/certification of technical amendments		
AS12	**CFR 112.7, CFR 112.6(a)**	**Management authorization of resource commitment to implement the SPCC Plan**		
AS13	CFR 112.7(a)(3)	Diagram with location & contents of regulated containers, transfer stations & connecting pipes		
AS14	**CFR 112.7(a)(3)**	**Type of oil & storage capacity for each container**		
AS15	CFR 112.7(a)(3)	Discharge prevention measures; procedures for routine handling		
AS16	**CFR 112.7(a)(3)**	**Countermeasures for discovery, response & cleanup**		
AS17	CFR 112.7(a)(3)	Required contact list & phone numbers		
		GENERAL SPCC REQUIREMENTS – Pursuant to 25270.4.5(a), 25270.5 & 25270.12(a)		
AS18	**CFR 112.8(c)(4), (c)(5), (d)(1)**	**Failed to provide corrosion protection**		
AS19	CFR 112.8(c)(1)	Containers not compatible with materials stored		
AS20	**CCR 112.5(a), (d)**	**Failed to implement SPCC Plan review changes and/or amendment changes within 6 months**		
AS21	CFR 112.7(f)	Failed to train oil-handling personnel in operation & maintenance of equipment to prevent discharges		
AS22	**CCR 112.7(f)(3)**	**Failed to conduct annual spill prevention briefings**	m	4/13/12
AS23	CFR 112.7(d)	Failed to prepare an oil contingency plan or provide written control/removal commitments		
		FACILITY INSPECTION – Pursuant to 25270.4.5, 25270.5 & 25270.12(a)		
AS24	**H&SC 25270.4.5(b)**	**Failed to meet provisions of conditional exemption 25270.4.5(b)**		
AS25	CFR 112.7(g)	Facility security not adequate		
AS26	**CFR 112.7(c)**	**Clean-up materials not readily available**		
AS27	CFR 112.8(c)	Tank in poor condition/leaking		
AS28	**CFR 112.8(c)(8)**	**Overfill protection procedures or devices missing, not maintained or inoperative**	m	4/13/12
AS29	CFR 112.8(c)(11)	Portable/mobile containers not positioned to prevent a discharge		
AS30	**CFR 112.7(h)**	**Loading/unloading rack does not drain to containment**		
AS31	CFR 112.8(b)(c)	Facility drainage not functioning, or improperly operated or engineered		
AS32	**CFR 112.8(a), CFR 112.7(c)**	**Failed to provide appropriate containment or diversionary structures to prevent discharge**		
AS33	CFR 112.8(c)	Secondary containment inadequate to contain capacity of largest container plus precipitation		
AS34	**CFR 112.8(c)(10)**	**Failed to remove accumulation of oil in secondary containment**		
AS35	CFR 112.8	Secondary containment valve(s) not closed		
AS36	**CFR 112.3**	**Failed to implement SPCC Plan element:**		
AS37	—	Other:		

ENTERED CUPA

Total Time for Review and Inspection (in 15 minute increments): ☐ No Violations Observed

Facility Rep Initials	CC Hazmat Initials	Date
NDO		3/13/12

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CONTINUATION SHEET

Program: ☐ UST ☐ BP ☐ HW ☐ TP ☐ SWP ☒ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
CCC Airports Division Byron Airport	770985	3/13/12

Comments:

SPCC plan reviewed on 11/2/11

Observation: Overfill protection procedures not followed as stated in SPCC plan. Tank level controls 40 CFR 112.8(c)(8) Spcc plan requires waste oil tank to be pumped out @ 25% of capacity. In practice at Facility they are pumping of at 75% of capacity.

Violation (A328) 40 CFR 112.8(c)(8) Over Fill protection procedures not followed

Corrective Action: Update SPCC plan to reflect 75% of capacity of tank for pump OFF. Or change procedures to 25% of capacity. 4/13/12

Observation: Failed to conduct training for staff

Violation: Failed to conduct annual spill prevention briefings CCR 112.7 (f)(3)

Corrective Action: ~~Conduct~~ Conduct training on SPCC plan by 4/13/12

Facility Rep Initials	CC Hazmat Rep Initials	Date
NDO		3/13/12

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Storm Water Discharge Inspection/Compliance Checklist

FACILITY NAME	ADDRESS	INSPECTION DATE
Contra Costa County Airports Division Byron Airport	500 Eagle Court Byron CA 94514	3/13/12
		SITE ID: 770985

INSPECTION TYPE: Routine / Follow-Up	SIC CODE / NAICS	NOI Facility	WDID # or NPDES Permit #	
Routine	4581	☒ Yes ☐ No	5B07S00266	**Minor**: Correct within 30 days **Class I Violation**: Cease activity/mitigate immed. **Class II**: Correct within 10 business days/before the next rain (whichever 1st)

SELF CERTIFIED – NO EXPOSE ☐ Yes ☐ No

Contra Costa Co. Code, Title 10 Public Works and Flood Control, Division 1014 Stormwater Management and Discharge Control; California Porter-Cologne Water Quality Control Act and Federal Clean Water Act Incorporated by reference

Viol Code	Authority CCCT10	Requirement	Viol Class	Violation Due Date/ Violation Corrected
SW01	1014-4.006	Illicit discharge to the Contra Costa County stormwater system. **"Illicit discharge" means any discharge to the county's stormwater system that is not composed entirely of stormwater,** except a discharge in compliance with a NPDES permit.		
SW02	1014-4.008	Discharge that results in or contributes to a violation of the Contra Costa County NPDES permit.		
SW03	1014-4.010	Unlawful drainage connection to the Contra Costa County stormwater system.		
SW04	1014-4.012(a)	Any person engaging in activities that may result in pollutants entering the county's stormwater system shall undertake all practicable measures to reduce such pollutants.		
SW05	1014-4.012(b)	No person shall throw, deposit, leave, or keep trash (discarded objects) in or upon any street, alley, sidewalk, business place, creek, stormwater system, fountain, pool, lake, stream, river or any other body of water, or upon any public or private parcel of land, except in containers or in lawfully established waste disposal facilities.		
SW06	1014-4.012(d)	Facility cleans paved parking lots, paved areas of gasoline stations, paved private roads, or related stormwater systems as frequently and thoroughly as practicable in a manner that does not result in the discharge of pollutants to the county's stormwater system.		
SW07	1014-4.012(g)	Facility complies with any and all applicable **Best Management Practices** adopted by any federal, state or local agency.		
SW08	1014-4.016(c)	Facility maintains a notification procedure, trains personnel in the procedures, and personnel make notifications of any release or suspected release of pollutants to the Contra Costa County Stormwater system.		
SW09	1014-4.016(c)	Facility takes all necessary steps to ensure the discovery, containment, and clean up of any release constituting an illicit discharge to the Contra Costa County stormwater system.		
Viol Code	**Authority CCCT10**	**Notice of Intent Facilities**	**Viol Class**	**Viol Due Date/ Viol Corrected**
SW10	1014-4.012(f)	Notice of intent filed with State Water Quality Control Board		
SW11	1014-4.012(h)	Facility has a Storm Water Pollution Prevention Plan (SWPPP).		
SW12	1014.4.012(f)	Facility has submitted the results of annual storm water runoff analyses to the State Water Quality Control Board.		

	Best Management Practices	**Exist - E, Recommended - R or (follow-up) Implemented - I**
BMP 1	Outdoor storage of materials with a potential for polluting (chemicals, wastes, equipment etc.) moved indoors; alternatively, materials raised above the ground and covered to prevent contact with run-off and rain.	I
BMP 2	Vehicle and equipment washing located away from drains or any area with a potential for run-off to the County stormwater system.	I
BMP 3	Adequate spill control and spill mitigation materials are available (e.g. absorbents, rags, booms, oil absorbent pads, etc).	I
BMP 4	Minimal spills in storage area. All spills promptly addressed to prevent discharge to soil or surface water.	I
BMP 5	Secondary containment in place for hazardous materials/wastes storage tanks and containers.	I
BMP 6	Facility personnel are trained in the SWPPP and/or SPCC (Spill Prevention, Control and Countermeasures).	I
BMP 7	Other existing or recommended BMPs (see continuation sheet for description).	

FILTERED

Total Time for Review and Inspection (in 15 minute increments): 8 ☒ No Violations Observed

Facility Rep Initials NDO | CC Hazmat Rep Initials MSL | Date 03/13/2012

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HEALTH SERVICES

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CONTINUATION SHEET

Program: ☐ UST ☐ BP ☐ HW ☐ TP ☒ SWP ☐ APSA ☐ CalARP ☐ GB ☐ Other

FACILITY NAME	SITE ID	DATE
CCC Airports Division Byron Airport	770985	3/13/12

Comments:

Storm water training conducted 2012

Storm Water Pollution Prevention Plan on File

Vehicle wash rack water goes to Sump with oil/water Separator. This Then Flows to Leach Field

SPCC plan in place 2° containment provided for all tanks.

SW PPP has a good description of Pollutant Sources.

Facility Rep Initials	CC Hazmat Rep Initials	Date
NDO	MSK	03/13/2012

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INSPECTION COVER SHEET

FACILITY NAME	FACILITY ADDRESS	INSPECTION DATE
CONTRA COSTA COUNTY - BYRON AIRPORT	500 EAGLE COURT BYRON, CA 94514	03/13/2012
Contact Name NATALIE OLESEN	**EPA ID** CAL000112340	**SITE ID** 770985
Contact Telephone (925) 646-5722		

Program(s): (check all that apply)

[X] Hazardous Materials Release Response Plan / Business Plan (BP)	[ ] Tiered Permitting (TP)
[X] Hazardous Waste Generator (HW)	[ ] Green Business (GB)
[ ] Underground Storage Tank (UST)	[X] Storm Water Program (SWP)
[X] Aboveground Petroleum Storage Act (APSA)	[ ] California Accidental Release Prevention Program (CalARP)

CUPA Permit Current: Yes [X] No [ ]

REPRESENTATIVES PRESENT:

Name	Title	Organization
MATT KAUFMANN	HAZ MAT SPEC.	CCHSHMP.
ADAM SPRINGER	HAZ MAT SPEC.	CCHSHMP
NATALIE OLESEN	AIRPORT OFFICE ASSISTANT	CONTRA COSTA COUNTY AIRPORT
BETH LEE	ASSISTANT DIRECTOR	" "
MICHAEL VITALICH	AIRPORT OPS SPEC.	" "

Facility Description/Comments: CCHSHMP is onsite to conduct the following routine inspections: (1) HMBP; (2) HWG; (3) APSA; (4) SWP.

ISSUANCE OF NOTICES:

A **NOTICE TO COMPLY** or **NOTICE OF VIOLATION** is issued to identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC), the California Code of Regulations (CCR), Code of Federal Regulations (CFR), or Contra Costa County Code (CCC). The facility may be subject to reinspection at any time by Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) to ensure that observed violations cited on the Notices are corrected. Failure to correct violations within the scheduled period provided may result in CCHSHMP citing the facility for continuing or additional violations. Issuances of Notices do not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted. (See back)

CONSENT:

Consent includes inspecting hazardous material/waste handling areas, taking photographs, reviewing and copying documents, questioning personnel and sampling activities to determine compliance with applicable laws and regulations.

Facility Rep Natalie Olesen (Consent to inspect given by)	Facility Rep Signature Natalie Olesen	Date 3/13/12
CC Hazmat Rep MATT KAUFMANN	CC Hazmat Signature	Date 03/13/2012

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., **HEALTH SERVICES DIRECTOR** • RANDALL L. SAWYER, **DIRECTOR**

Aboveground Petroleum Storage Tanks Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
CCC Airports Division Byron Airport	770985	6/4/12

INSPECTION TYPE: Routine / (Follow-Up) / Other	VIOLATION CLASSIFICATIONS: M = Minor Cl I = Major Cl II = Medium / Repeat Minor		TOTAL QUANTITY
Date facility began operations:	Date of initial SPCC Plan:	Date of current SPCC Plan:	FACILITY CAPACITY/CLASSIFICATION ☐ EXEMPT ☐ < 10,000 ☐ ≥ 10,000 Qualified Facility: ☐ Tier I ☐ Tier II

Code of Federal Regulations (CFR) Title 40, Chapter I, Subpart D, Part 112
California Health & Safety Code (HSC) Division 20, Chapter 6.67, Section 25270

Viol Code	Authority	Violation Description	Viol Class	Violation Due Date/ Violation Corrected
AS01	**CFR 112.3**	**Failed to prepare a SPCC Plan**		
AS02	CFR 112.5(a)(d)	Failed to review or amend SPCC Plan		
AS03	**CFR 112.3(e)**	**SPCC Plan not available onsite**		
AS04	CFR 112.7(e)	Failed to conduct inspections & tests in accordance with written procedures		
AS05	**CFR 112.7(e)**	**Failed to maintain records of inspections, tests and/or procedures**		
AS06	CFR 112.7(e)	Record of inspections or tests not signed by supervisor or inspector		
		SPCC PLAN ELEMENTS – Pursuant to 25270.4.5(a), 25270.12(a) / The SPCC Plan is missing the following elements:		
AS07	CFR 112.6(a)(1), (b)(1)	Self-certification for Tier I or II Qualified Facility		
AS08	**CFR 112.3(d) & CFR 112.6(b)(4)**	**Professional Engineer certification**		
AS09	CFR 112.5(b)	Documentation of 5-year review & evaluation of the SPCC Plan		
AS10	**CFR 112.7(f)**	**Training program**		
AS11	CFR 112.5(a), CFR 112.6(a)(2), (b)(2)	Amendments required within 6 months of change/certification of technical amendments		
AS12	**CFR 112.7, CFR 112.6(a)**	**Management authorization of resource commitment to implement the SPCC Plan**		
AS13	CFR 112.7(a)(3)	Diagram with location & contents of regulated containers, transfer stations & connecting pipes		
AS14	**CFR 112.7(a)(3)**	**Type of oil & storage capacity for each container**		
AS15	CFR 112.7(a)(3)	Discharge prevention measures; procedures for routine handling		
AS16	**CFR 112.7(a)(3)**	**Countermeasures for discovery, response & cleanup**		
AS17	CFR 112.7(a)(3)	Required contact list & phone numbers		
		GENERAL SPCC REQUIREMENTS – Pursuant to 25270.4.5(a), 25270.5 & 25270.12(a)		
AS18	**CFR 112.8(c)(4), (c)(5), (d)(1)**	**Failed to provide corrosion protection**		
AS19	CFR 112.8(c)(1)	Containers not compatible with materials stored		
AS20	**CCR 112.5(a), (d)**	**Failed to implement SPCC Plan review changes and/or amendment changes within 6 months**		
AS21	CFR 112.7(f)	Failed to train oil-handling personnel in operation & maintenance of equipment to prevent discharges		
AS22	**CCR 112.7(f)(3)**	**Failed to conduct annual spill prevention briefings**	—	3/22/12
AS23	CFR 112.7(d)	Failed to prepare an oil contingency plan or provide written control/removal commitments		
		FACILITY INSPECTION – Pursuant to 25270.4.5, 25270.5 & 25270.12(a)		
AS24	**H&SC 25270.4.5(b)**	**Failed to meet provisions of conditional exemption 25270.4.5(b)**		
AS25	CFR 112.7(g)	Facility security not adequate		
AS26	**CFR 112.7(c)**	**Clean-up materials not readily available**		
AS27	CFR 112.8(c)	Tank in poor condition/leaking		
AS28	**CFR 112.8(c)(8)**	**Overfill protection procedures or devices missing, not maintained or inoperative**	—	3/22/12
AS29	CFR 112.8(c)(11)	Portable/mobile containers not positioned to prevent a discharge		
AS30	**CFR 112.7(h)**	**Loading/unloading rack does not drain to containment**		
AS31	CFR 112.8(b)(c)	Facility drainage not functioning, or improperly operated or engineered		
AS32	**CFR 112.8(a), CFR 112.7(c)**	**Failed to provide appropriate containment or diversionary structures to prevent discharge**		
AS33	CFR 112.8(c)	Secondary containment inadequate to contain capacity of largest container plus precipitation		
AS34	**CFR 112.8(c)(10)**	**Failed to remove accumulation of oil in secondary containment**		
AS35	CFR 112.8	Secondary containment valve(s) not closed		
AS36	**CFR112.3**	**Failed to implement SPCC Plan element:**		
AS37	—	Other:		

Total Time for Review and Inspection (in 15 minute increments): 2 ☐ No Violations Observed

Facility Rep Initials	CC Hazmat Initials	Date
Mat		6/4/12

CONTRA COSTA HEALTH SERVICES

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WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

INSPECTION COVER SHEET

FACILITY NAME	FACILITY ADDRESS	INSPECTION DATE
CCC Airports Division Byron Airport	500 Eagle ct Byron CA	6/4/12
Contact Name	**EPA ID**	**SITE ID**
		77-0985
Contact Telephone		

Program(s): (check all that apply)

☑ Hazardous Materials Release Response Plan / Business Plan (BP)	☐ Tiered Permitting (TP)
☑ Hazardous Waste Generator (HW)	☐ Green Business (GB)
☐ Underground Storage Tank (UST)	☐ Storm Water Program (SWP)
☑ Aboveground Petroleum Storage Act (APSA)	☐ California Accidental Release Prevention Program (CalARP)

CUPA Permit Current: Yes ☑ No ☐

REPRESENTATIVES PRESENT:

Name	Title	Organization
Adam Springer	HMS	

Facility Description/Comments: File review only. Facility sent documentation correcting violations cited on 3/13/12. received corrected documentation for 2 violations on 3/22/12.
Training and SPCC Plan correction has been done all violations corrected From 3/13/12 inspection

ISSUANCE OF NOTICES:

A **NOTICE TO COMPLY** or **NOTICE OF VIOLATION** is issued to identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC), the California Code of Regulations (CCR), Code of Federal Regulations (CFR), or Contra Costa County Code (CCC). The facility may be subject to reinspection at any time by Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) to ensure that observed violations cited on the Notices are corrected. Failure to correct violations within the scheduled period provided may result in CCHSHMP citing the facility for continuing or additional violations. Issuances of Notices do not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted. (See back)

CONSENT:

Consent includes inspecting hazardous material/waste handling areas, taking photographs, reviewing and copying documents, questioning personnel and sampling activities to determine compliance with applicable laws and regulations.

Facility Rep _____ Consent to inspect given by	Facility Rep Signature	Date
CC Hazmat Rep Adam Springer	CC Hazmat Signature	Date 6/4/12

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA COUNTY
HAZARDOUS MATERIALS PROGRAMS
CERTIFIED UNIFIED PROGRAM AGENCY

4585 PACHECO BLVD., STE 100, MARTINEZ, CA 94553-2233
PHONE: (925)335-3200 FAX: (925)646-2073 www.cchealth.org/hazmat

PERMIT NUMBER: 07-000-770985
PERMIT TO OPERATE

Permit Valid 07/01/12 thru 06/30/13

This is to certify that the owner and establishment shown have been granted permission to operate subject to compliance with all applicable laws and regulations. This permit is valid for the period shown above unless revoked or suspended for violation of applicable laws and/or regulations.

REGULATED FACILITY:
ID # FA0033495
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

OWNER OF RECORD:
CONTRA COSTA COUNTY
550 SALLY RIDE DR
CONCORD, CA 94520

	Regulated Program(s)	Permit #	Program Record #	Permit Fee Paid
1	HWG: LESS THAN 5 TONS/YEAR	PT0026643	PR0054690	YES
2	HMBP: >10K-100K LBS, 0-19 EMPLOYEES	PT0022893	PR0051759	YES
3	APSA: 10K - <100K GALLONS	PT0027045	PR0056020	YES

IMMEDIATELY NOTIFY HAZARDOUS MATERIALS IF THERE ARE CHANGES IN FACILITY, OWNERSHIP, AND/OR BILLING ADDRESS(ES) BY CALLING (925) 335-3200.

THIS IS NOT AN INVOICE

CCC BYRON AIRPORT
RAJ SINGH
550 SALLY RIDE DR
CONCORD, CA 94520

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

Aboveground Petroleum Storage Tank Facility Statement

I. FACILITY/BUSINESS INFORMATION

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 [1]

FACILITY NAME (Same as BUSINESS NAME or DBA-Doing Business As) [3]
Contra Costa County – Byron Airport

FACILITY ADDRESS [103]
500 Eagle Ct.

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Hazardous Materials

FACILITY CITY [104]
Byron

CA

ZIP CODE [105]
94514

CONTACT NAME [117a]
Natalie Olesen

CONTACT PHONE [118a]
(925) 646-5722

Does the facility have an SPCC plan? ☒ Yes ☐ No [920]
(see reverse for instructions)

Date of last SPCC Plan Revision/Review:
01 / 14 / 2013

II. TOTAL FACILITY CAPACITY (in gallons) [921]

Facility's total aboveground petroleum storage **capacity** for all tanks and containers greater than or equal to 55 gal.: 11,450 gal.
(see reverse for instructions)

Capacity of the largest tank/container that stores petroleum at your facility (in gallons): 10,000 gal.

III. TANK DETAILS for facilities with tanks 10,000 gallons in capacity or more (attach a spread sheet if needed)

Tank ID Number [922]	Contents (Gas, Diesel, etc.) [923]	Capacity (in gallons) [924]	Tank Location [925]	Age of Tank (in years) [926]	Secondary Containment [927]
	Aviation Fuel – 100 LL	10,000		14	☒ Yes ☐ No
			SEE SITE MAP/PLAN FOR TANK LOCATION		☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No
					☐ Yes ☐ No

IV. SIGNATURE

I certify under penalty of law that the information submitted is accurate and complete to the best of my knowledge.

SIGNATURE OF OWNER OR TANK FACILITY OPERATOR	PRINTED NAME OF OWNER OR TANK FACILITY OPERATOR [136]	DATE (MM/DD/YYYY) [134]
	Keith Freitas, Director of Airports	01 / 31 / 2013

ENTERED

INSTRUCTIONS FOR EACH BOX IS PROVIDED ON THE BACK

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

FACILITY INFORMATION 2013

BUSINESS OWNER/OPERATOR IDENTIFICATION

I. IDENTIFICATION

FACILITY ID#	BEGINNING DATE 100	ENDING DATE 101
0 7 0 0 0 7 7 0 9 8 5 1	01/01/2013	12/31/2013

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3	BUSINESS PHONE 102
Contra Costa County – Byron Airport	(925) 634-0147
BUSINESS SITE ADDRESS 103	BUSINESS FAX 102a
500 Eagle Ct.	(925) 513-0749

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Hazardous Materials

BUSINESS SITE CITY 104		ZIP CODE 105	COUNTY 108
Byron	CA	94514	Contra Costa

DUN & BRADSTREET 106	PRIMARY SIC 107	PRIMARY NAICS 107a
848313052	4581	488119

BUSINESS MAILING ADDRESS 108a		
550 Sally Ride Drive		
BUSINESS MAILING CITY 108b	STATE 108c	ZIP CODE 108d
Concord	CA	94520
BUSINESS OPERATOR NAME 109	BUSINESS OPERATOR PHONE 110	
Contra Costa County	(925) 646-5722	

II. BUSINESS OWNER

OWNER NAME 111	OWNER PHONE 112	
Contra Costa County	(925) 646-5722	
OWNER MAILING ADDRESS 113		
550 Sally Ride Drive		
OWNER MAILING CITY 114	STATE 115	ZIP CODE 116
Concord	CA	94520

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117	CONTACT PHONE 118	
Natalie Olesen	(925) 646-5722	
CONTACT MAILING ADDRESS 119	CONTACT EMAIL 119a	
550 Sally Ride Drive	natalie.olesen@airport.cccounty.us	
CONTACT MAILING CITY 120	STATE 121	ZIP CODE 122
Concord	CA	94520

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123	NAME 128
Keith Freitas	Steve Callahan
TITLE 124	TITLE 129
Director of Airports	Lead Airport Operations Specialist
BUSINESS PHONE 125	BUSINESS PHONE 130
(925) 646-5722	(925) 646-5722
24-HOUR PHONE 126	24-HOUR PHONE 131
(925) 646-5722	(925) 646-5722
CELL # 127	CELL # 132
(925) 382-1715	(925) 383-1384

ENTERED

63335

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Number of Employees:	**1.5**	**Total Pounds of Hazardous Materials:**	**63,335**
Invoice Contact Name:	**Raj Singh**	**Invoice Contact Name of Business:**	**Buchanan Field Airport**
Invoice Contact Address:	**550 Sally Ride Drive**	**Date of Ownership:**	**1989**
Invoice City:	**Concord**	**Invoice State:**	**CA**
Invoice ZIP:	**94520**	**Invoice Telephone:**	**(925) 646-5722**

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
	1/31/13	Natalie Olesen
NAME OF SIGNER (print) 136	TITLE OF SIGNER 137	
Keith Freitas	Director of Airports	

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 |

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1 | MAP# (optional) 203 | GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Petroleum Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Aviation Fuel – 100 LL

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Contra Costa Health
Hazardous Materials

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
8006-61-9

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Combustible Liquid Class II

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211 | RADIOACTIVE ☐ Yes ☒ No 212 | CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214 | LARGEST CONTAINER 10,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
6,000	10,000	0	

UNITS* (Check one item only) 221 ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224 ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225 ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon mixture 227	☐ Yes ☒ No 228	8006-61-9 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 60,000 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 |

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
4015 Holey Rd.

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Petroleum Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Diesel Fuel

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
68476-34-6

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Combustible Liquid, Class II

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 200 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
100	200	0	

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☒ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Diesel mixture (varies by supplier) 227	☐ Yes ☒ No 228	68476-34-6 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,460 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 |

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
100 yards SE of Administration Building

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Petroleum Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Unleaded Fuel

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209
8006-61-9 and 86290-81-5

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Combustible Liquid, Class II

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 1,000 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
0	1,000	0	

UNITS* (Check one item only) 221 ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
0

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Gasoline Mixture (varies by season & supplier) 227	☐ Yes ☒ No 228	8006-61-9 & 86290-81-5 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 0 Lbs.** 246
Below

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 |

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Contra Costa County – Byron Airport

CHEMICAL LOCATION 201
10 ft. to the NE of the owner maintenance hangar

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 7 0 9 8 5 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Blended Hydrocarbons

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Waste Oil

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
Mixture

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Combustible Liquid, Class III-B

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☒ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
10	250	600	221

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	100 226	Hydrocarbon mixture 227	☐ Yes ☒ No 228	Mixture 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,875 Lbs.** 246

If EPCRA, Please Sign Here:

INSTRUCTIONS FOR EACH BOX IS PROVIDED ON THE BACK

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2013

BUSINESS ACTIVITIES

RECEIVED
FEB 0 8 2013
Contra Costa Health
Hazardous Materials

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only) 0 7 0 0 0 7 7 0 9 8 5 [1]	EPA ID # (Hazardous Waste Only) C A L0001 12340	[2]
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As) Contra Costa County – Byron Airport		[3]
BUSINESS SITE ADDRESS 500 Eagle Ct.		[103]
BUSINESS SITE CITY Byron [104]	CA ZIP CODE 94514	[105]

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility...	If Yes, please complete these pages of the UPCF....	
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION FOR EACH HAZARDOUS MATERIAL
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
D. ABOVEGROUND PETROLEUM STORAGE Own or operate ASTs above these thresholds: Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks **or containers**?	☒ YES ☐ NO 8	Aboveground Petroleum Storage Tank Facility Statement (if not already on file) SPCC Plan is required
E. HAZARDOUS WASTE Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste?	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.
F. LOCAL REQUIREMENTS		15

INSTRUCTIONS FOR EACH BOX IS PROVIDED ON THE BACK

CONTRA COSTA HEALTH SERVICES-HAZARDOUS MATERIALS PROGRAMS

FACILITY INFORMATION 2013

711364

BUSINESS OWNER/OPERATOR IDENTIFICATION

BAY CITIES REFUSE SERVICE INC
2525 GARDEN TRACT RD
RICHMOND CA 94801

I. IDENTIFICATION

FACILITY ID# 1: 07 0000 71364	BEGINNING DATE 100: 01/01/2013	ENDING DATE 101: 12/31/2013	
BUSINESS NAME (Same as FACILITY NAME or DBA - Doing Business As) 3: Bay Cities Refuse Service, Inc.		BUSINESS PHONE 102: 510-237-4614	
BUSINESS SITE ADDRESS 103: 2525 Garden Tract Road	RECEIVED FEB 08 2013 Contra Costa Health Hazardous Materials	BUSINESS FAX 102a: 510-237-8078	
BUSINESS SITE CITY 104: Richmond	CA	ZIP CODE 105: 94801	COUNTY 108: Contra Costa
DUN & BRADSTREET 106: 041842519		PRIMARY SIC 107: 4212	PRIMARY NAICS 107a:
BUSINESS MAILING ADDRESS 108a: 2525 Garden Tract Road			
BUSINESS MAILING CITY 108b: Richmond,		STATE 108c: CA	ZIP CODE 108d: 94801
BUSINESS OPERATOR NAME 109:		BUSINESS OPERATOR PHONE 110:	

II. BUSINESS OWNER

OWNER NAME 111: Bay Cities Refuse Svc, Inc.	OWNER PHONE 112: 510-237-4614	
OWNER MAILING ADDRESS 113: 2525 Gardne Tract Road		
OWNER MAILING CITY 114: Richmond	STATE 115: CA	ZIP CODE 116: 94801

III. ENVIRONMENTAL CONTACT

CONTACT NAME 117:	CONTACT PHONE 118:	
CONTACT MAILING ADDRESS 119:	CONTACT EMAIL 119a:	
CONTACT MAILING CITY 120:	STATE 121:	ZIP CODE 122:

IV. EMERGENCY CONTACTS

-PRIMARY-	-SECONDARY-
NAME 123: Gregory Christie	NAME 128: Gregory Smith
TITLE 124: Supervisor	TITLE 129: Supervisor
BUSINESS PHONE 125: 510-237-4614	BUSINESS PHONE 130: 510-237-4614
24-HOUR PHONE 126: 415-601-6558	24-HOUR PHONE 131: 415-987-7149
CELL # 127: 415-601-6558	CELL # 132: 415-987-7149

ADDITIONAL LOCALLY COLLECTED INFORMATION: 133

Number of Employees: 5 **Total Pounds of Hazardous Materials:** ~~7,507~~ 7616

Invoice Contact Name: Kim Christie **Invoice Contact Name of Business:** Bay Cities Refuse Svc

Invoice Contact Address: 2525 Garden Tract Road **Date of Ownership:** 1967

Invoice City: Richmond **Invoice State:** CA **Invoice ZIP:** 94801 **Invoice Telephone:** 510-237-4614

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete.

SIGNATURE OF OWNER/OPERATOR OR DESIGNATED REPRESENTATIVE	DATE 134	NAME OF DOCUMENT PREPARER 135
Lewis Figone	2-5-2013	Kim Christie
NAME OF SIGNER (print) 136: Lewis Figone	TITLE OF SIGNER 137: President	

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 RECEIVED Page ___ of ___

FEB 06 2013
Contra Costa Health
Hazardous Materials

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Chevron Aw 68

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Hydraulic Oil

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209
647242-65-U

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Flammable-irritant

HAZARDOUS MATERIAL TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215
250

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
150	200		

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☒ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	99 226	Lubricating Base Oil 227	☐ Yes ☒ No 228	229
2	1 230	Additives 231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** ~~1,500~~ 1875 **Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Dexron III-MERCON

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Auto Transmission Fluid

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209
64742-65-U

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 55 gallon 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
30	40		

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	85 226	Lubricating Base Oil 227	☐ Yes ☒ No 228	229
2	15 230	Additives 231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** ~~288~~ 385 **Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Delo 400

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Motor Oil SAE 15w-40

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209
6472-65-u

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 250 215

FED HAZARD CATEGORIES (Check all that apply) 216
☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
150	250		

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	70 226	Lubricating Base Oil 227	☐ Yes ☒ No 228	229
2	30 230	Additives 231	☐ Yes ☒ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,875 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
08910 Anti Freeze 186

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Anti-Freeze

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
107-21-1

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) 216
☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
25	55	50 gallon	134

UNITS* (Check one item only) 221
☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	226	Ethylene Glycol 227	☐ Yes ☒ No 228	107-21-1 229
2	230	231	☐ Yes ☐ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** 484 **Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Chevron Grease Black Pearl EP NLGI 2

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Grease

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
64742547

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
30	55		

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	72.5 226	Hydrocarbon Base Oil 227	☐ Yes ☒ No 228	200 229
2	22.5 230	Polyurea Thickeners 231	☐ Yes ☐ No 232	233
3	5.0 234	Aditives 235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 396 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
LHC Fuel Gas

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Class 4 Toxic

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID ☒ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) 216
☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
29.91	29.91		

UNITS* (Check one item only) 221
☐ a. GALLONS ☐ b. CUBIC FEET ☒ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE 224
☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT

STORAGE TEMPERATURE 225
☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** 29.91 **Lbs.** 246
Below

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Waste Oil

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☒ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☒ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
110	165		221

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds: 1,237 Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Svc, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Roac, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Gear Lubricant 85W-140

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Grease

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
64742-65-U

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
Combustable-Irritant

HAZARDOUS MATERIAL TYPE (Check one item only) ☒ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
35	55		

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 365 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. CAN ☐ f. CARBOY ☐ g. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 223

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 224

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	75 226	Lubricating Base Oil 227	☐ Yes ☒ No 228	229
2	25 230	Additives 231	☐ Yes ☒ No 232	233
3	234	235	☐ Yes ☐ No 236	237
4	238	239	☐ Yes ☐ No 240	241
5	242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** 396 **Lbs.** 246

If EPCRA, Please Sign Here

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Svc, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Roac, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
50-50 Mix

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Recycled Anti-Freeze

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☒ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
30	55		

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 223

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 224

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	Ethylenlycol-Water 227	☐ Yes ☒ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information. 225

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** ~~456.5~~ 484 **Lbs.** 246

If EPCRA, Please Sign Here:

CUPA (Rev. 12-2007)

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Anti-Freeze Waste

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☒ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 55 215

FED HAZARD CATEGORIES (Check all that apply) ☐ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
30	55	50	342

UNITS* (Check one item only) ☒ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☒ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	Anti-Freeze Waste 227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** ~~456.5~~ 484 **Lbs.** 246

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 [redacted] 0 0 0 [redacted] 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Safety Kleen 105 Solvent

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
Mineral Spirits

208
Regulated Substance? ☐ Yes ☒ No

CAS# 209

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☒ b. LIQUID ☐ c. GAS 214

LARGEST CONTAINER 215

FED HAZARD CATEGORIES (Check all that apply) ☒ a. FIRE ☐ b. REACTIVE ☐ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH 216

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
20	25		365

UNITS* (Check one item only) ☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS 221
* If EHS, amount must be in pounds.

DAYS ON SITE: 222

STORAGE CONTAINER
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☒ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER 223

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1 226	227	☐ Yes ☐ No 228	229
2 230	231	☐ Yes ☐ No 232	233
3 234	235	☐ Yes ☐ No 236	237
4 238	239	☐ Yes ☐ No 240	241
5 242	243	☐ Yes ☐ No 244	245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** 207.5 **Lbs.** 246
Below

If EPCRA, Please Sign Here:

UNIFIED PROGRAM CONSOLIDATED FORM
HAZARDOUS MATERIALS BUSINESS PLAN 2013

HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION

(one page per material per building or area)

☐ ADD ☐ DELETE ☐ REVISE 200 | Page ___ of ___

I. FACILITY INFORMATION

BUSINESS NAME (Same as FACILITY NAME or DBA – Doing Business As) 3
Bay Cities Refuse Service, Inc.

CHEMICAL LOCATION 201
2525 Garden Tract Road, Richmond, CA 94801

CHEMICAL LOCATION CONFIDENTIAL EPCRA 202
☐ YES ☒ NO

FACILITY ID # 0 7 0 0 0 7 1 1 3 6 4 1

MAP# (optional) 203

GRID# (optional) 204

II. CHEMICAL INFORMATION

CHEMICAL NAME 205
Parafin Hydro Carbon

TRADE SECRET ☐ Yes ☒ No 206
If Subject to EPCRA, refer to instructions

COMMON NAME 207
LP Gas

Regulated Substance? ☐ Yes ☒ No 208

CAS# 209
74-84-0, 74-98-6, 115-07-1, 75-08-01

*If Regulated Substance is "Yes", all amounts below must be in lbs.

FIRE CODE HAZARD CLASSES (Complete if required by CUPA) 210
4 flammable

HAZARDOUS MATERIAL TYPE (Check one item only) ☐ a. PURE ☐ b. MIXTURE ☐ c. WASTE 211

RADIOACTIVE ☐ Yes ☐ No 212

CURIES 213

PHYSICAL STATE (Check one item only) ☐ a. SOLID ☐ b. LIQUID ☒ c. GAS 214

LARGEST CONTAINER 215
20

FED HAZARD CATEGORIES (Check all that apply) 216
☐ a. FIRE ☐ b. REACTIVE ☒ c. PRESSURE RELEASE ☐ d. ACUTE HEALTH ☐ e. CHRONIC HEALTH

AVERAGE DAILY AMOUNT 217	MAXIMUM DAILY AMOUNT 218	ANNUAL WASTE AMOUNT 219	STATE WASTE CODE 220
20	40		

UNITS* (Check one item only) 221
☐ a. GALLONS ☐ b. CUBIC FEET ☐ c. POUNDS ☐ d. TONS
* If EHS, amount must be in pounds.

DAYS ON SITE: 222
365

STORAGE CONTAINER 223
☐ a. ABOVE GROUND TANK ☐ b. UNDERGROUND TANK ☐ c. TANK INSIDE BUILDING ☐ d. STEEL DRUM ☐ e. PLASTIC/NONMETALLIC DRUM ☐ f. CAN ☐ g. CARBOY ☐ h. SILO ☐ i. FIBER DRUM ☐ j. BAG ☐ k. BOX ☐ l. CYLINDER ☐ m. GLASS BOTTLE ☐ n. PLASTIC BOTTLE ☐ o. TOTE BIN ☐ p. TANK WAGON ☐ q. RAIL CAR ☐ r. OTHER

STORAGE PRESSURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT 224

STORAGE TEMPERATURE ☐ a. AMBIENT ☐ b. ABOVE AMBIENT ☐ c. BELOW AMBIENT ☐ d. CRYOGENIC 225

	%WT	HAZARDOUS COMPONENT (For mixture or waste only)	EHS	CAS #
1	0-5.0 226	Ethane 227	☐ Yes ☐ No 228	74-84-0 229
2	87.5 230 10	Propane 231	☐ Yes ☐ No 232	74-98-6 233
3	0-5.0 234	Proplene 235	☐ Yes ☐ No 236	115-07-01 237
4	0-1.5 238	Butane 239	☐ Yes ☐ No 240	various 241
5	0-5.0 242	Ehtyl Mercaptan 243	☐ Yes ☐ No 244	75-08-01 245

If more hazardous components are present at greater than 1% by weight if non-carcinogenic, or 0.1% by weight if carcinogenic, attach additional sheets of paper capturing the required information.

ADDITIONAL LOCALLY COLLECTED INFORMATION **Maximum Daily Amount in pounds:** 180 Below **Lbs.** 246

If EPCRA, Please Sign Here:

INSTRUCTIONS FOR EACH BOX IS PROVIDED ON THE BACK

RECEIVED
FEB 0 [illegible]
Contra Costa County
Hazardous Materials

UNIFIED PROGRAM CONSOLIDATED FORM
FACILITY INFORMATION 2013
BUSINESS ACTIVITIES

711364
BAY CITIES REFUSE SERVICE INC
2525 GARDEN TRACT RD
RICHMOND CA 94801

I. FACILITY IDENTIFICATION

FACILITY ID # (Agency Use Only)	0 7 0 0 0 7 1 1 3 6 4 [1]	EPA ID # (Hazardous Waste Only) [2]	CA D 0 4 1 8 4 2 5 1 9
BUSINESS NAME (Same as Facility Name of DBA-Doing Business As)	Bay Cities Refuse Svc, Inc. [3]		
BUSINESS SITE ADDRESS	2525 Garden Tract Road [103]		
BUSINESS SITE CITY	Richmond [104]	CA	ZIP CODE 94801 [105]

II. ACTIVITIES DECLARATION

NOTE: If you check YES to any part of this list, please submit the Business Owner/Operator Identification page.

Does your facility…		If Yes, please complete these pages of the UPCF….
A. HAZARDOUS MATERIALS Have on site (for any purpose) at any one time, hazardous materials at or above 55 gallons for liquids, 500 pounds for solids, or 200 cubic feet for compressed gases (include liquids in ASTs and USTs); or the applicable Federal threshold quantity for an extremely hazardous substance specified in 40 CFR Part 355, Appendix A or B; or handle radiological materials in quantities for which an emergency plan is required pursuant to 10 CFR Parts 30, 40 or 70?	☒ YES ☐ NO 4	HAZARDOUS MATERIALS INVENTORY – CHEMICAL DESCRIPTION FOR EACH HAZARDOUS MATERIAL
B. REGULATED SUBSTANCES Have Regulated Substances stored onsite in quantities greater than the threshold quantities established by the California Accidental Release prevention Program (CalARP)?	☐ YES ☒ NO 4a	Coordinate with your local agency responsible for CalARP.
C. UNDERGROUND STORAGE TANKS (USTs) Own or operate underground storage tanks?	☐ YES ☒ NO 5	UST FACILITY (Formerly SWRCB Form A) UST TANK (one page per tank) (Formerly Form B)
D. ABOVEGROUND PETROLEUM STORAGE Own or operate ASTs above these thresholds: Store greater than 1,320 gallons of petroleum products (new or used) in aboveground tanks **or containers**?	☐ YES ☒ NO 8	Aboveground Petroleum Storage Tank Facility Statement (if not already on file) SPCC Plan is required
E. HAZARDOUS WASTE Generate hazardous waste?	☒ YES ☐ NO 9	EPA ID NUMBER – provide at the top of this page
Recycle more than 100 kg/month of excluded or exempted recyclable materials (per HSC 25143.2)?	☐ YES ☒ NO 10	RECYCLABLE MATERIALS REPORT (one per recycler)
Treat hazardous waste on-site?	☐ YES ☒ NO 11	ON-SITE HAZARDOUS WASTE TREATMENT – FACILITY ON-SITE HAZARDOUS WASTE TREATMENT – UNIT (one page per unit)
Treatment subject to financial assurance requirements (for Permit by Rule and Conditional Authorization)?	☐ YES ☒ NO 12	CERTIFICATION OF FINANCIAL ASSURANCE
Consolidate hazardous waste generated at a remote site?	☐ YES ☒ NO 13	REMOTE WASTE / CONSOLIDATION SITE ANNUAL NOTIFICATION
Need to report the closure/removal of a tank that was classified as hazardous waste and cleaned on-site?	☐ YES ☒ NO 14	HAZARDOUS WASTE TANK CLOSURE CERTIFICATION
Generate in any single calendar month 1,000 kilograms (kg) (2,200 pounds) or more of federal RCRA hazardous waste, or generate in any single calendar month, or accumulate at any time, 1 kg (2.2 pounds) of RCRA acute hazardous waste; or generate or accumulate at any time more than 100 kg (220 pounds) of spill cleanup materials contaminated with RCRA acute hazardous waste?	☐ YES ☒ NO 14a	Obtain federal EPA ID Number, file Biennial Report (EPA Form 8700-13A/B), and satisfy requirements for RCRA Large Quantity Generator.
Household Hazardous Waste (HHW) Collection site?	☐ YES ☒ NO 14b	See CUPA for required forms.
F. LOCAL REQUIREMENTS		15

CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)

CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID # 07-000-770985 (1.) | CERS ID (A1.) | DATE OF PLAN PREPARATION/REVISION (A2.): 1/31/13

BUSINESS NAME *(Same as Facility Name or DBA - Doing Business As)* (3.): Contra Costa County - Buchanan Field Airport

BUSINESS SITE ADDRESS (103.): 550 Sally Ride Drive

BUSINESS SITE CITY (104.): Concord | CA | ZIP CODE (105.): 94520

TYPE OF BUSINESS (e.g., Painting Contractor) (A3.): Airport

INCIDENTAL OPERATIONS (e.g., Fleet Maintenance) (A4.): Self-Fueling, Aircraft Owner maintenance

THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) (A5.)

☒ 1. HAZARDOUS MATERIALS; ☒ 2. HAZARDOUS WASTES

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Hazardous Materials

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) (B1.)

☒ 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
☒ 2. CALLING HAZARDOUS WASTE CONTRACTOR
☒ 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:

1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) (C1.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☐ 5. ALARM SYSTEM; ☒ 6. PORTABLE RADIO

NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) (C2.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☐ 5. ALARM SYSTEM; ☐ 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:

AMBULANCE, FIRE, POLICE AND CHP	9-1-1
CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550
NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802
POISON CONTROL CENTER	(800) 222-1222
LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)	(925) 335-3232 (C3.)
OTHER (Specify): (C4.) COUNTY OFFICE OF EMERGENCY SERVICES	(925) 228-5000 (C5.)
NEAREST MEDICAL FACILITY / HOSPITAL NAME: (C6.) JOHN MUIR MEDICAL CENTER - CONCORD CAMPUS	(925) 682-8200 (C7.)

AGENCY NOTIFICATION PHONE NUMBERS:

CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545
REGIONAL WATER QUALITY CONTROL BOARD	(510) 622-2369 (C8.)
U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193
CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900
U.S. COAST GUARD	(202) 267-2180
CAL/OSHA	(916) 263-2800
STATE FIRE MARSHAL	(916) 445-8200
OTHER (Specify): (C9.) DIRECTOR OF AIRPORTS	(925) 646-5722 (C10.)
OTHER (Specify): (C11.)	( ) (C12.)

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and. preventing and mitigating associated harm to persons, property, and the environment.)

D1.

- ☒ 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- ☐ 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- ☒ 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- ☒ 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- ☐ 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- ☐ 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- ☐ 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- ☐ 8. STOP PROCESSES AND/OR OPERATIONS;
- ☐ 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- ☐ 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- ☒ 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- ☒ 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- ☒ 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- ☒ 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- ☒ 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- ☒ 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- ☒ 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- ☒ 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- ☐ 21. OTHER (Specify):

D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY): E1.

- ☐ 1. BELLS;
- ☐ 2. HORNS/SIRENS;
- ☒ 3. VERBAL (i.e., SHOUTING);
- ☐ 4. OTHER (Specify):

E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.) E3.

Field directly across from office @ 550 Sally Ride Drive

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

☒ EVACUATION ROUTE MAP(S) POSTED AS REQUIRED E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following) F1.

- ☐ 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- ☒ 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify): F2.

Letters of Agreement with Contra Costa Fire and Contra Costa County Sheriff's Office.

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., ☒ CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE G1.	LOCATION	CAPABILITY *(If applicable)*
Safety and First Aid	1. ☐ CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2.	G3.
	2. ☒ CHEMICAL PROTECTIVE GLOVES	G4. Spill cart	G5.
	3. ☒ CHEMICAL PROTECTIVE BOOTS	G6. Spill cart	G7.
	4. ☒ SAFETY GLASSES / GOGGLES / SHIELDS	G8. Spill cart	G9.
	5. ☒ HARD HATS	G10. with each Operation staff	G11.
	6. ☐ CARTRIDGE RESPIRATORS	G12.	G13.
	7. ☒ SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14. on ARFF vehicle	G15.
	8. ☒ FIRST AID KITS / STATIONS	G16. Airports office, Airport vehicles	G17.
	9. ☐ PLUMBED EYEWASH FOUNTAIN / SHOWER	G18.	G19.
	10. ☒ PORTABLE EYEWASH KITS	G20. ARFF shed, maint. shed, barricade shed	G21.
	11. ☐ OTHER	G22.	G23.
	12. ☐ OTHER	G24.	G25.
Fire Fighting	13. ☒ PORTABLE FIRE EXTINGUISHERS	G26. 37 located around Airport	G27.
	14. ☐ FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28.	G29.
	15. ☐ FIRE ALARM BOXES OR STATIONS	G30.	G31.
	16. ☒ OTHER	G32. ARFF Vehicles	G33.
Spill Control and Clean-Up	17. ☒ ALL-IN-ONE SPILL KIT	G34. At waste oil convaults, Owner Maint. Hangar, shed	G35.
	18. ☒ ABSORBENT MATERIAL	G36. At waste oil convaults, Owner Maint. Hangar, shed	G37.
	19. ☒ CONTAINER FOR USED ABSORBENT	G38. At waste oil convaults, Owner Maint. Hangar, shed	G39.
	20. ☐ BERMING / DIKING EQUIPMENT	G40.	G41.
	21. ☒ BROOM	G42. Spill cart	G43.
	22. ☒ SHOVEL	G44. Spill cart	G45.
	23. ☐ SHOP VAC	G46.	G47.
	24. ☐ EXHAUST HOOD	G48.	G49.
	25. ☐ EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. ☐ CHEMICAL NEUTRALIZERS	G52.	G53.
	27. ☐ GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. ☐ SPILL OVERPACK DRUMS	G56.	G57.
	29. ☐ OTHER	G58.	G59.
Communi-cations and Alarm Systems	30. ☒ TELEPHONES (Includes cellular)	G60. Admin. office, Operations staff	G61.
	31. ☐ INTERCOM / PA SYSTEM	G62.	G63.
	32. ☒ PORTABLE RADIOS	G64. Operations staff & airport vehicle	G65.
	33. ☐ AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66.	G67.
Other	34. ☐ OTHER	G68.	G69.
	35. ☐ OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply) H1.	LOCATIONS (e.g., shop, outdoor shed, forensic lab)
☒ 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA	Waste oil convaults, diesel tank H2.
☐ 2. PROCESS LINES / PIPING	H3.
☐ 3. LABORATORY	H4.
☐ 4. WASTE TREATMENT AREA	H5.

Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply) H6.	LOCATIONS
☐ 1. SHELVES, CABINETS AND RACKS	H7.
☐ 2. TANKS (EMERGENCY SHUTOFF)	H8.
☐ 3. PORTABLE GAS CYLINDERS	H9.
☐ 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES	H10.
☐ 5. SPRINKLER SYSTEMS	H11.
☐ 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)	H12.

I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- Material Safety Data Sheets;
- Hazard communication related to health and safety;
- Methods for safe handling of hazardous substances;
- Fire hazards of materials / processes;
- Conditions likely to worsen emergencies;
- Coordination of emergency response;
- Notification procedures;
- Applicable laws and regulations;
- Communication and alarm systems;
- Personal protective equipment;
- Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.);
- Decontamination procedures;
- Evacuation procedures;
- Control and containment procedures;
- UST monitoring system equipment and procedures (if applicable).

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) I1.

☒ 1. FORMAL CLASSROOM; ☒ 2. VIDEOS; ☐ 3. SAFETY / TAILGATE MEETINGS;

☐ 4. STUDY GUIDES / MANUALS (Specify): _____ I2.

☒ 5. OTHER (Specify): emails I3.

☐ 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES

Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) J1.

☐ 1. NO ATTACHMENTS ARE REQUIRED; *or*

☐ 2. THE FOLLOWING DOCUMENTS ARE ATTACHED: J2.

K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED K1.
	1/31/13
NAME OF SIGNER (print) K2.	TITLE OF SIGNER K3.
Keith Freitas	Director of Airports

CONTRA COSTA
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Hazardous Materials

2013 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY/SITE ID: Site #~~773248~~ 770985 EPA ID: CAL000112340

Contra Costa County Airports – Byron Airport
500 Eagle Ct.
Byron, CA 94514

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 1, 2013. **Forms postmarked after March 1, 2013 may be subject to a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2012** calendar year.

Total Tonnage of Hazardous Waste Shipped Offsite During 2012: 2.04 / Tons

ENTERED

PLEASE NOTE: USED OIL IS NO LONGER EXEMPT

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: _____ Date: 01/13/13

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 646-5722

Forms postmarked after March 1, 2013 may be subject to a 50% late filing fee.

- Do not send payments at this time.
- Retain a copy for your records.

CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS)

CONSOLIDATED EMERGENCY RESPONSE / CONTINGENCY PLAN

Prior to completing this Plan, please refer to the INSTRUCTIONS FOR COMPLETING A CONSOLIDATED CONTINGENCY PLAN

A. FACILITY IDENTIFICATION AND OPERATIONS OVERVIEW

FACILITY ID # 07-000-770985 (1.) | CERS ID (A1.) | DATE OF PLAN PREPARATION/REVISION (A2.): 1/31/13

BUSINESS NAME *(Same as Facility Name or DBA - Doing Business As)* (3.): Contra Costa County - Byron Airport

BUSINESS SITE ADDRESS (103.): 500 Eagle Ct.

BUSINESS SITE CITY (104.): Byron | CA | ZIP CODE (105.): 94514

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TYPE OF BUSINESS (e.g., Painting Contractor) (A3.): Airport

INCIDENTAL OPERATIONS (e.g., Hazardous Waste) (A4.): Self-Fueling, Aircraft owner maintenance

THIS PLAN COVERS CHEMICAL SPILLS, FIRES, AND EARTHQUAKES INVOLVING: (Check all that apply) (A5.)

☒ 1. HAZARDOUS MATERIALS; ☒ 2. HAZARDOUS WASTES

B. INTERNAL RESPONSE

INTERNAL FACILITY EMERGENCY RESPONSE WILL OCCUR VIA: (Check all that apply) (B1.)

☒ 1. CALLING PUBLIC EMERGENCY RESPONDERS (i.e., 9-1-1)
☒ 2. CALLING HAZARDOUS WASTE CONTRACTOR
☒ 3. ACTIVATING IN-HOUSE EMERGENCY RESPONSE TEAM

C. EMERGENCY COMMUNICATIONS, PHONE NUMBERS AND NOTIFICATIONS

Whenever there is an imminent or actual emergency situation such as an explosion, fire, or release, the Emergency Coordinator (or his/her designee when the Emergency Coordinator is on call) shall:

1. Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel.
2. Notify appropriate local authorities (i.e., call 9-1-1).
3. Notify the California Emergency Management Agency at (800) 852-7550.

Before facility operations are resumed in areas of the facility affected by the incident, the emergency coordinator shall notify the California Department of Toxic Substances Control (DTSC), the local Unified Program Agency (UPA), and the local fire department's hazardous materials program that the facility is in compliance with requirements to:

1. Provide for proper storage and disposal of recovered waste, contaminated soil or surface water, or any other material that results from an explosion, fire, or release at the facility; and
2. Ensure that no material that is incompatible with the released material is transferred, stored, or disposed of in areas of the facility affected by the incident until cleanup procedures are completed.

INTERNAL FACILITY EMERGENCY COMMUNICATIONS OR ALARM NOTIFICATION WILL OCCUR VIA: (Check all that apply) (C1.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☐ 5. ALARM SYSTEM; ☒ 6. PORTABLE RADIO

NOTIFICATIONS TO NEIGHBORING FACILITIES THAT MAY BE AFFECTED BY AN OFF-SITE RELEASE WILL OCCUR BY: (Check all that apply) (C2.)

☒ 1. VERBAL WARNINGS; ☐ 2. PUBLIC ADDRESS OR INTERCOM SYSTEM; ☒ 3. TELEPHONE;
☐ 4. PAGERS; ☐ 5. ALARM SYSTEM; ☐ 6. PORTABLE RADIO

EMERGENCY RESPONSE PHONE NUMBERS:

AMBULANCE, FIRE, POLICE AND CHP	9-1-1
CALIFORNIA EMERGENCY MANAGEMENT AGENCY (CAL/EMA)	(800) 852-7550
NATIONAL RESPONSE CENTER (NRC)	(800) 424-8802
POISON CONTROL CENTER	(800) 222-1222
LOCAL UNIFIED PROGRAM AGENCY (UPA/CUPA)	(925) 335-3232 (C3.)
OTHER (Specify): COUNTY OFFICE OF EMERGENCY SERVICES (C4.)	(925) 228-5000 (C5.)
NEAREST MEDICAL FACILITY / HOSPITAL NAME: SUMMIT DELTA MEDICAL CENTER (C6.)	(925) 754-6210 (C7.)

AGENCY NOTIFICATION PHONE NUMBERS:

CALIFORNIA DEPT. OF TOXIC SUBSTANCES CONTROL (DTSC)	(916) 255-3545
REGIONAL WATER QUALITY CONTROL BOARD	(510) 622-2369 (C8.)
U.S. ENVIRONMENTAL PROTECTION AGENCY (US EPA)	(800) 300-2193
CALIFORNIA DEPT OF FISH AND GAME (DFG)	(916) 358-2900
U.S. COAST GUARD	(202) 267-2180
CAL/OSHA	(916) 263-2800
STATE FIRE MARSHAL	(916) 445-8200
OTHER (Specify): DIRECTOR OF AIRPORTS (C9.)	(925) 646-5722 (C10.)
OTHER (Specify): (C11.)	( ) (C12.)

D. EMERGENCY CONTAINMENT AND CLEANUP PROCEDURES

SPILL PREVENTION, CONTAINMENT, AND CLEANUP PROCEDURES: (Check all boxes that apply to indicate your procedures for containing spills, releases, fires or explosions; and. preventing and mitigating associated harm to persons, property, and the environment.)

D1.

- ☒ 1. MONITOR FOR LEAKS, RUPTURES, PRESSURE BUILD-UP, ETC.;
- ☐ 2. PROVIDE STRUCTURAL PHYSICAL BARRIERS (e.g., Portable spill containment walls);
- ☒ 3. PROVIDE ABSORBENT PHYSICAL BARRIERS (e.g., Pads, pigs, pillows);
- ☒ 4. COVER OR BLOCK FLOOR AND/ OR STORM DRAINS;
- ☐ 5. BUILT-IN BERM IN WORK / STORAGE AREA;
- ☐ 6. AUTOMATIC FIRE SUPPRESSION SYSTEM;
- ☐ 7. ELIMINATE SOURCES OF IGNITION FOR FLAMMABLE HAZARDS (e.g. Flammable liquids, Propane);
- ☐ 8. STOP PROCESSES AND/OR OPERATIONS;
- ☐ 9. AUTOMATIC / ELECTRONIC EQUIPMENT SHUT-OFF SYSTEM;
- ☐ 10. SHUT-OFF WATER, GAS, ELECTRICAL UTILITIES AS APPROPRIATE;
- ☒ 11. CALL 9-1-1 FOR PUBLIC EMERGENCY RESPONDER ASSISTANCE / MEDICAL AID;
- ☒ 12. NOTIFY AND EVACUATE PERSONS IN ALL THREATENED AREAS;
- ☒ 13. ACCOUNT FOR EVACUATED PERSONS IMMEDIATELY AFTER EVACUATION CALL;
- ☒ 14. PROVIDE PROTECTIVE EQUIPMENT FOR ON-SITE RESPONSE TEAM;
- ☒ 15. REMOVE OR ISOLATE CONTAINERS / AREA AS APPROPRIATE;
- ☒ 16. HIRE LICENSED HAZARDOUS WASTE CONTRACTOR;
- ☒ 17. USE ABSORBENT MATERIAL FOR SPILLS WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 18. SUCTION USING SHOP VACUUM WITH SUBSEQUENT PROPER LABELING, STORAGE, AND HAZARDOUS WASTE DISPOSAL AS APPROPRIATE;
- ☐ 19. WASH / DECONTAMINATE EQUIPMENT W/ CONTAINMENT and DISPOSAL OF EFFLUENT / RINSATE AS HAZARDOUS WASTE;
- ☒ 20. PROVIDE SAFE TEMPORARY STORAGE OF EMERGENCY-GENERATED WASTES;
- ☐ 21. OTHER (Specify):

D2.

E. FACILITY EVACUATION

THE FOLLOWING ALARM SIGNAL(S) WILL BE USED TO BEGIN EVACUATION OF THE FACILITY (CHECK ALL THAT APPLY): E1.

- ☐ 1. BELLS;
- ☐ 2. HORNS/SIRENS;
- ☒ 3. VERBAL (i.e., SHOUTING);
- ☐ 4. OTHER (Specify):

E2.

THE FOLLOWING LOCATION(S) IS/ARE EVACUEE EMERGENCY ASSEMBLY AREA(S) (i.e., Front parking lot, specific street corner, etc.) E3.

Corner of Eagle Ct. and Falcon Way

Note: The Emergency Coordinator must account for all on site employees and/or site visitors after evacuation.

☒ EVACUATION ROUTE MAP(S) POSTED AS REQUIRED E4.

Note: The map(s) must show primary and alternate evacuation routes, emergency exits, and primary and alternate staging areas, and must be prominently posted throughout the facility in locations where it will be visible to employees and visitors.

F. ARRANGEMENTS FOR EMERGENCY SERVICES

Explanation of Requirement: Advance arrangements with local fire and police departments, hospitals, and/or emergency services contractors should be made as appropriate for your facility. You may determine that such arrangements are not necessary.

ADVANCE ARRANGEMENTS FOR LOCAL EMERGENCY SERVICES (Check one of the following) F1.

- ☐ 1. HAVE BEEN DETERMINED NOT NECESSARY; *or*
- ☒ 2. THE FOLLOWING ARRANGEMENTS HAVE BEEN MADE (Specify):

F2.

Letters of Agreement with Contra Costa Fire and Contra Costa County Sheriff's Office

G. EMERGENCY EQUIPMENT

Check all boxes that apply to list emergency response equipment available at the facility and identify the location(s) where the equipment is kept and the equipment's capability, if applicable. [e.g., ☒ CHEMICAL PROTECTIVE GLOVES | Spill response kit | One time use, Oil & solvent resistant only.]

TYPE	EQUIPMENT AVAILABLE G1.	LOCATION	CAPABILITY *(If applicable)*
Safety and First Aid	1. ☐ CHEMICAL PROTECTIVE SUITS, APRONS, OR VESTS	G2.	G3.
	2. ☒ CHEMICAL PROTECTIVE GLOVES	G4. Part of spill cart	G5.
	3. ☒ CHEMICAL PROTECTIVE BOOTS	G6. Part of spill cart	G7.
	4. ☒ SAFETY GLASSES / GOGGLES / SHIELDS	G8. Part of spill cart	G9.
	5. ☒ HARD HATS	G10. With each Operations Staff	G11.
	6. ☐ CARTRIDGE RESPIRATORS	G12.	G13.
	7. ☒ SELF-CONTAINED BREATHING APPARATUS (SCBA)	G14. With each Operations staff/tanks on ARFF Vehicle	G15.
	8. ☒ FIRST AID KITS / STATIONS	G16. Admin. office/Airport vehicles	G17.
	9. ☐ PLUMBED EYEWASH FOUNTAIN / SHOWER	G18.	G19.
	10. ☒ PORTABLE EYEWASH KITS	G20. Pump house and tool shed	G21.
	11. ☐ OTHER	G22.	G23.
	12. ☐ OTHER	G24.	G25.
Fire Fighting	13. ☒ PORTABLE FIRE EXTINGUISHERS	G26. 30 around airport	G27.
	14. ☐ FIXED FIRE SYSTEMS / SPRINKLERS / FIRE HOSES	G28.	G29.
	15. ☐ FIRE ALARM BOXES OR STATIONS	G30.	G31.
	16. ☒ OTHER	G32. Aicraft Rescue & Fire Fighting vehicle (ARFF)	G33.
Spill Control and Clean-Up	17. ☒ ALL-IN-ONE SPILL KIT	G34. fuel island, maint. hangar, waste oil convault, ARFF	G35.
	18. ☒ ABSORBENT MATERIAL	G36. fuel island, maint. hangar, waste oil convault, ARFF	G37.
	19. ☒ CONTAINER FOR USED ABSORBENT	G38. fuel island, maint. hangar, waste oil convault, ARFF	G39.
	20. ☐ BERMING / DIKING EQUIPMENT	G40.	G41.
	21. ☒ BROOM	G42. with spill kit	G43.
	22. ☒ SHOVEL	G44. with spill kit	G45.
	23. ☐ SHOP VAC	G46.	G47.
	24. ☐ EXHAUST HOOD	G48.	G49.
	25. ☐ EMERGENCY SUMP / HOLDING TANK	G50.	G51.
	26. ☐ CHEMICAL NEUTRALIZERS	G52.	G53.
	27. ☐ GAS CYLINDER LEAK REPAIR KIT	G54.	G55.
	28. ☐ SPILL OVERPACK DRUMS	G56.	G57.
	29. ☐ OTHER	G58.	G59.
Communi-cations and Alarm Systems	30. ☒ TELEPHONES (Includes cellular)	G60. In office/cell in admin office/various staff	G61.
	31. ☐ INTERCOM / PA SYSTEM	G62.	G63.
	32. ☒ PORTABLE RADIOS	G64. Operations staff and Operations vehicles	G65.
	33. ☐ AUTOMATIC ALARM CHEMICAL MONITORING EQUIPMENT	G66.	G67.
Other	34. ☐ OTHER	G68.	G69.
	35. ☐ OTHER	G70.	G71.

H. EARTHQUAKE VULNERABILITY

Identify areas of the facility that are vulnerable to hazardous materials releases / spills due to earthquake-related motion. These areas require immediate isolation and inspection.

VULNERABLE AREAS: (Check all that apply) H1.	LOCATIONS (e.g., shop, outdoor shed, forensic lab)
☒ 1. HAZARDOUS MATERIALS / WASTE STORAGE AREA	Fueling area, pump house, waste oil convault, OMH H2.
☐ 2. PROCESS LINES / PIPING	H3.
☐ 3. LABORATORY	H4.
☐ 4. WASTE TREATMENT AREA	H5.

Identify mechanical systems vulnerable to releases / spills due to earthquake-related motion. These systems require immediate isolation and inspection.

VULNERABLE SYSTEMS: (Check all that apply) H6.	LOCATIONS
☐ 1. SHELVES, CABINETS AND RACKS	H7.
☒ 2. TANKS (EMERGENCY SHUTOFF)	Fueling area, pump house H8.
☐ 3. PORTABLE GAS CYLINDERS	H9.
☐ 4. EMERGENCY SHUTOFF AND/OR UTILITY VALVES	H10.
☐ 5. SPRINKLER SYSTEMS	H11.
☐ 6. STATIONARY PRESSURIZED CONTAINERS (e.g., Propane dispensing tank)	H12.

I. EMPLOYEE TRAINING

Explanation of Requirement: Employee training is required for all employees handling hazardous materials and hazardous wastes in day-to-day or clean-up operations including volunteers and/or contractors. Training must be:

- Provided within 6 months for new hires;
- Amended as necessary prior to change in process or work assignment;
- Given upon modification to the Emergency Response / Contingency Plan, and updated/refreshed annually for all employees.

Required content includes all of the following:

- Material Safety Data Sheets;
- Hazard communication related to health and safety;
- Methods for safe handling of hazardous substances;
- Fire hazards of materials / processes;
- Conditions likely to worsen emergencies;
- Coordination of emergency response;
- Notification procedures;
- Applicable laws and regulations;
- Communication and alarm systems;
- Personal protective equipment;
- Use of emergency response equipment (e.g. Fire extinguishers, respirators, etc.);
- Decontamination procedures;
- Evacuation procedures;
- Control and containment procedures;
- UST monitoring system equipment and procedures (if applicable).

INDICATE HOW EMPLOYEE TRAINING PROGRAM IS ADMINISTERED (Check all that apply) I1.

☒ 1. FORMAL CLASSROOM; ☒ 2. VIDEOS; ☐ 3. SAFETY / TAILGATE MEETINGS;

☐ 4. STUDY GUIDES / MANUALS (Specify): _____ I2.

☒ 5. OTHER (Specify): emails I3.

☐ 6. NOT APPLICABLE BECAUSE FACILITY HAS NO EMPLOYEES

Large Quantity Generator (LQG) Training Records: Large quantity hazardous waste generators (i.e., who generate more than 270 gallons/1,000 kilograms of hazardous waste per month) must retain written documentation of employee hazardous waste management training sessions which includes:

- A written outline/agenda of the type and amount of both introductory and continuing training that will be given to persons filling each job position having responsibility for the management of hazardous waste (e.g., labeling, manifesting, compliance with accumulation time limits, etc.).
- The name, job title, and date of training for each hazardous waste management training session given to an employee filling such a job position; and
- A written job description for each of the above job positions that describes job duties and the skills, education, or other qualifications required of personnel assigned to the position.
- Current employee training records must be retained until closure of the facility.
- Former employee training records must be retained at least three years after termination of employment.

J. LIST OF ATTACHMENTS

(Check one of the following) J1.

☐ 1. NO ATTACHMENTS ARE REQUIRED; *or*

☐ 2. THE FOLLOWING DOCUMENTS ARE ATTACHED: J2.

K. SIGNATURE / CERTIFICATION

Certification: Based on my inquiry of those individuals responsible for obtaining the information, I certify under penalty of law that I have personally examined and am familiar with the information submitted and believe the information is true, accurate, and complete, and that a copy is available on site.

SIGNATURE OF OWNER/OPERATOR	DATE SIGNED K1.
	1/31/13
NAME OF SIGNER (print) K2.	TITLE OF SIGNER K3.
Keith Freitas	Director of Airports

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA COUNTY
HAZARDOUS MATERIALS PROGRAMS
CERTIFIED UNIFIED PROGRAM AGENCY

4585 PACHECO BLVD., STE 100, MARTINEZ, CA 94553-2233
PHONE: (925)335-3200 FAX: (925)646-2073 www.cchealth.org/hazmat

PERMIT NUMBER: 07-000-770985

PERMIT TO OPERATE

Permit Valid 07/01/13 thru 06/30/14

This is to certify that the owner and establishment shown have been granted permission to operate subject to compliance with all applicable laws and regulations. This permit is valid for the period shown above unless revoked or suspended for violation of applicable laws and/or regulations.

REGULATED FACILITY:
ID # FA0033495
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

OWNER OF RECORD:
CONTRA COSTA COUNTY
550 SALLY RIDE DR
CONCORD, CA 94520

	Regulated Program(s)	Permit #	Program Record #	Permit Fee Paid
1	APSA: 10K - <100K GALLONS	PT0027045	PR0056[illegible]	YES
2	HMBP: >10K-100K LBS, 0-19 EMPLOYEES	PT0022893	PR0051[illegible]	YES
3	HWG: LESS THAN 5 TONS/YEAR	PT0026643	PR0054[illegible]	YES

IMMEDIATELY NOTIFY HAZARDOUS MATERIALS IF THERE ARE CHANGES IN FACILITY OWNERSHIP, AND/OR BILLING ADDRESS(ES) BY CALLING (925)335-3200.

THIS IS NOT AN INVOICE

CCC BYRON AIRPORT
RAJ SINGH
550 SALLY RIDE DR
CONCORD, CA 94520

CONTRA COSTA
HEALTH SERVICES

2014 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

SITE ID: 07-000-773248 EPA ID: CAL000112340

FACILITY NAME: Contra Costa County - Byron Airport

ADDRESS: 500 Eagle Ct., Byron, CA 94514

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Forms must be submitted through CERS by March 3, 2014.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2013** calendar year.

ENTERED

Total Tonnage of Hazardous Waste Shipped Offsite During 2013: 3.36 Tons

PLEASE NOTE: USED OIL IS NO LONGER EXEMPT

Forms submitted after March 3, 2014 may be subject to a 50% late filing fee.

CONTRA COSTA
HEALTH SERVICES

2014 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

SITE ID: 07-000-770985 EPA ID: CAL000112341

FACILITY NAME: Contra Costa County - Buchanan Field Airport

ADDRESS: 550 Sally Ride Drive, Concord, CA 94520

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Forms must be submitted through CERS by March 3, 2014.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2013** calendar year.

ENTERED

Total Tonnage of Hazardous Waste Shipped Offsite During 2013: 4.51 Tons

PLEASE NOTE: USED OIL IS NO LONGER EXEMPT

Forms submitted after March 3, 2014 may be subject to a 50% late filing fee.

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

Aboveground Petroleum Storage Tanks Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
CCC Byron Airport	770985	3-26-14

INSPECTION TYPE: Routine / Follow-Up / Other	VIOLATION CLASSIFICATIONS: M = Minor Cl I = Major Cl II = Medium / Repeat Minor		TOTAL QUANTITY
			11,505 gallons
Date facility began operations:	Date of initial SPCC Plan: 9-4-2003 or earlier	Date of current SPCC Plan: 11/2/2011	FACILITY CAPACITY/CLASSIFICATION ☐ EXEMPT ☐ < 10,000 ☑ ≥ 10,000 Qualified Facility: ☐ Tier I ☐ Tier II

Code of Federal Regulations (CFR) Title 40, Chapter 1, Subpart D, Part 112
California Health & Safety Code (HSC) Division 20, Chapter 6.67, Section 2570

Viol Code	Authority	Violation Description	Viol Class	Violation Due Date/ Violation Corrected
AS01	CFR 112.3	Failed to prepare a SPCC Plan		
AS02	CFR 112.5(a)(d)	Failed to review or amend SPCC Plan		
AS03	CFR 112.3(e)	SPCC Plan not available onsite		
AS04	CFR 112.7(e)	Failed to conduct inspections & tests in accordance with written procedures		
AS05	CFR 112.7(e)	Failed to maintain records of inspections, tests and/or procedures		
AS06	CFR 112.7(e)	Record of inspections or tests not signed by supervisor or inspector		
		SPCC PLAN ELEMENTS – Pursuant to 25270.4.5(a), 25270.12(a) / The SPCC Plan is missing the following elements:		
AS07	CFR 112.6(a)(1), (b)(1)	Self-certification for Tier I or II Qualified Facility		
AS08	CFR 112.3(d) & CFR 112.6(b)(4)	Professional Engineer certification		
AS09	CFR 112.5(b)	Documentation of 5-year review & evaluation of the SPCC Plan		
AS10	CFR 112.7(f)	Training program		
AS11	CFR 112.5(a), CFR 112.6(a)(2), (b)(2)	Amendments required within 6 months of change/certification of technical amendments		
AS12	CFR 112.7, CFR 112.6(a)	Management authorization of resource commitment to implement the SPCC Plan		
AS13	CFR 112.7(a)(3)	Diagram with location & contents of regulated containers, transfer stations & connecting pipes		
AS14	CFR 112.7(a)(3)	Type of oil & storage capacity for each container		
AS15	CFR 112.7(a)(3)	Discharge prevention measures; procedures for routine handling		
AS16	CFR 112.7(a)(3)	Countermeasures for discovery, response & cleanup		
AS17	CFR 112.7(a)(3)	Required contact list & phone numbers		
		GENERAL SPCC REQUIREMENTS – Pursuant to 25270.4.5(a), 25270.5 & 25270.12(a)		
AS18	CFR 112.8(c)(4), (c)(5), (d)(1)	Failed to provide corrosion protection		
AS19	CFR 112.8(c)(1)	Containers not compatible with materials stored		
AS20	CCR 112.5(a), (d)	Failed to implement SPCC Plan review changes and/or amendment changes within 6 months		
AS21	CFR 112.7(f)	Failed to train oil-handling personnel in operation & maintenance of equipment to prevent discharges		
AS22	CCR 112.7(f)(3)	Failed to conduct annual spill prevention briefings		
AS23	CFR 112.7(d)	Failed to prepare an oil contingency plan or provide written control/removal commitments		
		FACILITY INSPECTION – Pursuant to 25270.4.5, 25270.5 & 25270.12(a)		
AS24	H&SC 25270.4.5(b)	Failed to meet provisions of conditional exemption 25270.4.5(b)		
AS25	CFR 112.7(g)	Facility security not adequate		
AS26	CFR 112.7(c)	Clean-up materials not readily available		
AS27	CFR 112.8(c)	Tank in poor condition/leaking		
AS28	CFR 112.8(c)(8)	Overfill protection procedures or devices missing, not maintained or inoperative		
AS29	CFR 112.8(c)(11)	Portable/mobile containers not positioned to prevent a discharge		
AS30	CFR 112.7(h)	Loading/unloading rack does not drain to containment		
AS31	CFR 112.8(b)(c)	Facility drainage not functioning, or improperly operated or engineered		
AS32	CFR 112.8(a), CFR 112.7(c)	Failed to provide appropriate containment or diversionary structures to prevent discharge		
AS33	CFR 112.8(c)	Secondary containment inadequate to contain capacity of largest container plus precipitation		
AS34	CFR 112.8(c)(10)	Failed to remove accumulation of oil in secondary containment		
AS35	CFR 112.8	Secondary containment valve(s) not closed		
AS36	CFR 112.3	Failed to implement SPCC Plan element:		
AS37	—	Other:		

ENTERED

Total Time for Review and Inspection (in 15 minute increments): 4 ☐ Notice to Comply ☐ Notice of Violation ☑ No Violations Observed

Facility Rep Initials NDO | CC Hazmat Initials NM | Date 3-26-14

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services / Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., **HEALTH SERVICES DIRECTOR** • RANDALL L. SAWYER, **DIRECTOR**

Hazardous Materials Business Plan Inspection/Compliance Checklist

FACILITY NAME	SITE ID	INSPECTION DATE
CCC Byron Airport	770985	3-26-14

INSPECTION TYPE: (Routine) Follow-Up / Other

VIOLATION CLASSIFICATIONS: M = Minor Cl I = Major Cl II = Medium / Repeat Minor

California Code of Regulations, Title 19, Division 2, Chapter 4, §2620 et al; Title 27, Div 1, Subdiv. 2, Chap. 1, Part II
California Health and Safety Code, Division 20, Chapter 6.95, §25404; §25500-25520

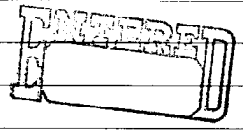
Viol Code	Authority	Requirement	Viol Class	Violation Due Date/ Violation Corrected
BP01	19CCR 2729.2	Adequate submission / completion of Business Activities & Owner / Operator Identification Forms.		
BP02	19CCR 2729.2	Adequate submission / completion of chemical inventory forms.		
BP03	19CCR 2729.4	Maximum quantity of all hazardous materials stored on site in reportable quantities are listed in the HMBP.		
BP04	19CCR 2729.5	Original signature on inventory forms for acutely hazardous materials ≥ Threshold Planning Quantities.		
BP05	19CCR 2729.2	Adequate submission / completion of site map.		
BP06	H&SC 25504	Adequate submission / completion / retention of written Emergency Response Plan.		
BP07	27CCR 15210 & H&SC 25404	Full and timely payment of the HMBP program annual fee.		
BP08	H&SC 25503.5	HMBP is maintained on-site or is accessible.		
BP09	H&SC 25504(c) & 19CCR 2732	Initial employee training program for hazardous materials/emergency response implemented and adequate.		
BP10	H&SC 25504(c) & 19CCR 2732	Annual hazardous materials/emergency response refresher component of the employee training program implemented and adequate.		
BP11	19CCR 2731(c) & H&SC 25503(e)(1)	Procedures in place to mitigate, prevent or abate hazards to persons, property or the environment from a release or threatened release of hazardous materials. **See back for Best Management Practices (BMP).**		
BP12	—	Other:		

See back for Best Management Practices (BMP)

Observation: Hazmat observed during inspection:
250 gal used oil (convault DW tank)
1 (55 gal) DM used oil filters
200 gal diesel (at fire house pump room)
10,000 gallon AV Gas 100 LL

HMBP submitted via CERS this year.

By Jan 1, 2015 new site map regulations may go into effect



Total Time for Review and Inspection (in 15 minute increments): 4 ☐ Notice to Comply ☐ Notice of Violation ☑ No Violations Observed

Facility Rep Initials NDO | CC Hazmat Initials NM | Date 3-26-14

CONTRA COSTA
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INSPECTION COVER SHEET

FACILITY NAME	FACILITY ADDRESS	INSPECTION DATE
CCC Byron Airport	500 Eagle Ct. Byron, CA 94514	3-26-14
Contact Name Natalie Olesen	**EPA ID** CAL000112340	**SITE ID** 770985
Contact Telephone (925) 646-5722		

Program(s): (check all that apply)

☑ Hazardous Materials Release Response Plan / Business Plan (BP)	☐ Tiered Permitting (TP)
☑ Hazardous Waste Generator (HW)	☐ Green Business (GB)
☐ Underground Storage Tank (UST)	☑ Storm Water Program (SWP)
☑ Aboveground Petroleum Storage Act (APSA)	☐ California Accidental Release Prevention Program (CalARP)

CUPA Permit Current: Yes ☑ No ☐

REPRESENTATIVES PRESENT:

Name	Title	Organization
Natalie Olesen	Airport Office Asst.	CCC Airport
Nick Umemoto	HMS 1	CCHS HMP
Beth Lee	Asst. Director of Airports	CCC Airport
STEVE CALLAHAN	LEAD AIRPORT OPERATION SPECIALIST	CCC AIRPORT

Facility Description/Comments:

ISSUANCE OF NOTICES:

A **NOTICE TO COMPLY** or **NOTICE OF VIOLATION** is issued to identify conditions observed this day that are alleged to be violations of one or more sections of the California Health and Safety Code (HSC), the California Code of Regulations (CCR), Code of Federal Regulations (CFR), or Contra Costa County Code (CCC). The facility may be subject to reinspection at any time by Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) to ensure that observed violations cited on the Notices are corrected. Failure to correct violations within the scheduled period provided may result in CCHSHMP citing the facility for continuing or additional violations. Issuances of Notices do not preclude CCHSHMP from taking any administrative, civil, or criminal action as a result of the violations noted. (See back)

CONSENT:

Consent includes inspecting hazardous material/waste handling areas, taking photographs, reviewing and copying documents, questioning personnel and sampling activities to determine compliance with applicable laws and regulations.

Facility Rep Natalie Olesen (Consent to inspect given by)	Facility Rep Signature Natalie Olesen	Date 3-26-14
CC Hazmat Rep Nick Umemoto	CC Hazmat Signature NU	Date 3-26-14

Contra
Costa
County



Beth Lee
Assistant Director of Airports

(925) 646-5722
(925) 646-5731 Fax
(925) 890-5660 Cell

Buchanan and Byron Airports
550 Sally Ride Drive
Concord, CA 94520

E-Mail: beth.lee@airport.cccounty.us
Web Site: www.buchananfield-byronairports.org

CONTRA COSTA HEALTH SERVICES

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Hazardous Waste Inspection/Compliance Checklist (page 1 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
CLC Byron Airport	770985	3-26-14

INSPECTION TYPE	VIOLATION CLASSIFICATIONS	EPA ID
(Routine) Follow-Up / Other	M = Minor CI I = Major CI II = Medium / Repeat Minor	CAL000112340

California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 10, §66001 et al
California Health and Safety Code (HSC), Division 20, Chapter 6.5, §25100 et al
Code of Federal Regulations (CFR) Title 40, Chapter 1, Part 260 et al

Disposal Documents Reviewed For Year:	HW Gen Rpt Form On File? ☑ Yes ☐ No	Total Annual Tonnage of All Hazardous Waste Generated:

CA State Waste Code if applicable, Federal Code(s)	Hazardous Waste Stream	Annual Quantity (Tons)
	used oil, 1 or 2 pick ups	
	Additional Wastes on Continuation Sheet? ☐ Yes ☑ No	

Generator Status: unknown

☐ RCRA-LQG > 1,000 kg/month ☐ CA-LQG > 1,000 kg/month ☐ CA-SQG > 100 to < 1,000 kg/month ☐ CA-CESQG < 100 kg/month ☐ Episodic

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW01	HSC 25189.5	HSC 25189.5	Disposal, treatment or storage at unauthorized location		
HW02	CCR 22 66262.11	CCR 22 66262.11	Hazardous Waste Determination		
HW03	CCR 22 66262.12	CCR 22 66262.12	Obtain & maintain a valid EPA ID Number (DTSC Form 1358)		
HW04	CFR 262.34(d)	—	Accumulation time may not exceed 180 days (Unless waste shipped 200 or more miles, no more than 270 days)		
HW05	—	CCR 22 66262.34(a)	Accumulation time may not exceed 90 days		
HW06	CCR 22 67450.1	CCR 22 67450.1	Notify CUPA for eligible onsite treatment.		
HW07	HSC 25163(a)	HSC 25163(a)	Lawful transportation of hazardous waste		
			RECORDKEEPING & REPORTING		
HW08	CCR 22 66262.20	CCR 22 66262.20	Properly Complete Manifest		
HW09	CCR 22 66262.23	CCR 22 66262.23	Send manifest copy to DTSC, P.O. Box 400, Sacramento, CA 95812		
HW10	HSC 25160.2	HSC 25160.2	Properly complete consolidated manifest		
HW11	CCR 22 66262.40	CCR 22 66262.40	Keep waste manifests and/or consolidated manifests for 3 years		
HW12	—	CCR 22 66262.40-41	Biennial Report (RCRA LQG Only)		
HW13	HSC 25123.3	CCR 22 66262.42	File manifest Exception Report with DTSC		
HW14	HSC 25143.10	HSC 25143.10	Biennial Excluded Recyclable Materials Report		
HW15	HSC 25143.2(f) & CCR 22 66261.2(g)	HSC 25143.2(f) & CCR 22 66261.2(g)	Maintain adequate records demonstrating claim of exemption for Excluded Recyclable Material		
HW16	CCR 22 66262.40(c)	CCR 22 66262.40(c)	Keep copies of analytical results, waste analysis records, or waste determination results for 3 years		
HW17	CCR 22 66266.130(c)(5)	CCR 22 66266.130(c)(5)	Keep disposal receipts for 3 years for drained used oil filters and/or drained fuel filters		
HW18	—	CCR 22 67100.1	SB14 – Hazardous Waste Source Reduction Evaluation Review Plan		
			HAZARDOUS WASTE HANDLER TRAINING		
HW19	40 CFR 262.34(d)(5)(iii)	CCR 22 66265.16	Employee training program adequate.		
HW20	—	CCR 22 66265.16	Training Documentation		
HW21	—	CCR 22 66265.16	Training Conducted Annually		
HW22	40 CFR 262.34(d)(5)(ii)	—	Post Emergency Response Plan by telephone.		
HW23	40 CFR 262.34(d)(5)(i)	CCR 22 66265.55	Have an emergency coordinator on call or available during emergency.		
HW24	—	CCR 22 66265.51-55	Contingency Plan Completed		

Facility Rep Initials	CC Hazmat Rep Initials	Date
NPO	NH	3-26-14

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Telephone (925) 335-3200 FAX (925) 646-2073
WWW.CCHEALTH.ORG/GROUPS/HAZMAT
WILLIAM B. WALKER, M.D., HEALTH SERVICES DIRECTOR • RANDALL L. SAWYER, DIRECTOR

Hazardous Waste Inspection/Compliance Checklist (page 2 of 2)

FACILITY NAME	SITE ID	INSPECTION DATE
CCC Byron Airport	770985	3-26-14

Viol Code	Authority SQG Via CCR 22 66262.34	Authority LQG	GENERAL REQUIREMENTS	Viol Class.	Violation Due Date/ Violation Corrected
HW25	40 CFR 262.34(d)(5)(iv)	CCR 22 66265.51	Properly carry out contingency plan during an emergency.		
			FACILITY OPERATION		
HW26	40 CFR 265.31, Via 262.34(d)(4)	CCR 22 66265.31	Maintain and/or operate facility to prevent release or fire		
HW27	40 CFR 265.32(c) Via 262.34(d)(4)	CCR 22 66265.32	Spill/fire control equipment available.		
HW28	40 CFR 265.32(a) & (b) Via 262.34(d)(4)	CCR 22 66265.32	Facility equipped with internal communication or alarm.		
HW29	40 CFR 265.33 Via 262.34(d)(4)	CCR 22 66265.33	Equipment properly maintained and tested		
HW30	40 CFR 265.35, Via 262.34(d)(4)	CCR 22 66265.35	Maintain adequate aisle space		
HW31	40 CFR 265.37, Via 262.34(d)(4)	CCR 22 66265.37	Arrangements with response agencies		
			HAZARDOUS WASTE TANKS & CONTAINERS		
HW32	CCR 22 66262.34(f)	—	Properly label/date hazardous waste container and/or tank.		
HW33	CCR 22 66262.34	CCR 22 66262.34	Proper Markings including start date and composition		
HW34	HSC 25143.9(a)	HSC 25143.9(a)	Proper label on Excluded Recyclable Materials		
			HAZARDOUS WASTE CONTAINERS		
HW35	CFR 265.171, Via 262.34(d)(2)	CCR 22 66265.171	Container in good condition		
HW36	CFR 265.172, Via 262.34(d)(2)	CCR 22 66265.172	Container and/or liner compatible		
HW37	CFR 265.173, Via 262.34(d)(2)	CCR 22 66265.173	Containers are kept closed		
HW38	CFR 265.174, Via 262.34(d)(2)	CCR 22 66265.174	Conduct weekly inspections		
HW39	—	CCR 22 66265.176	Buffer zone for ignitable wastes		
HW40	CFR 265.177, Via 262.34(d)(2)	CCR 22 66265.177	Properly separate incompatible wastes		
HW41	CCR 22 66261.7(e)(f)(i)	CCR 22 66261.7(e)(f)(i)	Properly manage containers or inner liners removed from containers greater than 5 gallons (Accumulation time not to exceed one year)		
			HAZARDOUS WASTE TANK SYSTEMS		
HW42	CFR 262.201, Via 262.34(d)(2)	CCR 22 66265.190	Tank in good condition		
HW43	—	CCR 22 66265.191(a) & (e)	Complete annual integrity assessment for HW tank system without secondary containment.		
HW44	—	CCR 22 66265.191(a) or 66265.192(a)	Failed to obtain a PE assessment for hazardous waste (HW) tank system.		
HW45	Check local FD	CCR 22 66265.193(a)	Failed to provide proper secondary containment and/or leak detection for HW tank system.		
HW46	CFR 265.201, Via 262.34(d)(2)	CCR 22 66265.194(a)	Failed to use proper spill/overfill prevention controls and practices.		
HW47	CFR 265.201 Via 262.34(d)(2)	CCR 22 66265.194	Comply with tank standards which include: two feet of freeboard (where applicable), shut off for waste feed line, & daily inspections of waste levels		
HW48	—	CCR 22 66265.195(c)	Failed to inspect and/or document daily HW tank system inspections.		
HW49	—	CCR 22 6265.196(e)(1) or (3)	Notify DTSC when a release to environment occurred from HW tank system.		
HW50	CCR 22 67383.3	CCR 22 66265.197 CCR 22 67383.3	Properly complete and/or document closure for a hazardous waste tank.		
HW51	—	—	Other:		

Observations:

Total Time for Review and Inspection (in 15 minute increments): 4 ☐ Notice to Comply ☐ Notice of Violation ☑ No Violations Observed

Facility Rep Initials NDO | CC Hazmat Rep Initials NM | Date 3-26-14

CONTRA COSTA HEALTH SERVICES

Contra Costa Health Services Hazardous Materials Programs
4585 Pacheco Boulevard, Suite 100, Martinez, CA 94553
Telephone (925) 335-3200 Fax (925) 646-2073
www.cchealth.org/groups/hazmat
William B. Walker, M.D., Health Services Director
Randall L. Sawyer, Director

STORMWATER INSPECTION CHECKLIST

FACILITY NAME	ADDRESS	PHONE #
CCC Byron Airport	500 Eagle Ct. Byron, CA 94514	925-646-5722
		SITE ID 770985

INSPECTION TYPE:	SIC CODE	NOI FACILITY	WDID # or NPDES Permit #	Business Type (Automotive, Gas Station, Trucking, etc.)
(Routine) / Follow-Up	4581	☑ YES ☐ NO	5S071002606	Airport

Contra Costa County Code, Title 10 Public Works & Flood Control, Division 1014 Stormwater Management and Discharge Control (CCCT10); California Porter-Cologne Water Quality Control Act and Federal Clean Water Act incorporated by reference

Violation Code	Violation	Potential Discharge	Actual Discharge	Administrative	Other	Date Corrected
SW01	Illicit discharge to ground/pavement		■	■		
	Illicit discharge to storm drain/body of water	■		■		
SW02	Illicit connection		■	■		
	Illicit connection with discharge or connection to storm drain/body of water	■		■		
SW03	Dumpster/compactor leakage to ground/pavement		■	■		
	Dumpster/compactor leakage to storm drain/body of water	■		■		
SW04	Debris/trash on ground/pavement		■	■		
	Debris/trash in drainage inlet/catch basin/storm drain/body of water	■		■		
SW05	Items stored outdoors likely to discharge (open containers, near down spout)		■	■		
	Items stored outdoors discharging/evidence of recent discharge to storm drain	■		■		
SW06	Leakage from outside containers, tanks, equipment, etc. to ground/pavement		■	■		
	Leakage from outside containers, tanks, equipment, etc. to storm drain	■		■		
SW07	Outdoor surface/equipment washing with discharge to ground/pavement		■	■		
	Outdoor surface/equipment washing w/discharge to storm drain/body of water	■		■		
SW08	Outdoor repairs resulting in spills, leaks, or drips to the ground/pavement		■	■		
	Outdoor repairs resulting in spills, leaks, or drips to storm drain/body of water	■		■		
SW09	Recent and/or excessive outdoor spills-pavement staining		■	■		
	Recent storm drain staining or staining leading to storm drain/body of water	■		■		
SW10	Poor housekeeping resulting in discharge to ground/pavement		■	■		
	Poor housekeeping resulting in discharge to storm drain/body of water	■		■		
SW11	Ineffective Best Management Practice resulting in discharge to ground		■	■		
	Ineffective Best Management Practice resulting in discharge to storm drain	■		■		
SW12	Hazardous materials stored outdoors with insufficient containment		■	■		
SW13	Lack of notification of release, including insufficient procedures/training		■	■		
SW14	Lack of adequate spill control measures/equipment		■	■		
SW15	Failure to submit Notice of Intent to Regional Water Quality Control Board	■	■			
SW16	Failure to prepare/implement a Stormwater Pollution Prevention Plan (SWPPP)	■	■			
SW17	Failure to submit stormwater sampling results to Regional Water Quality Control Board	■	■			
	All Potential and Actual Discharge violations and/or citations must be corrected within 10 business days or before the next rain, whichever is first	Notice to Comply	Notice of Violation	Notice to Comply	Due Date For Correction:	
	Potential discharge – Imminent threat of pollutant discharge *Actual discharge* – Observed discharge to stormwater or clear evidence of recent discharge to storm drain — TOTALS	Ø	Ø	Ø	—	

Comments:

Facility Representative Providing Consent to Inspect		Contra Costa Hazardous Materials Representative		Inspection Date
Print	Signature	Print	Signature	
Natalie Olsen	Natalie Olsen	Nick Umemoto		3-26-14

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA COUNTY
HAZARDOUS MATERIALS PROGRAMS
CERTIFIED UNIFIED PROGRAM AGENCY

4585 PACHECO BLVD., STE 100, MARTINEZ, CA 94553-2233
PHONE: (925)335-3200 FAX: (925)646-2073 www.cchealth.org/hazmat

PERMIT NUMBER: 07-000-770985
PERMIT TO OPERATE

Permit Valid 07/01/14 thru 06/30/15

This is to certify that the owner and establishment shown have been granted permission to operate subject to compliance with all applicable laws and regulations. This permit is valid for the period shown above unless revoked or suspended for violation of applicable laws and/or regulations.

REGULATED FACILITY:
ID # FA0033495
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

OWNER OF RECORD:
CCC BYRON AIRPORT
550 SALLY RIDE DR
CONCORD, CA 94520

	Regulated Program(s)	Permit #	Program Record #	Permit Fee Paid
1	APSA: 10K - <100K GALLONS	PT0027045	PR0056020	PAID
2	HMBP: >10K-100K LBS, 0-19 EMPLOYEES	PT0022893	PR0051759	PAID
3	HWG: LESS THAN 5 TONS/YEAR	PT0026643	PR0054680	PAID





FOR CHANGES TO THE FACILITY, OWNERSHIP, AND/OR BILLING ADDRESS(ES), PLEASE LOG IN TO THE CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS) AT http://cers.calepa.ca.gov AND RESUBMIT THE FACILITY INFORMATION SECTION.

THIS IS NOT AN INVOICE

BECKY ENGLAND
550 SALLY RIDE DR
CONCORD, CA 94520

Contra Costa County
Public Works
Department

Julia R. Bueren, Director
Deputy Directors
Brian M. Balbas
Stephen Kowalewski
Stephen Silveira
Joe Yee

Memo

December 22, 2014

TO: Contra Costa County Safety Coordinators

FROM: Brian Balbas, Deputy Director

SUBJECT: CUPA Reporting and Workshop for County Facilities

In the past, Public Works, Hazardous Materials and Risk Management have partnered to train and assist County departments that handle hazardous materials and wastes with their State-mandated, Certified Unified Program Agency (CUPA) submittals.

These submissions were traditionally done on paper, but in 2014, the State required these documents to be submitted online through the Environmental Protection Agency's California Environmental Reporting System (CERS) program.

While Public Works assists with the maintenance and inspections of the equipment and materials, by regulation it is the responsibility of each facility or "handler" to submit these documents to CERS annually.

Health and Safety Code, Section 25506. (a) The secretary, in coordination with the office, shall specify the hazardous materials inventory that shall be submitted by **handlers** and the data to be collected and submitted for hazardous materials in quantities equal to or greater than the quantities specified in Section 25507 or as otherwise established by the governing body of the unified program agency by a local ordinance.

(http://codes.lp.findlaw.com/cacode/HSC/1/d20/6.95/1/s25506).

Health and Safety Code, Section 25501(l) and (m) defines "Handle" as those who use, generate, process, produce, package, treat, store, emit, discharge, or dispose of a hazardous material in any fashion and "Handler" as a business that handles a hazardous material.

http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb_1251-1300/sb_1261_bill_20140928_chaptered.pdf

In order to assist departments and building managers with CERS submissions, Public Works, Hazardous Materials, and Risk Management have partnered again to create two hands-on workshops in February. These workshops will enable attendees to complete their online submissions during the workshop in a simple and efficient manner. By law, submittals to CERS are required by March 1, 2015.

SAVE THE DATE:

WHO: All County Facility Managers with Hazardous Materials and Waste

WHAT: **CC COUNTY CUPA SUBMISSION WORKSHOP**

Facility representatives who have their CERS log-on and password will be able to complete their CUPA submittal by the end of the workshop. Computers will be provided and HazMat and Public Works will have representatives available to provide the documents and maps that are required for compliance.

WHEN: 2/12/2015 from 10:00 am – 12:00 pm, or

2/17/2015 from 1:00 pm – 3:00 pm

WHERE: Risk Management Training Room, 2530 Arnold Drive, Suite 125, Martinez

HOW: Email **targetsafety@riskm.cccounty.us** to enroll in the workshop.

If you have any questions or concerns, please contact me at (925) 313-2284 or Doug Parker at (925) 335-3662.

BB:lz
G:\Admin\Brian\2014\December\CUPA Reporting and Workshop for County Facilities 12-22-14.doc

CUPA Facility ID
07000730672
07000730673
07000730678
07000730679
07000746628
07000770762
07000770961
07000770985
07000771137
07000771329
07000772163
07000772169
07000772598
07000773122
07000773157
07000773248
07000773512
07000773563
07000773564
07000773566
07000773567
07000773632
07000707502
07000774172
07000774158
07000772230
07000774156
07000774243
07000774606
07000774605
07000774608
07000774607
07000774610
07000774610
07000774191
07000772776
07000774617
07000774609
07000774140
07000774890
07000730676
07000730676
07000770122

WILLIAM B. WALKER, M.D.
HEALTH SERVICES DIRECTOR

RANDALL L. SAWYER
CHIEF ENVIRONMENTAL HEALTH AND
HAZARDOUS MATERIALS OFFICER

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA
HEALTH SERVICES
HAZARDOUS MATERIALS PROGRAMS
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553-2228
Ph 925-335-3200
Fax 925-646-2073

CCC BYRON AIRPORT
CCC BYRON AIRPORT
550 SALLY RIDE DR
CONCORD, CA 94520

CUPA FACILITY ID: 770985
CERS ID: 10011013
ENVIRONMENTAL CONTACT: Natalie Olesen

December 29, 2014

Subject: Certified Unified Program Agency (CUPA) Submittal for 2015

Dear Ccc Byron Airport:

All regulated businesses are required to review and submit information regarding the annual Hazardous Materials Business Plan, Hazardous Waste Generator Reporting, Underground Storage Tanks, Aboveground Storage Tanks, and/or California Accidental Release Prevention Program annually (CUPA data). State Law (Assembly Bill 2286) now requires your business to report this information electronically. Contra Costa County requires all facilities to use the California Environmental Reporting System (CERS) to submit this information: http://cers.calepa.ca.gov/.

All regulated businesses must use CERS to submit their 2015 CUPA data between January 1, 2015 and March 2, 2015. **All 2015 CUPA data must be submitted by March 2, 2015.**

As of December 29, 2014, your facility is registered in the following CUPA programs:

HAZARDOUS MATERIALS BUSINESS PLAN PROGRAM
HAZARDOUS WASTE GENERATOR PROGRAM
ABOVEGROUND PETROLEUM STORAGE ACT PROGRAM

For your convenience, the reverse side of this letter identifies the required CERS submittal element(s) for each CUPA program.

Assistance with submitting a complete and correct CERS submittal may be obtained by:

1. Visiting our website at: http://cchealth.org/hazmat/
2. Requesting to attend one of the CERS training classes offered by CCHSHMP (see enclosure)

If you have any questions regarding the 2015 CUPA submittal, please contact us at (925) 335-3200.

Sincerely,

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa County

770985, 773248

RECEIVED

JAN 05 2015

Contra Costa Health
Hazardous Materials

CONTRA COSTA
HEALTH SERVICES

CERS WORKSHOP TRAINING FOR CONTRA COSTA COUNTY BUSINESSES
REGISTRATION FORM (Please Print)

Pre-registration is required. These free classes are limited to 12 persons/business/agencies per session. **Forms must be returned by January 9, 2015 and Space is limited.** Priority will be given to those businesses that did not attend a class last year.

Confirmation will be emailed prior to the class and you must bring it with you.

Facility Site ID # ~~770985~~ & ~~773248~~ CERS ID 10011013 & 10017469

First Name: Jake Last Name: Allred

Business Name: Contra Costa County - Airports Division

Business Address: 550 Sally Ride Dr.

Phone #: (925) 681-4200 Email: jake.allred@airport.cccounty.us please send confirmation to: beth.ice@airport.cccounty.us

new employee

If you are in the **Hazardous Materials Business Plan, Aboveground Petroleum Storage Tank and/or Hazardous Waste Generator Programs only, e.g., Auto Body, Auto Repair, Dry Cleaners**, please choose from the following classes by writing your first choice, second choice and third choice in the blank spaces. ***(Must Write 1, 2 & 3)***

____	Wednesday	January 28, 2015	1:30 pm – 3:30 pm	Martinez Location (Spanish Assistance Available)
____	Thursday	January 29, 2015	9:00 am – 11:00 am	Martinez Location (Spanish Assistance Available)
____	Thursday	January 29, 2015	1:30 pm – 3:30 pm	Martinez Location
X	Tuesday	February 10, 2015	9:00 am – 11:00 am	Martinez Location
____	Tuesday	February 10, 2015	1:30 pm – 3: 30 pm	Martinez Location

If you are in any of the **above programs and also the Underground Storage Tank or Tiered Permitting Programs**, please choose from the following classes by writing your first choice and second choice in the blank spaces. ***(Must Write 1 & 2)***

____	Wednesday	January 28, 2015	9:00 am – 12:00 pm	Martinez Location
____	Wednesday	February 11, 2015	1:00 pm – 4:00 pm	Martinez Location

Email this completed form to ccchazmat@hsd.cccounty.us or fax to (925) 646-2073
Questions? Call (925) 335-3200

FOR OFFICE USE ONLY

Date Received:

Confirmation # _____ *Date Reserved:*

Active in These Programs: *Date Confirmed:*
APSA BP HWG TP UST



Fw: CERS Workshop and Training

Matt Kaufmann to: Beth.Lee 01/05/2015 01:51 PM
Cc: Devra Lewis, "Kerri Greene"

Hi Beth,

Contra Costa Health Services Hazardous Materials Programs has partnered with Contra Costa County Risk Management to offer classes for Contra Costa County facilities only. I will be sending you an email with the options for classes being offered. Therefore, I will cancel your request to attend the all facilities training on Tuesday, February 10, 2015.

I apologize for the confusion.

Kind Regards,

Matt Kaufmann
Assistant Director of Hazardous Materials
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553-2233
Office: (925) 335-3235
Fax: (925) 646-2073
----- Forwarded by Matt Kaufmann/HazMat/HSD/US on 01/05/2015 01:40 PM -----

From:	ccchazmat/HazMat/HSD/US
To:	Matt Kaufmann/HazMat/HSD/US@HSD,
Date:	01/05/2015 01:38 PM
Subject:	Fw: CERS Workshop and Training
Sent by:	Alexandra McMullen

Contra Costa County Health Services
Hazardous Materials Programs
4585 Pacheco Blvd, Suite 100
Martinez. CA 94553

(925) 335-3200 Ph
(925) 646-2073 Fax
cchealth.org/groups/hazmat
----- Forwarded by Alexandra McMullen/HazMat/HSD/US on 01/05/2015 01:38 PM -----

From:	Beth Lee <Beth.Lee@airport.cccounty.us>
To:	"ccchazmat@hsd.cccounty.us" <ccchazmat@hsd.cccounty.us>,
Date:	01/05/2015 11:33 AM
Subject:	CERS Workshop and Training

Can you please send both the party being registered and me a confirmation of class scheduled? This is a new employee and will not be accessing his email for a few days.

Thanks, Beth

Beth Lee
Assistant Director of Airports
Contra Costa County Airports Division

550 Sally Ride Drive

Concord, CA 94520

844-Fly-ToUs (844-359-8687)

www.ContraCostaCountyAirports.org

From: bizhub_scans@airport.cccounty.us [mailto:bizhub_scans@airport.cccounty.us]
Sent: Monday, January 05, 2015 12:30 PM
To: Beth Lee
Subject: Message from KMBT_C654



SKMBT_C65415010512291.pdf

RECEIVED
FEB 11 2015
Contra Costa Health
Hazardous Materials

CONTRA COSTA
HEALTH SERVICES

2015 CUPA PACKET
HAZARDOUS WASTE GENERATOR REPORTING FORM

SITE ID: 07000770985 EPA ID: CAL000112340

FACILITY NAME: CCC Byron Airport

ADDRESS: 500 Eagle Court Byron, CA 94514

PLEASE READ THE INSTRUCTIONS ON THE BACK BEFORE COMPLETING THIS FORM.
THE INSTRUCTIONS HAVE CHANGED FROM PREVIOUS YEARS.

Please return this completed form along with your CUPA documents to the Hazardous Materials Programs Office by March 2, 2015. **Forms submitted after March 2, 2015 may be subject to a 50% late filing fee.**

- Do not send payments at this time.
- Retain a copy for your records.

Determine the amount of hazardous waste your business generated and shipped offsite during the **2014** calendar year.

Total Tonnage of Hazardous Waste Shipped Offsite During 2014: 2.25 / Tons

ENTERED

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: [signature] Date: 2/9/15

Print Name: Keith Freitas

Title: Director of Airports Phone # (925) 681-4200

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA COUNTY
HAZARDOUS MATERIALS PROGRAMS
CERTIFIED UNIFIED PROGRAM AGENCY

4585 PACHECO BLVD., STE 100, MARTINEZ, CA 94553-2233
PHONE: (925)335-3200 FAX: (925)646-2073 www.cchealth.org/hazmat

PERMIT NUMBER: 07-000-770985
PERMIT TO OPERATE

Permit Valid 7/1/2015 thru 6/30/2016

This is to certify that the owner and establishment shown have been granted permission to operate subject to compliance with all applicable laws and regulations. This permit is valid for the period shown above unless revoked or suspended for violation of applicable laws and/or regulations.

REGULATED FACILITY:
ID # FA0033495
CCC BYRON AIRPORT
500 EAGLE CT
BYRON, CA 94514

OWNER OF RECORD:
CCC BYRON AIRPORT
550 SALLY RIDE DR
CONCORD, CA 94520

	Regulated Program(s)	Permit #	Program Record #	Permit Fee Paid
1	APSA: 10K - <100K GALLONS	PT0027045	PR0056020	PAID
2	HMBP: >10K-100K LBS, 0-19 EMPLOYEES	PT0022893	PR0051759	PAID
3	HWG: LESS THAN 5 TONS/YEAR	PT0026643	PR0054680	PAID

FOR CHANGES TO THE FACILITY, OWNERSHIP, AND/OR BILLING ADDRESS(ES), PLEASE LOG IN TO THE CALIFORNIA ENVIRONMENTAL REPORTING SYSTEM (CERS) AT http://cers.calepa.ca.gov AND RESUBMIT THE FACILITY INFORMATION SECTION.

THIS IS NOT AN INVOICE

NATALIE OLESEN
550 SALLY RIDE DR
CONCORD, CA 94520

WILLIAM B. WALKER M.D.
HEALTH SERVICES DIRECTOR

RANDALL L. SAWYER
CHIEF ENVIRONMENTAL HEALTH AND
HAZARDOUS MATERIALS OFFICER

CONTRA COSTA
HEALTH SERVICES

CONTRA COSTA
HEALTH SERVICES
HAZARDOUS MATERIALS PROGRAMS
4585 Pacheco Boulevard, Suite 100
Martinez, CA 94553-2228
Ph 925-335-3200
Fax 925-646-2073

CCC BYRON AIRPORT
CCC BYRON AIRPORT
550 SALLY RIDE DR
CONCORD, CA 94520

CUPA FACILITY ID: 770985
CERS ID: 10011013
ENVIRONMENTAL CONTACT: JACOB ALLRED

December 28, 2015

Subject: Certified Unified Program Agency (CUPA) Submittal for 2016

As a regulated business, your facility is required to review and submit information regarding the Hazardous Materials Business Plan, Hazardous Waste Generator, Underground Storage Tanks, Aboveground Petroleum Storage Act, and/or California Accidental Release Prevention Programs annually (CUPA data). State Law requires your business to report this information electronically.

Contra Costa Health Services Hazardous Materials Programs (CCHSHMP) requires the annual CUPA data to be submitted through the California Environmental Reporting System (CERS) (http://cers.calepa.ca.gov/) between **January 1, 2016 and March 1, 2016.**

Based on the 2015 CUPA data submitted by CCC BYRON AIRPORT, the following CUPA data submittal elements are required by **March 1, 2016**:

- ☐ **FACILITY INFORMATION**
- ☐ **HAZARDOUS MATERIALS INVENTORY**
- ☐ **EMERGENCY RESPONSE AND TRAINING PLANS**
- ☐ **ABOVEGROUND PETROLEUM STORAGE ACT (ONLY IF CHANGES HAVE OCCURRED SINCE LAST SUBMITTAL)**

A 2016 Hazardous Waste Generator Reporting Form is enclosed. This form must be completed and submitted to CCHSHMP by March 1, 2016 as part of the CUPA data submittal if your facility is in the Hazardous Waste Generator Program.

Assistance with submitting a complete CUPA submittal in CERS may be obtained by:

1. Visiting our website at: http://cchealth.org/hazmat/
2. Requesting to attend one of the CERS training classes (see enclosure)

If you have any questions regarding the 2016 submittal in CERS, please contact us at (925) 335-3200.

Sincerely,

Randall L. Sawyer
Chief Environmental Health and Hazardous Materials Officer
Contra Costa County

CONTRA COSTA
HEALTH SERVICES

2016 HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY NAME: CCC BYRON AIRPORT **CUPA FACILITY ID:** 770985

CERS ID: 10011013 **EPA ID:** CAL000112340

This form is required to be submitted if your facility had any amount of hazardous waste disposed of from your facility in 2015. Disposal includes picked up by a licensed transporter or taken to a certified collection location. If your facility is in the Hazardous Waste Generator Program, but no hazardous waste was disposed of in 2015, this form is still required.

Determine the amount of hazardous waste your business disposed of during the 2015 calendar year.

Total Tonnage of Hazardous Waste Disposed During 2015 (calculation guide on back)

_____ Tons

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: _____ **Date:** _____

Print Name: _____ _____

INSTRUCTIONS FOR COMPLETING THIS FORM ON BACK

SUBMITTAL OPTIONS - You may submit this form in one of the following ways:

1. Upload PDF document to your 2016 CERS submittal under **Miscellaneous State Required Documents** in the Facility Information section. (If you are submitting via CERS, no signature is required.)
2. Fax to 925-646-2073
3. Email PDF document to ccchazmat@hsd.cccounty.us
4. Mail to: Hazardous Materials Programs
   4585 Pacheco Blvd., Suite 100
   Martinez, CA 94553

RECEIVED
JAN 07 2016
Contra Costa Health
Hazardous Materials

CONTRA COSTA
HEALTH SERVICES

2016 HAZARDOUS WASTE GENERATOR REPORTING FORM

FACILITY NAME: Byron Airport

SITE ID: 07000770985

CERS ID: 10011013

EPA ID: CAL000112340

This form is required to be submitted if your facility had any amount of hazardous waste disposed of from your facility in 2015. Disposal includes picked up by a licensed transporter or taken to a certified collection location. If your facility is in the Hazardous Waste Generator Program, but no hazardous waste was disposed of in 2015, this form is still required.

Determine the amount of hazardous waste your business disposed of during the 2015 calendar year.

Total Tonnage of Hazardous Waste Disposed During 2015: (calculation guide on back)

0.00 Tons

I hereby certify that this form, including any accompanying statements, is true and correct to the best of my knowledge and belief.

Signature: Jake Allred Digitally signed by Jake Allred Date: 2016.01.06 10:06:16 -08'00' **Date:** 1/6/15

Print Name: Jake Allred

INSTRUCTIONS FOR COMPLETING THIS FORM ON BACK

SUBMITTAL OPTIONS – You may submit this form in one of the following ways:

1. Upload PDF document to your 2016 CERS submittal under **Miscellaneous State Required Documents** in the Facility Information section. (If you are submitting via CERS, no signature is required.)
2. Fax to 925-646-2073
3. Email PDF document to cchazmat@hsd.cccounty.us
4. Mail to: Hazardous Materials Programs
   4585 Pacheco Blvd, Suite 100
   Martinez, CA 94553

ATTACHMENT C

Aerial Photographs

Byron Airport-C83
Byron Airport-C83
Byron, CA 94514

Inquiry Number: 4548481.9
February 29, 2016

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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Date EDR Searched Historical Sources:

Aerial Photography February 29, 2016

Target Property:

Byron Airport-C83

Byron, CA 94514

Year	***Scale***	***Details***	***Source***
1949	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1949	USGS
1958	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1958	USGS
1967	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1967	USGS
1974	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1974	USGS
1981	Aerial Photograph. Scale: 1"=1000'	Flight Year: 1981	USGS
1993	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1993	USGS/DOQQ
1993	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1993	USGS/DOQQ
1993	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1993	USGS/DOQQ
1993	Aerial Photograph. Scale: 1"=500'	/DOQQ - acquisition dates: 1993	USGS/DOQQ
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2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
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2005	Aerial Photograph. Scale: 1"=500'	Flight Year: 2005	USDA/NAIP
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Year	*Scale*	*Details*	*Source*
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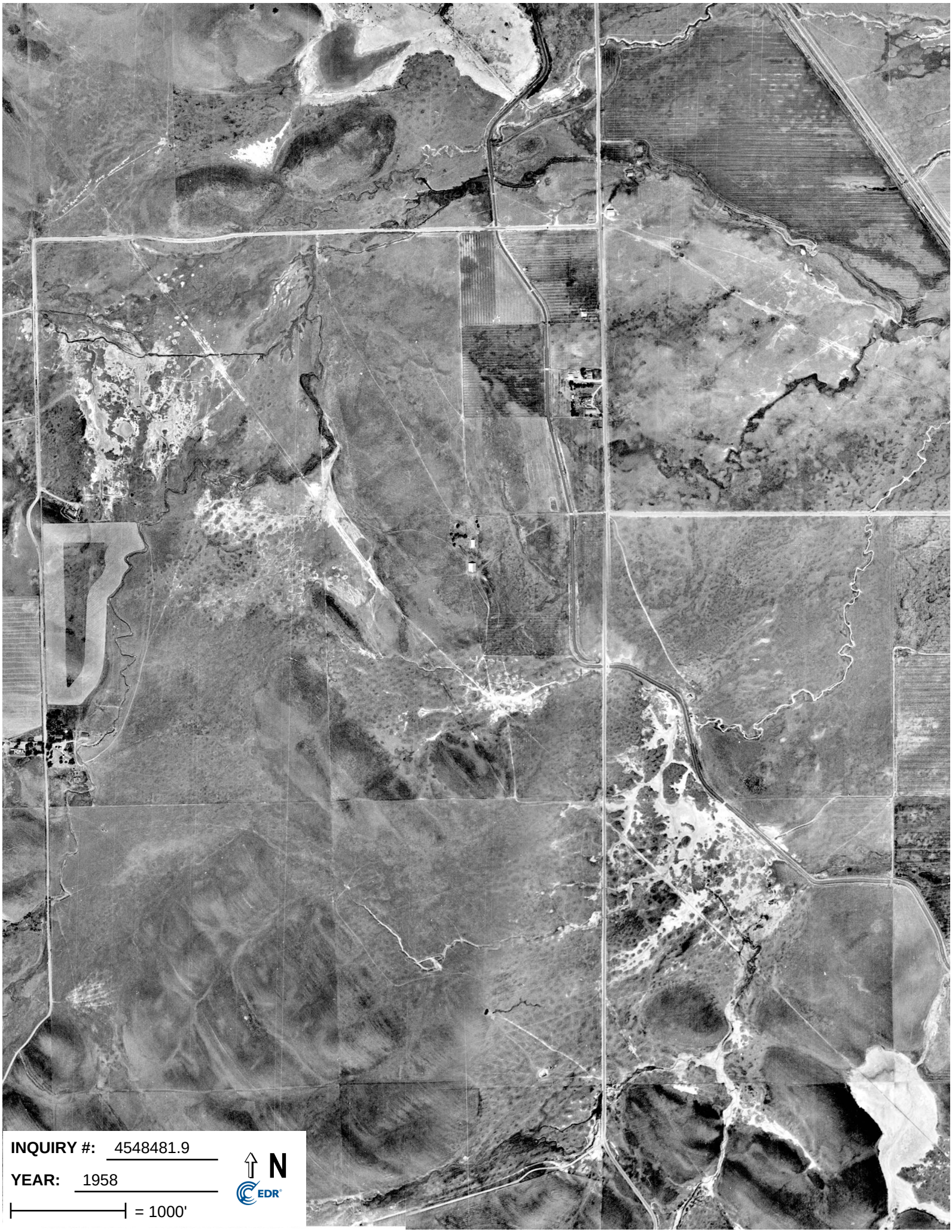

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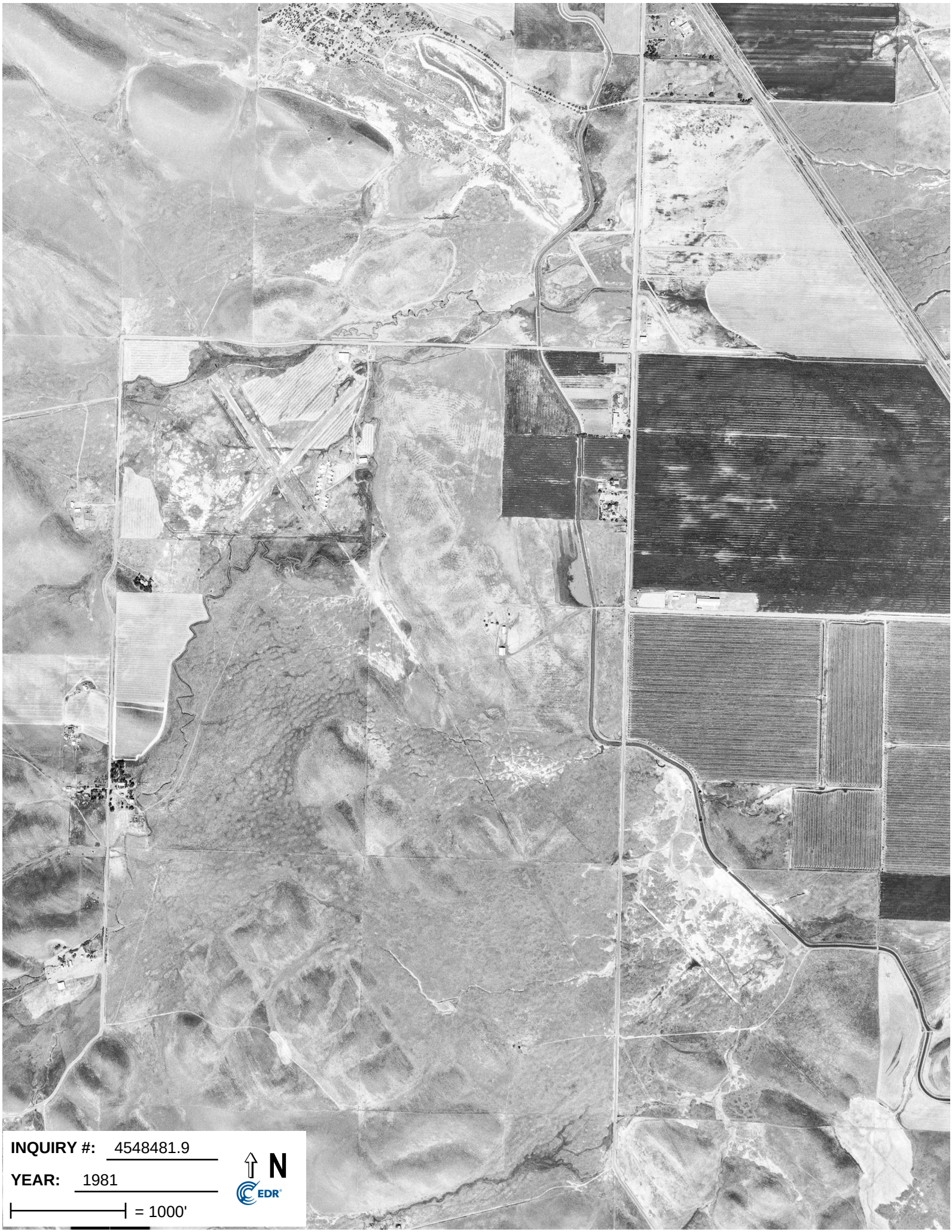
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INQUIRY #: 4548481.9
YEAR: 1993
= 500'
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EDR



INQUIRY #: 4548481.9

YEAR: 1993

= 500'

N

EDR


INQUIRY #: 4548481.9
YEAR: 1993
= 500'
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EDR


INQUIRY #: 4548481.9
YEAR: 1993
= 500'
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EDR


INQUIRY #: 4548481.9
YEAR: 1993
= 500'
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EDR


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= 1000'
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YEAR: 2005
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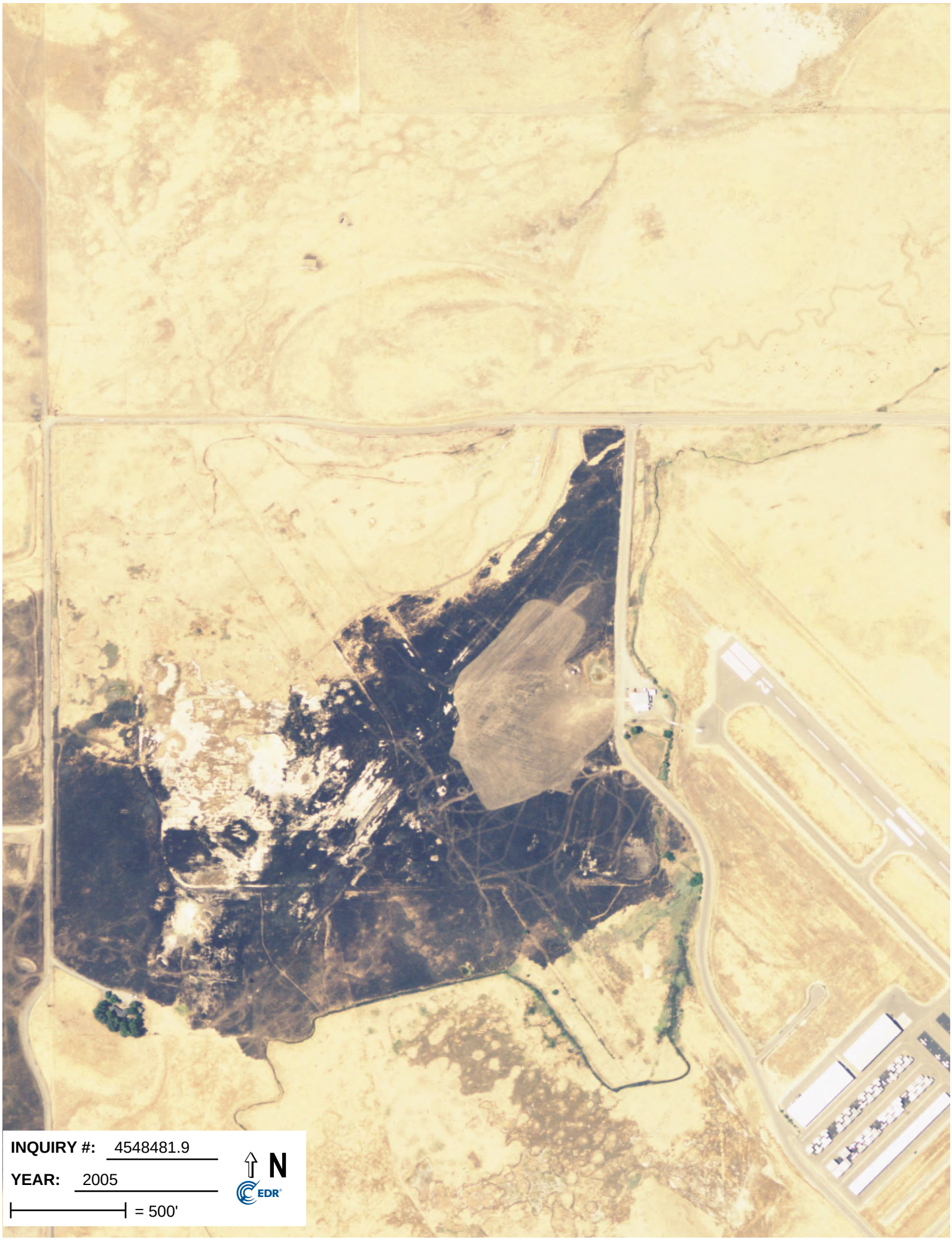
EDR



INQUIRY #: 4548481.9

YEAR: 2005

= 500'

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EDR



INQUIRY #: 4548481.9

YEAR: 2005

= 500'

N

EDR


INQUIRY #: 4548481.9
YEAR: 2005
= 500'
N
EDR


INQUIRY #: 4548481.9
YEAR: 2005
= 500'
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YEAR: 2005
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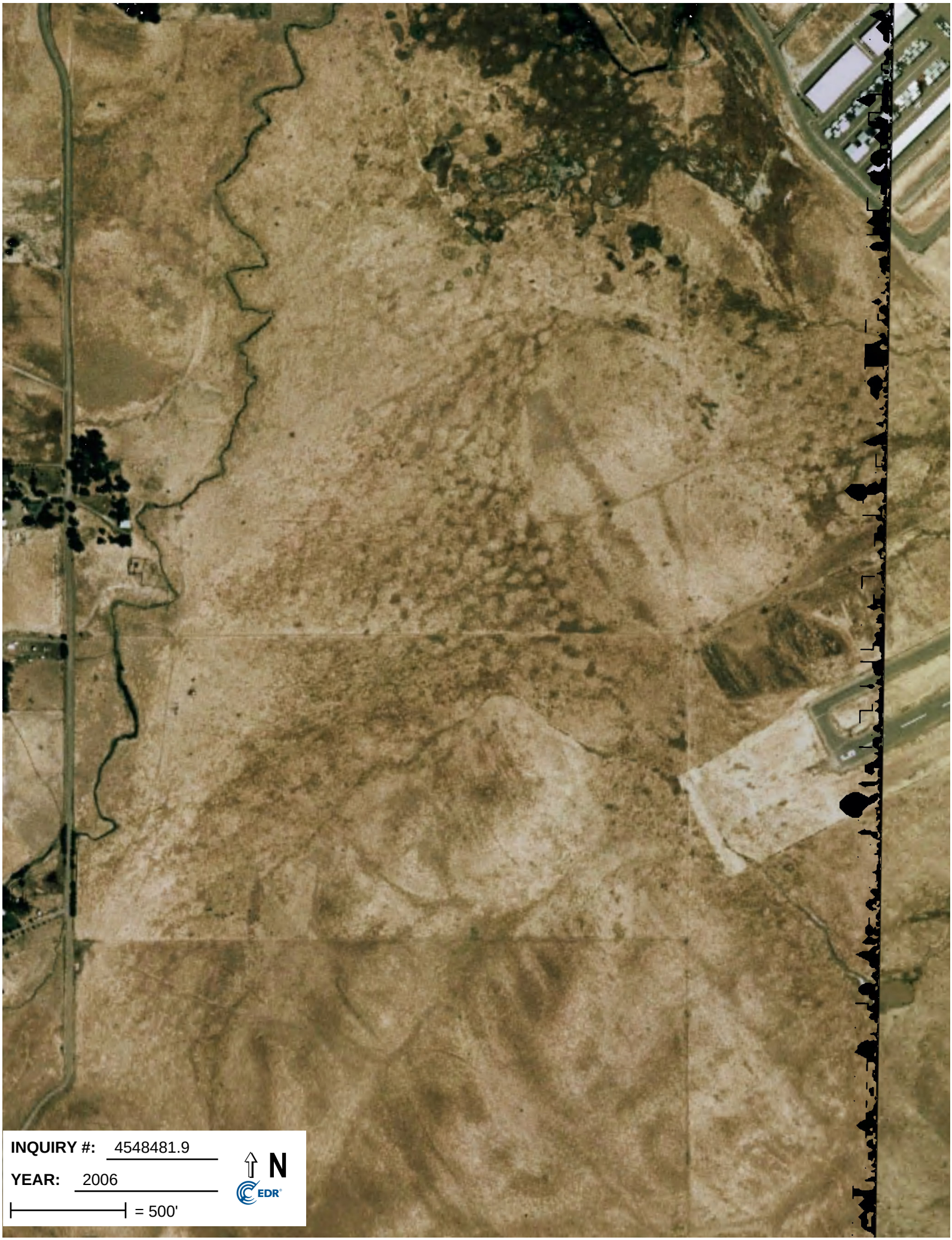
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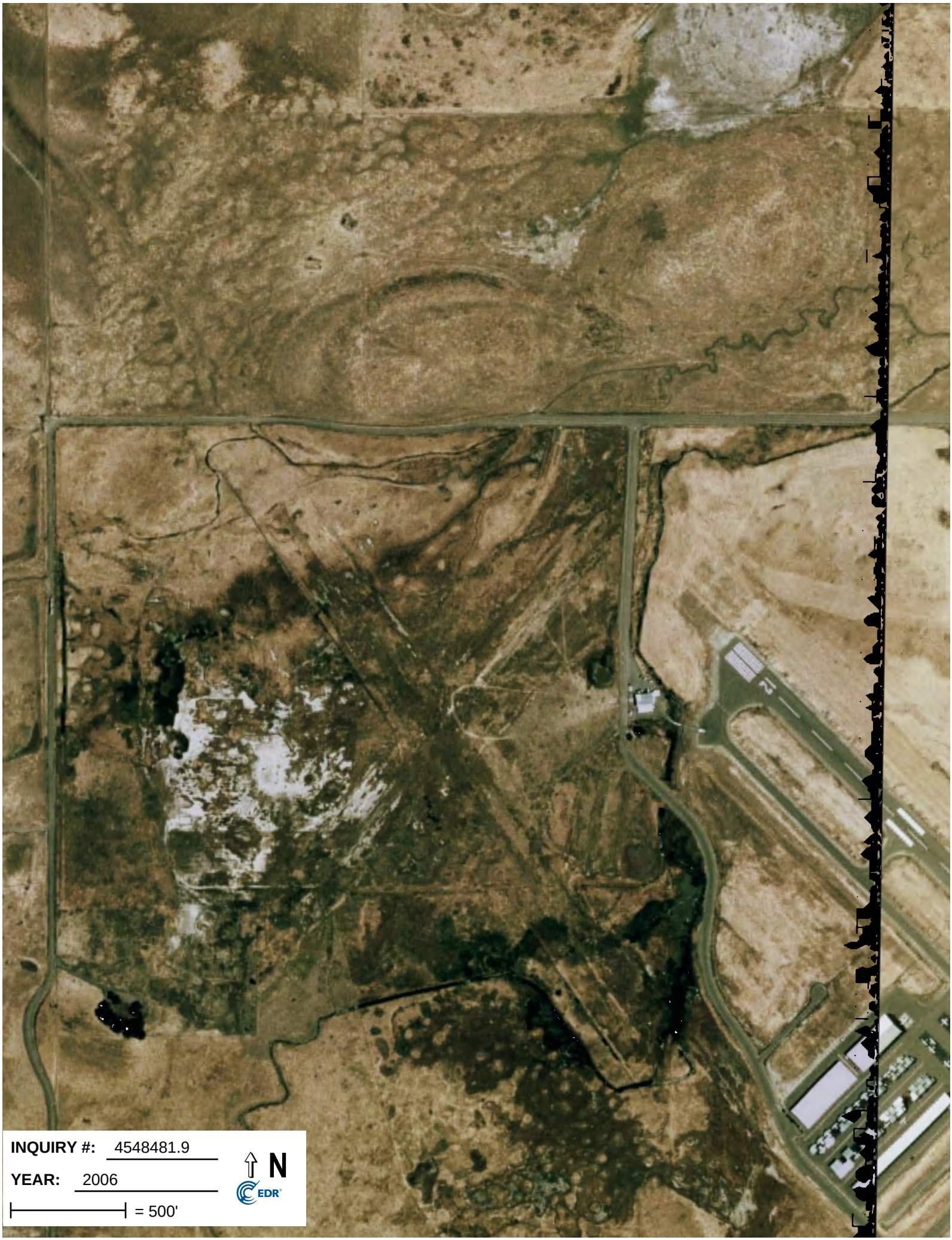
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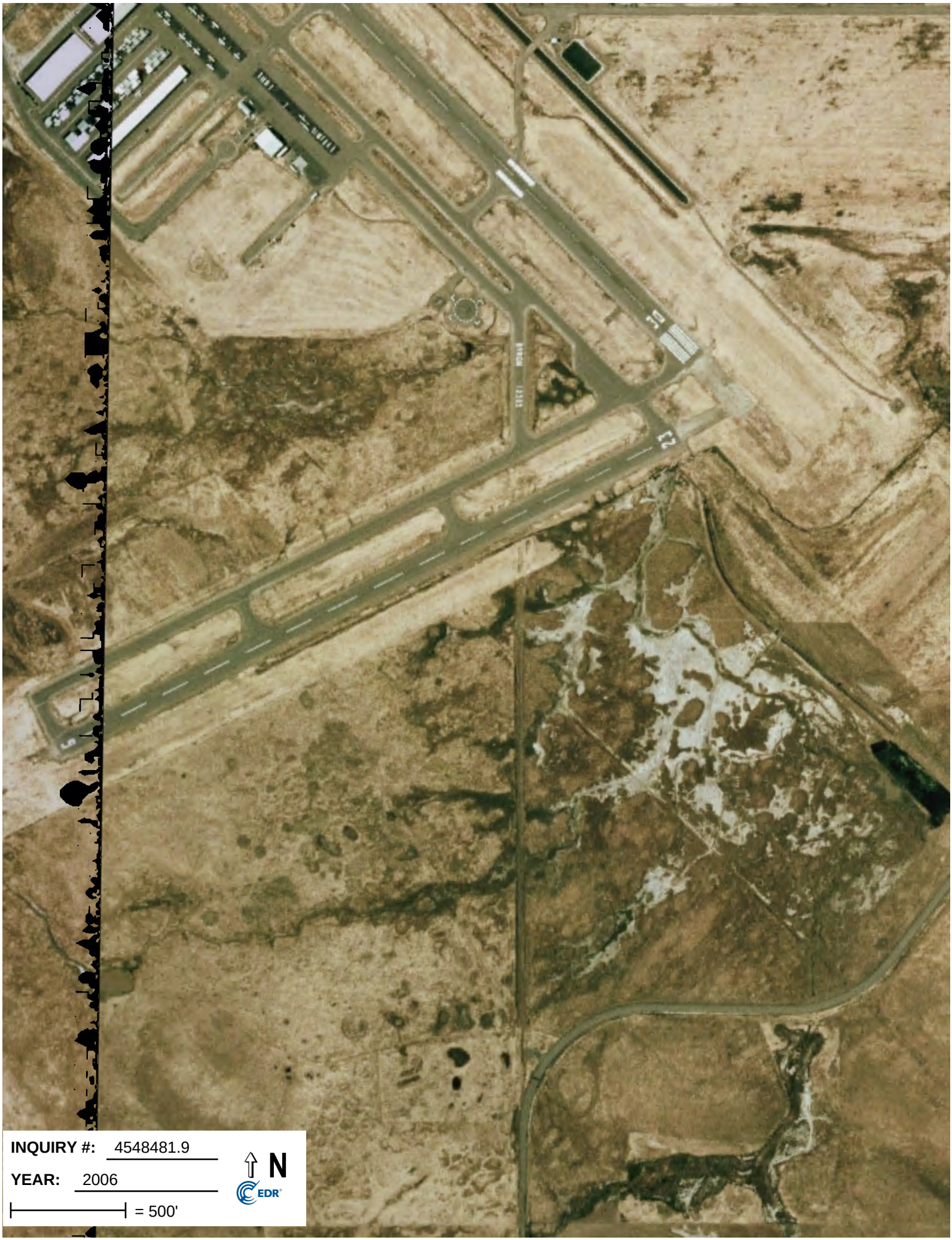
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EDR


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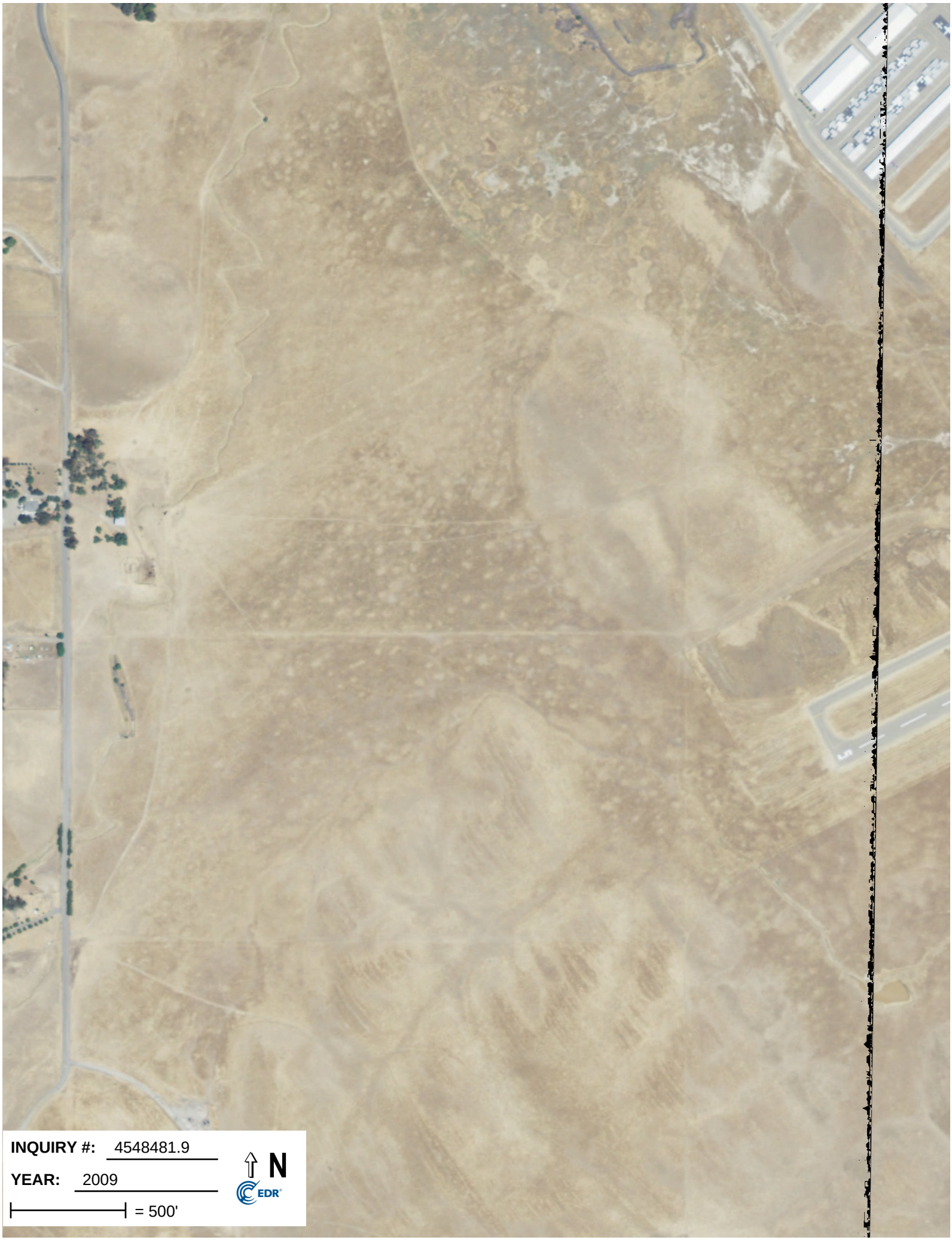
EDR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YEAR: 2009
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YEAR: 2009
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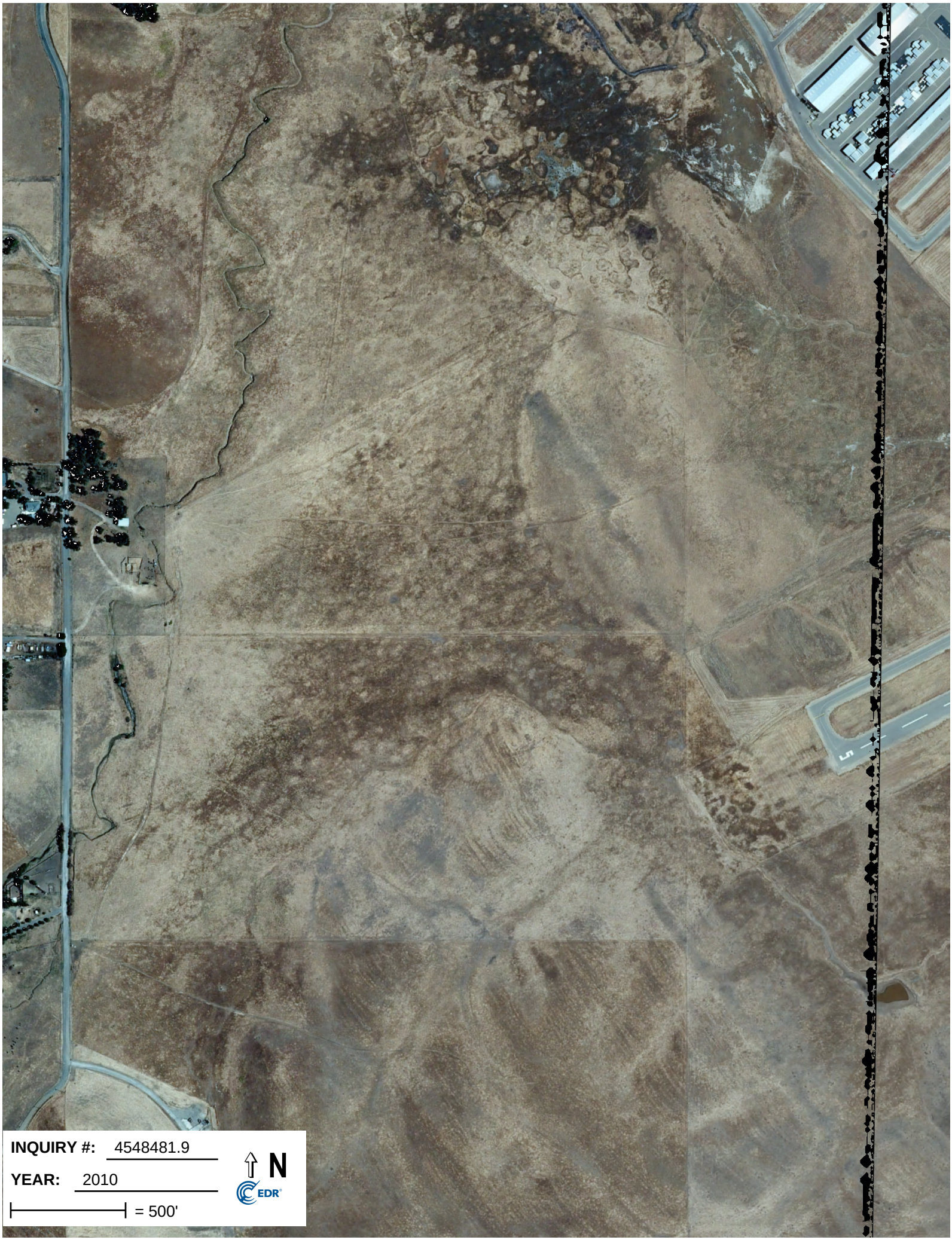
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YEAR: 2010

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INQUIRY #: 4548481.9

YEAR: 2010

= 500'

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EDR


INQUIRY #: 4548481.9
YEAR: 2010
= 500'
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EDR


INQUIRY #: 4548481.9
YEAR: 2010
= 500'
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EDR


INQUIRY #: 4548481.9
YEAR: 2012
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EDR


INQUIRY #: 4548481.9
YEAR: 2012
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EDR


INQUIRY #: 4548481.9
YEAR: 2012
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EDR


INQUIRY #: 4548481.9
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INQUIRY #: 4548481.9
YEAR: 2012
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EDR


INQUIRY #: 4548481.9
YEAR: 2012
= 500'
N
EDR

ATTACHMENT D

Topographic Maps

Byron Airport-C83

Byron Airport-C83

Byron, CA 94514

Inquiry Number: 4548481.4

February 25, 2016

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

02/25/16

Site Name:
Byron Airport-C83
Byron Airport-C83
Byron, CA 94514
EDR Inquiry # 4548481.4

Client Name:
Dudek & Associates
605 Third Street
Encinitas, CA 92024
Contact: Emmanuel Padilla

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Dudek & Associates were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

Site Name: Byron Airport-C83
Address: Byron Airport-C83
City,State,Zip: Byron, CA 94514
P.O.# 400-10
Project: Byron Airport 9269

Coordinates:

Latitude:	37.829651 37° 49' 47" North
Longitude:	-121.630353 -121° 37' 49" West
UTM Zone:	Zone 10 North
UTM X Meters:	620531.85
UTM Y Meters:	4187798.39
Elevation:	71.81' above sea level

Maps Provided:

2012
1968
1952, 1953
1940
1916
1911, 1914

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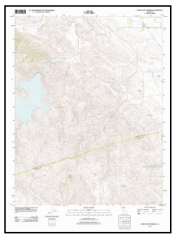
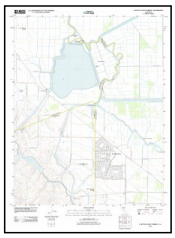
Topo Sheet Thumbnails

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Byron Hot Springs
2012
7.5-minute, 24000



Clifton Court Forebay
2012
7.5-minute, 24000

1968 Source Sheets



Bethany
1968
7.5-minute, 24000
Photo Revised 1968
Aerial Photo Revised 1968



Byron Hot Springs
1968
7.5-minute, 24000
Photo Revised 1968
Aerial Photo Revised 1968

1952, 1953 Source Sheets

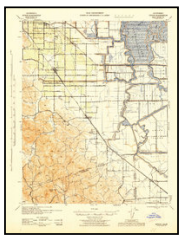


Bethany
1952
7.5-minute, 24000
Aerial Photo Revised 1949



Byron Hot Springs
1953
7.5-minute, 24000
Aerial Photo Revised 1949

1940 Source Sheets



Byron
1940
15-minute, 62500
Aerial Photo Revised 1940

Topo Sheet Thumbnails

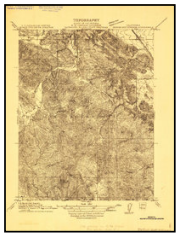
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1916 Source Sheets



Byron Hot Springs
1916
7.5-minute, 31680

1911, 1914 Source Sheets



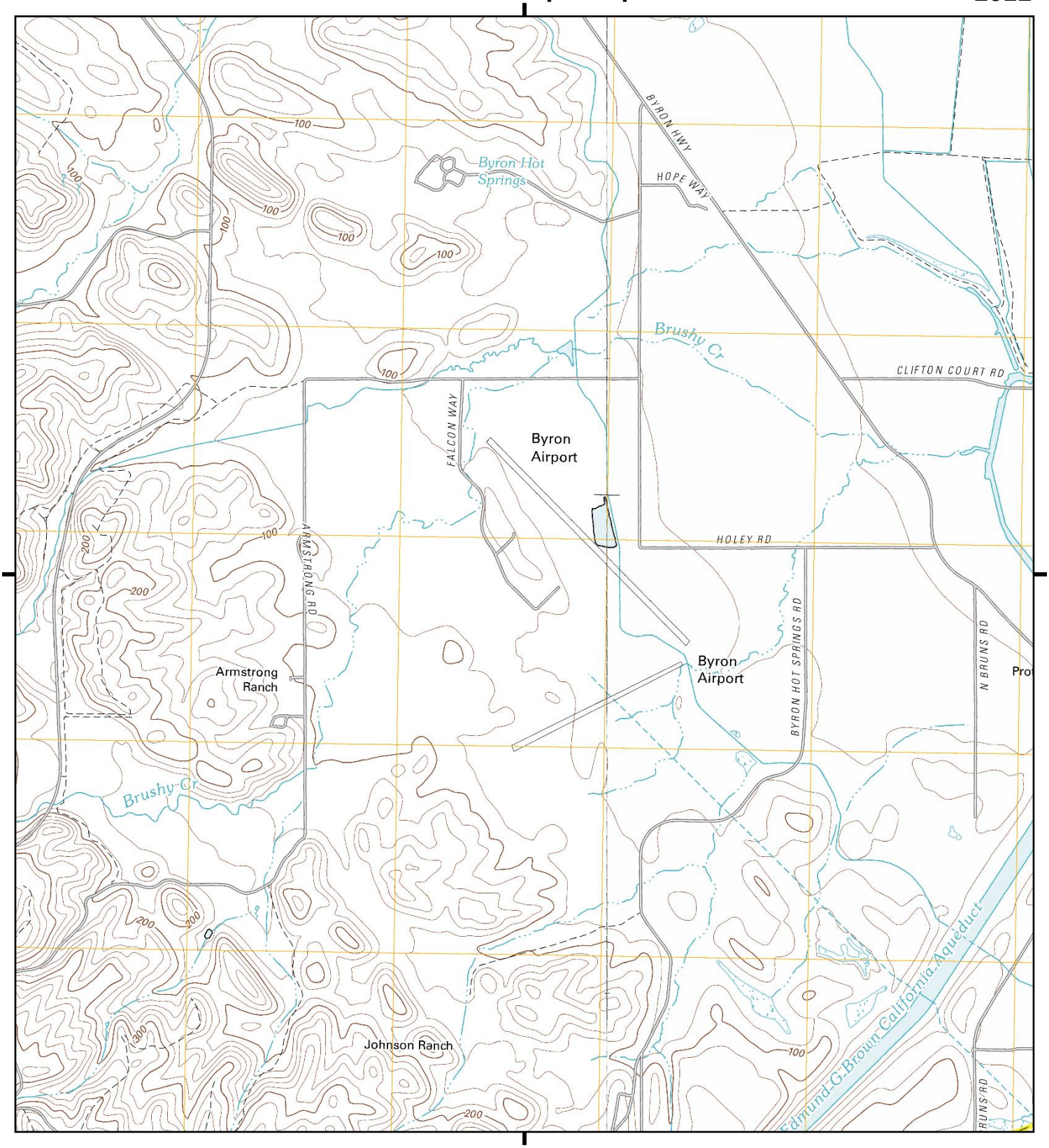
Byron Hot Springs
1911
7.5-minute, 31680



Bethany
1914
7.5-minute, 31680

Historical Topo Map

2012



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Byron Hot Springs, 2012, 7.5-minute

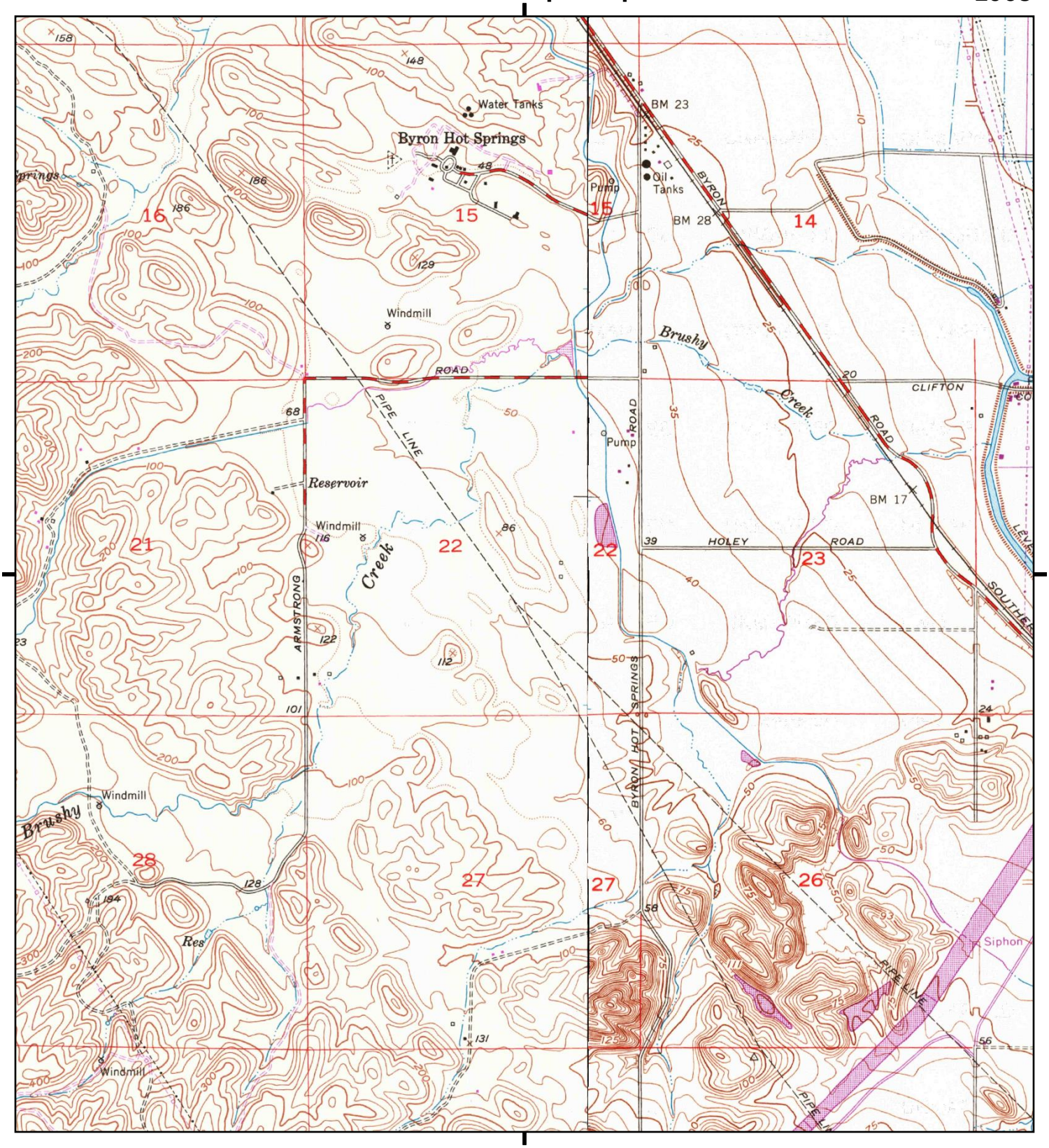
E, Clifton Court Forebay, 2012, 7.5-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

Historical Topo Map

1968



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W E
SW S SE

TP, Byron Hot Springs, 1968, 7.5-minute

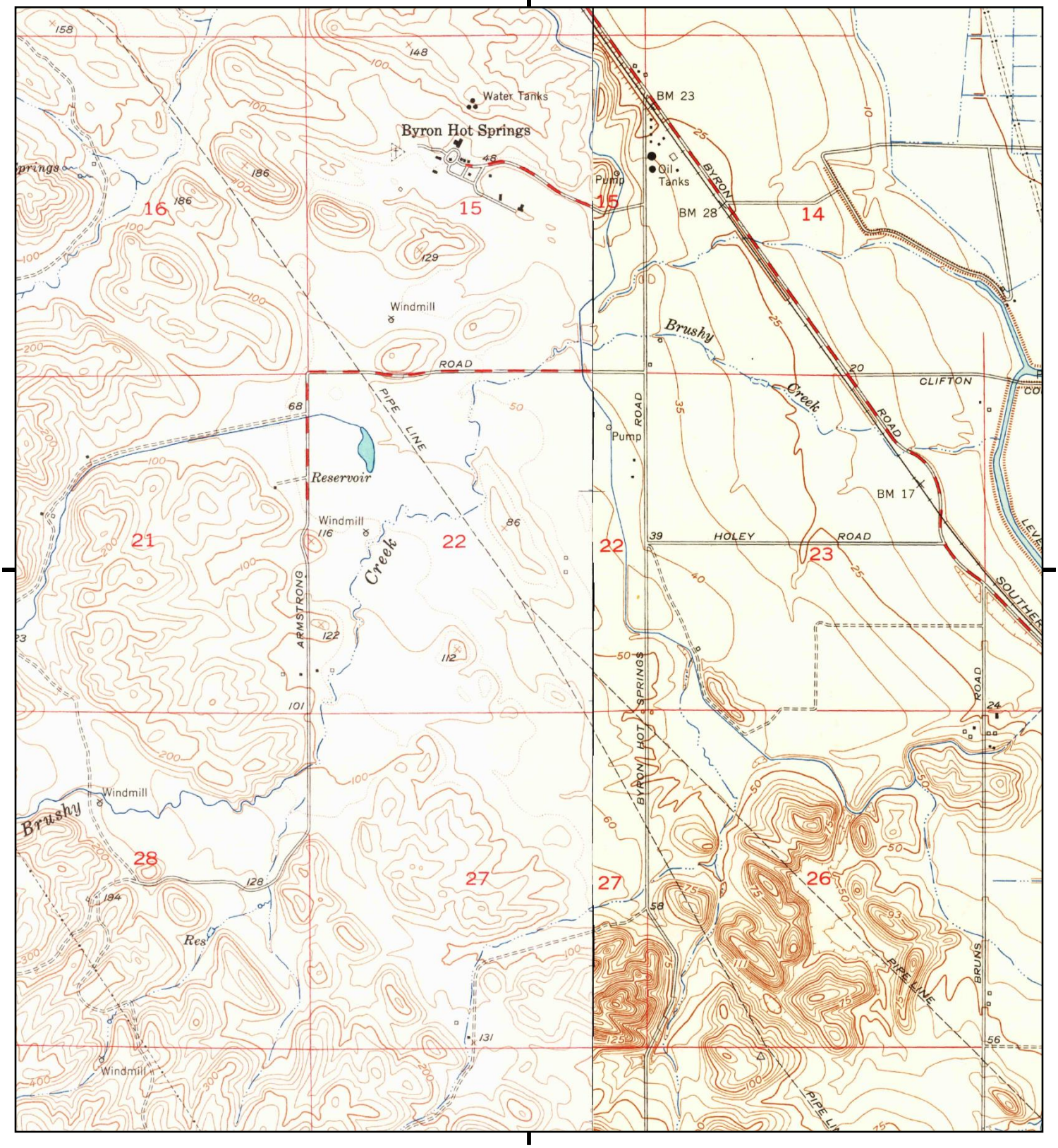
E, Bethany, 1968, 7.5-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

Historical Topo Map

1952, 1953



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Byron Hot Springs, 1953, 7.5-minute

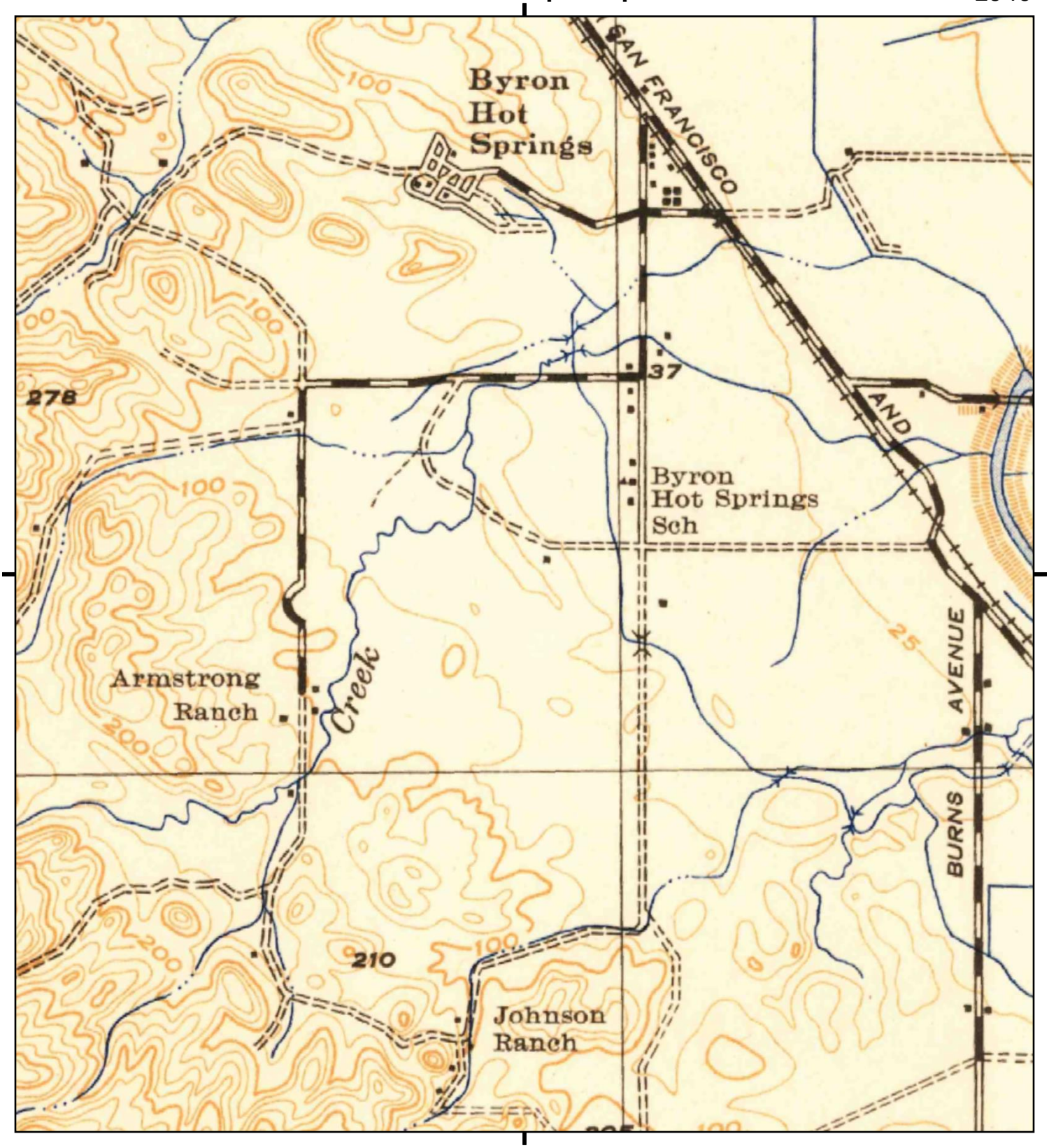
E, Bethany, 1952, 7.5-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

Historical Topo Map

1940



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

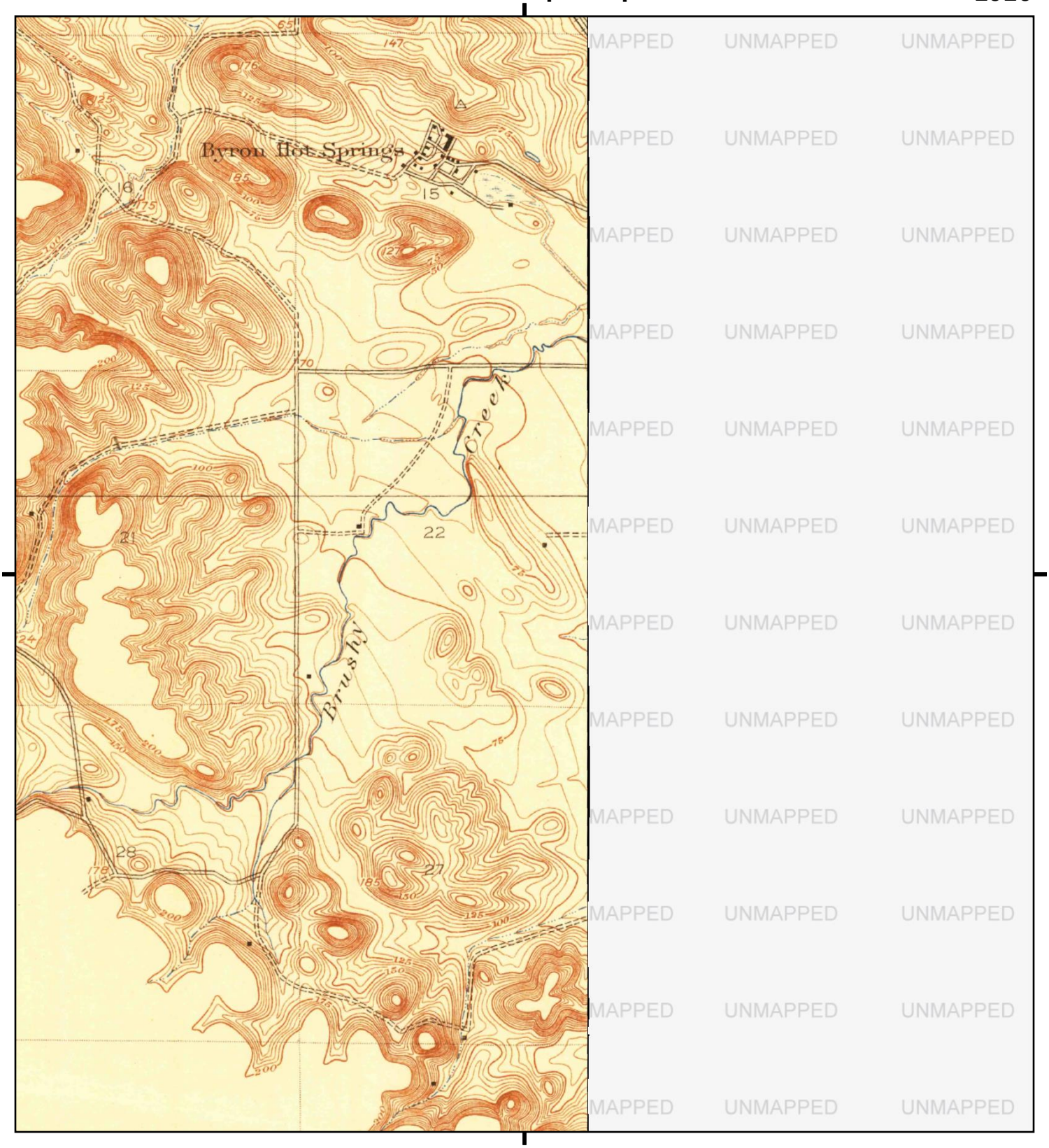
TP, Byron, 1940, 15-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

Historical Topo Map

1916



MAPPED UNMAPPED UNMAPPED

This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Byron Hot Springs, 1916, 7.5-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

Historical Topo Map

1911, 1914



This report includes information from the following map sheet(s).

Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Byron Hot Springs, 1911, 7.5-minute

E, Bethany, 1914, 7.5-minute

SITE NAME: Byron Airport-C83
ADDRESS: Byron Airport-C83
Byron, CA 94514
CLIENT: Dudek & Associates

N

ATTACHMENT E

Sanborn Maps

Byron Airport-C83
Byron Airport-C83
Byron, CA 94514

Inquiry Number: 4548481.3
February 25, 2016

Certified Sanborn® Map Report

6 Armstrong Road, 4th Floor
Shelton, Connecticut 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

2/25/16

Site Name:
Byron Airport-C83
Byron Airport-C83
Byron, CA 94514

Client Name:
Dudek & Associates
605 Third Street
Encinitas, CA 92024

EDR Inquiry # 4548481.3

Contact: Emmanuel Padilla

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The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Site Name: Byron Airport-C83
Address: Byron Airport-C83
City, State, Zip: Byron, CA 94514
Cross Street:
P.O. # 400-10
Project: Byron Airport 9269
Certification # 0507-48D5-AB69

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results
Certification # 0507-48D5-AB69

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX H

Traffic Report

DRAFT

Transportation Impact Analysis
Byron Airport Development Program
County of Contra Costa

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APRIL 2021

Printed on 30% post-consumer recycled material.

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1 Introduction

1.1 Purpose and Scope of the TIA

The purpose of this Transportation Impact Analysis (TIA) is to identify traffic impacts associated with the Byron Airport Development Program (proposed project) located in Contra Costa County (County). This TIA has been prepared per the Contra Costa County Transportation Analysis Guidelines (TAG) and complies with the Contra Costa County General Plan Transportation and Circulation Element requirements, as well as methodologies outlined in the East County Action Plan (ECAP).

The objectives of this TIA are to:

- Document existing roadway, pedestrian, bicycle, transit and traffic conditions, including intersection levels of service in the study area;
- Estimate trip generation, distribution, and assignment characteristics for the proposed project;
- Provide a Vehicle Miles Traveled (VMT) analysis per Senate Bill 743 (SB 743), the updated California Environmental Quality Act (CEQA) Guidelines, and the Contra Costa Guidelines;
- Determine traffic levels of service (LOS) for study area intersections under the Existing and Future Year 2040 conditions;
- Identify CEQA-required mitigation measures for significant transportation impacts and/or other improvements needed to meet LOS standards (if any); and,
- Provide findings and recommendations based on the traffic analysis of the proposed project.

Figure 1 shows the project location and study area as approved by County Transportation Planning section. As shown in Figure 1, the study area is comprised of the following 16 intersections and 5 Routes of Regional Significance designated in the ECAP:

Intersections

1. Byron Highway/Holey Road
2. Byron Highway/Byron Hot Springs Road
3. Byron Highway/Camino Diablo
4. Holway Drive/Camino Diablo
5. Byron Highway/Holway Drive
6. Byron Highway/State Route 4 (SR-4)
7. Vasco Road/Camino Diablo
8. Walnut Boulevard/Vasco Road
9. SR-4 – Vasco Road/Marsh Creek (SR-4)
10. Walnut Boulevard/Marsh Creek Road (SR-4)
11. Byron Highway (SR-4)/Marsh Creek Road (SR-4)
12. Discovery Bay Boulevard/SR-4

13. Byron Road/Mountain House Parkway
14. Byron Road/Grant Line Road
15. Mountain House Parkway/Interstate 205 (I-205) westbound ramps
16. Mountain House Parkway/I-205 eastbound ramps

Routes of Regional Significance

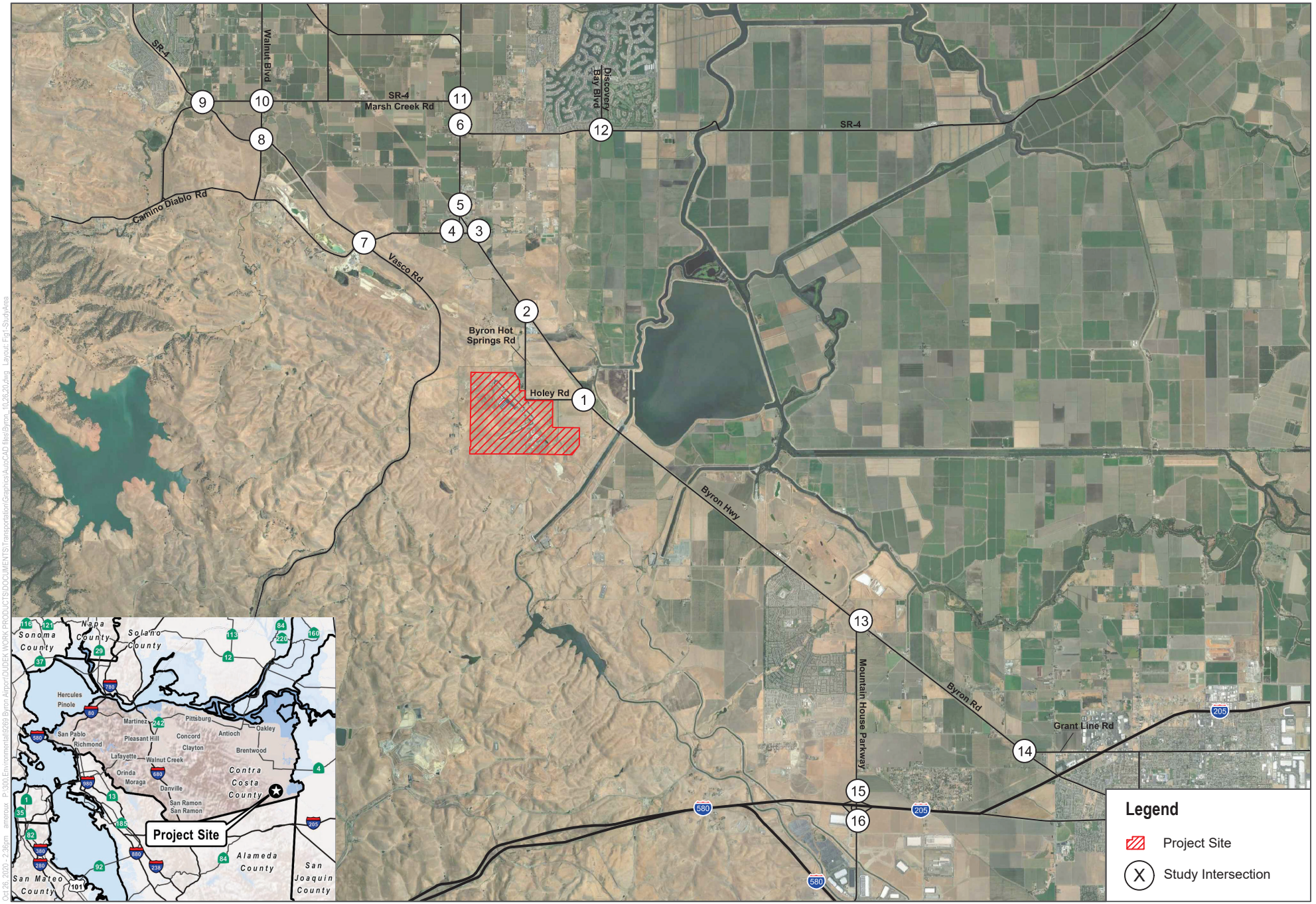
17. SR-4 – Marsh Creek Road
18. Vasco Road
19. Walnut Boulevard
20. Byron Highway
21. Camino Diablo

1.2 Project Description and Location

Byron Airport is located in the southeastern portion of the County, approximately 2.5 miles south of the community of Byron. The project site consists of the approximately 1,307-acre Byron Airport property south of Armstrong Road, and the 11.7-acre parcel located between the airport property and the Bethany Irrigation District Canal, for a total of 1,319 acres. Byron Airport also owns an additional 120 acres north of Armstrong Road that is not part of the project site.

The Byron Airport Development Program proposes to update the Airport Land Use Compatibility Plan (ALUCP) to reflect the latest planning and forecasts for the airport. The standards used in the current ALUCP for Byron Airport are based on the 1993 edition of the Airport Land Use Planning Handbook (Handbook). Caltrans has updated this guidance document twice since that time, in 2002 and 2011 (Caltrans 2011). Thus, the current ALUCP for Byron Airport does not reflect the latest planning and forecasts for the airport, and is based on dated compatibility planning guidance. The Airport Layout Plan was updated in 2016, and this is not reflected in the current ALUCP for Byron Airport. The proposed ALUCP update for Byron Airport would provide for lower development intensity than is allowed by the Handbook.

The airport property is currently zoned P-1, for Planned Unit District (Contra Costa County 2005). Currently, the Byron Airport P-1 zoning only allows aviation-related uses, agriculture, and open space. The amended Planned Unit District will identify four separate development areas: Aviation, Airport Related, Low-Intensity Use, and Habitat Management, as shown in Figure 2, Development Area and Safety Zones (which includes an overlay of the proposed ALUCP safety zones). The most important change would be to the airport-related uses, which would allow non-residential development that is compatible with the ALUCP for Byron Airport. These uses would include light industry, warehousing and logistics, commercial, and low-intensity office. In addition, the 11.7-acre parcel to be acquired by the County would be rezoned from Agriculture (A-3) to P-1. The size and location of each proposed development area shown in Figure 2 serves as the basis for project-related trip generation and distribution throughout the study area.



SOURCE: Google Maps 2019

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FIGURE 1

Project Location and Study Area

Byron Airport Development Program

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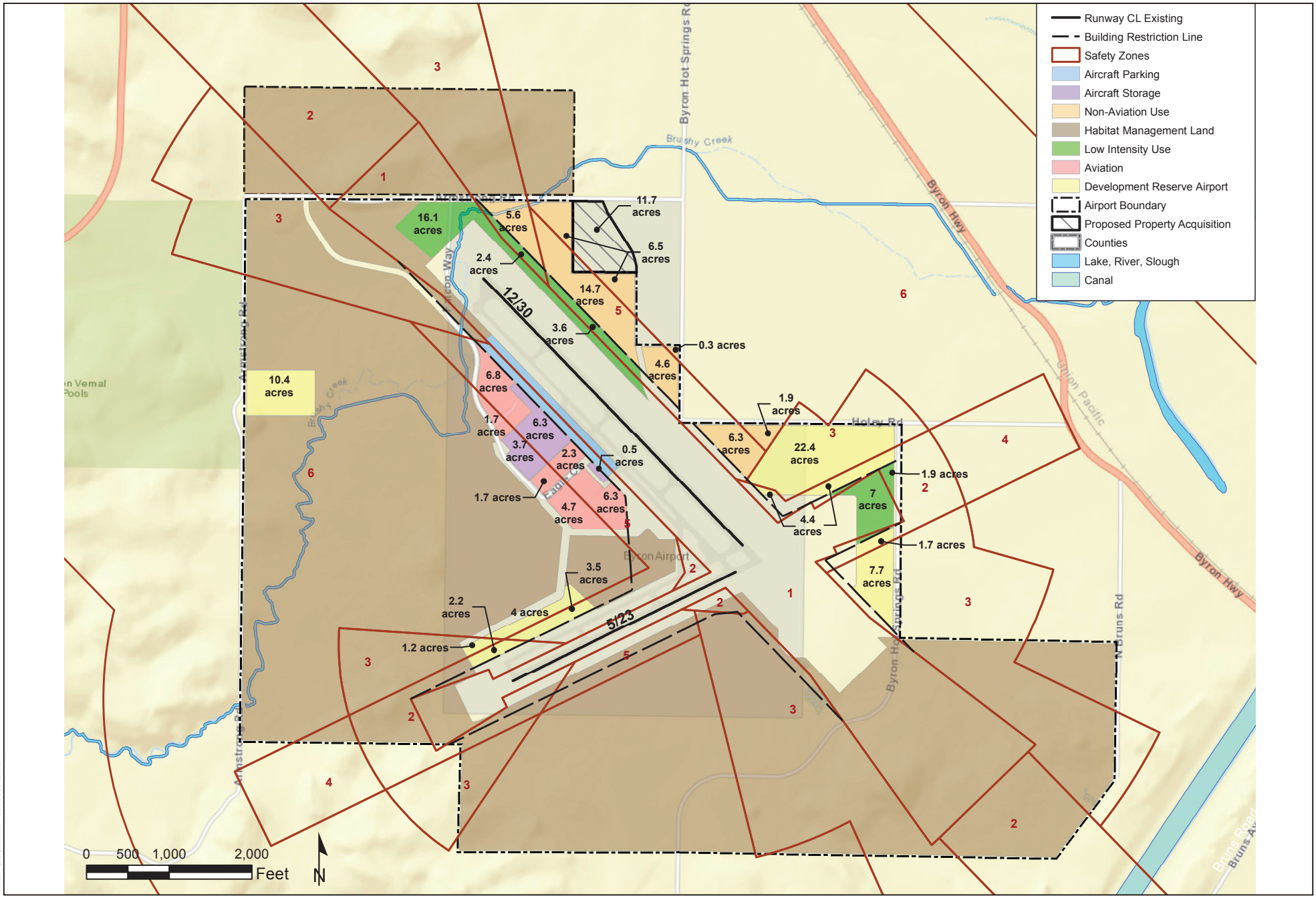

SOURCE: Mead & Hunt 2018

FIGURE 2

Development Area and Safety Zones

Byron Airport Development Program

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1.3 Analysis Methodology and Significance Thresholds

1.3.1 Vehicle Miles Traveled (VMT) Analysis for CEQA

On September 27, 2013, Senate Bill (SB) 743 was signed into law, which created a process to change the way that transportation impacts are analyzed under California Environmental Quality Act (CEQA). SB 743 required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines to provide an alternative to level of service (LOS) for evaluating transportation impacts. Under the new transportation guidelines, LOS, or vehicle delay, will no longer be considered an environmental impact under CEQA. OPR recommended Vehicle Miles Traveled (VMT) as the most appropriate measure of project transportation impacts for land use projects and land use plans. The updates to the CEQA Guidelines required under SB 743 were approved on December 28, 2018.

The Updated CEQA Guidelines state that "*…generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts…*" and define VMT as "*…the amount and distance of automobile travel attributable to a project…*". It should be noted that "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck VMT could be included for modeling convenience and ease of calculation (for example, where models or data provide combined auto and heavy truck VMT). Other relevant considerations may include the effects of the project on transit and non-motorized travel.

The new transportation impact guidelines were adopted for statewide implementation on July 1, 2020. The County of Contra Costa adopted Contra Costa County Transportation Analysis Guidelines (TAG), on June 23, 2020 and those guidelines have been used in the project's VMT analysis.

1.3.1.2 VMT Metric and Thresholds of Significance

Consistent with the OPR guidelines, the following specific VMT metrics are recommended by the County to complete a VMT impact assessment:

- **Residential Projects:** VMT per resident for all home-based trips.
- **Employment Projects:** VMT per employee for only the home-based-work trip purpose and would apply to office, industrial, and institutional projects.
- **Regional Retail (>50,000 square feet):** Total VMT per service population for trips taken by both workers and visitors.
- **Mixed-Use:** Total VMT per service population.
- **Other:** Total VMT per service population for trips taken by both workers and visitors.

The project proposes a mix of office, warehousing and commercial land uses and therefore is considered to be an employment project. Therefore, home-based work VMT per employee metric was chosen for the project's VMT analysis.

A proposed project should be considered to have a significant impact if the project VMT is greater than:

- **Employment Projects** (office, industrial and institutional projects): 15% below the Bay Area average commute VMT per employee.

The project's detailed VMT analysis was conducted using the Contra Costa Countywide Travel Demand Model and is provided in Chapter 4 of the TIA.

For significant VMT impacts found, appropriate VMT reduction strategies such as the implementation of Transportation Demand Management (TDM) measures, or other VMT-reducing measures, have been provided to mitigate project impacts.

1.3.2 Level of Service (LOS) for General Plan Consistency

Level of service (LOS) is commonly used as a qualitative description of intersection operations and Routes of Regional Significance and is based on the design capacity of the intersection configuration and roadway facility, compared to the volume of traffic using the facility.

The study area intersections and Routes of Regional Significance are analyzed in the TIA for the following scenarios per the Contra Costa County Transportation Analysis Guidelines (Contra Costa County 2020) and per the guidelines established in the Contra Costa Transportation Authority Technical Procedures (CCTA 2013):

Existing Condition

The TIA includes a description of existing traffic conditions in the site vicinity, including existing intersections and Routes of Regional Significance weekday AM and PM peak hour traffic volumes, and traffic operations. The existing condition is representative of the year 2015 which is consistent with the project's Notice of Preparation (NOP) and Draft Environmental Impact Report (DEIR).

Existing plus Project Condition

This condition includes analysis of traffic operations under existing conditions with project-related traffic, added to the existing AM and PM peak hour intersection and Routes of Regional Significance traffic volumes. The resulting LOS specific to the project under this condition were used as the basis for determining project's direct changes to intersection and roadway LOS.

Future Year 2040 Condition

This condition includes analysis of horizon year conditions with the implementation of all approved land use changes and any development that is consistent with the General Plan and expected to occur within the time frame of the project. Transportation projects programmed for implementation prior to the horizon year and any programmed capital improvements are also included in this condition.

Future Year 2040 plus Project Condition

This condition includes analysis of traffic operations under the Cumulative (Year 2040) (described above) condition with project-related traffic added to the AM and PM peak hour traffic volumes. The resulting LOS specific to the project under this condition were used as the basis for determining the project's contribution to cumulative LOS.

1.3.2.1 Intersections

The Highway Capacity Manual, 6th Edition (HCM 6) methodology was used to assess level of service for intersections within the study area per requirement of the respective jurisdiction.

The HCM intersection analysis methodology was used to analyze the operation of signalized and unsignalized study intersections. The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle for unsignalized intersections. The Synchro 10 LOS software was used to determine intersection LOS. Synchro is consistent with the HCM 6 methodology (TRB 2016). Table 1 shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 1. Levels of Service for Intersections using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds per vehicle)	Signalized Intersections Control Delay (in seconds per vehicle)
A	< 10.0	< 10.0
B	> 10.0 to < 15.0	> 10.0 to < 20.0
C	> 15.0 to < 25.0	> 20.0 to < 35.0
D	> 25.0 to < 35.0	> 35.0 to < 55.0
E	> 35.0 to < 50.0	> 55.0 to < 80.0
F	> 50.0	> 80.0

Source: HCM 6, 2016.

1.3.2.2 Routes of Regional Significance

Routes of Regional Significance are defined in the East County Action Plan as:

All portions of the Interstate and State highway systems, as well as major arterial roadways that service one or more of the following functions:

- *Connects two or more "regions" of the County*
- *Crosses County boundaries*
- *Carries a significant amount of through traffic*
- *Provides access to a regional highway or transit facility (e.g., a BART station or freeway interchange)*

As identified in Chapter 1, five roadways within the study area are designated as Routes of Regional Significance. The ECAP further organizes Routes of Regional Significance into four categories, each with specific multimodal transportation service objectives (MTSOs). A summary of these categories and their respective MTSOs if provided in Table 2 below.

Table 2. MTSO Summary for Routes of Regional Significance

Route of Regional Significance Category	MTSO Measure
Freeways	Delay Index
Suburban Arterial Routes	Signalized Intersection LOS
Rural Roads	Roadway Segment LOS
Freeways with HOV Lanes	HOV Lane Usage

Source: East County Action Plan (CCTA 2017a)

All five Routes of Regional Significance included in this TIA are identified as "rural roads" and are analyzed utilizing roadway segment evaluation criteria, as outlined in Chapter 15 of the Highway Capacity Manual (TRB 2016) through the Highway Capacity Software 7 (HCS 7). The ECAP identifies the following MTSO for rural roads:

- *Peak hour level-of-service shall not exceed level-of-service D for non-signalized rural roadways*

The Route of Regional Significance analysis is based on assessing roadway segments operations based on traffic volumes, roadway network and other segment-specific characteristics, and reporting speed and follower density. Follower density is a measure of the number of followers per mile per lane, which is used to determine LOS, and is a function of the percent of followers, flow rate, and the time mean speed. Table 3 presents the roadway segment criteria based on the service measure of follower density.

Table 3. Levels of Service for Two-Lane Highways

Level of Service	Follower Density (followers/mi/ln) for speeds ≥ 50 mph	Follower Density (followers/mi/ln) for speeds < 50 mph
A	FD ≤ 2	FD ≤ 2.5
B	2 < FD ≤ 4	2.5 < FD ≤ 5
C	4 < FD ≤ 8	5 < FD ≤ 10
D	8 < FD ≤ 12	10 < FD ≤ 15
E	12 < FD ≤ 99	15 < FD ≤ 99
F	>99	>99

Source: HCM 6; HCS 7
[1] followers/mi/ln– Followers per mile per lane
[2] mph = miles per hour

1.3.2.3 General Plan Consistency Requirements

Consistent with the acceptable LOS in the local agency's General Plan, the local agency may consider the following criteria for application in this traffic study to identify infrastructure improvements required to provide acceptable operations. The study area intersections are located within the jurisdictions either the Contra Costa County or San Joaquin County; therefore, the following consistency requirements would apply where applicable.

Contra Costa County General Plan Land Use Element

Per the Contra Costa County TAG, the County applies operational standards to ensure the levels of growth and development provided in the County General Plan Land Use Element are sufficiently accommodated. Therefore, this TIA uses the following level of service thresholds provided in the Contra Costa County TAG:

> Identifying improvements to address operational deficiencies would be required under the following circumstances:
>
> - Development projects where the addition of project traffic to an intersection(s) results in the degradation of intersection operations from acceptable LOS D or better to unacceptable operations (LOS E or LOS F).Priority Development Areas ("PDA") and routes of regional significance tolerate a higher level of congestion and therefore LOS E is considered acceptable operation. However, improvements are required if LOS degrades to F.

- Development projects where the addition of project traffic to an intersection(s) operating unacceptably before the addition of project trips results in the exacerbation of unacceptable operations by increasing the average control delay (for signalized and all-way stop-controlled intersections) or worst movement/approach delay (for side-street stop-controlled intersections) at the intersection by 5.0 seconds or less.

San Joaquin County Transportation and Mobility Element

The San Joaquin County Transportation and Mobility Element of the current General Plan includes the following level of service standards under TM-3.1, Roadway Provision:

> The County shall maintain LOS standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersection shall operate at LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standards for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other non-CMP designated County roadways and intersections.
>
> The County shall also maintain the following:
>
> - on State highways, LOS D or Caltrans standards whichever is stricter.
> - within a city's sphere of influence, LOS D, or the city planned standards for the level of service.
> - on Mountain House Gateways, as defined in the Master Plan, LOS D, on all other Mountain House roads, LOS C.

Project Access, Safety and Other Analyses

95th percentile queuing is analyzed at Project access intersections, and traffic signal warrant analysis are conducted for any deficient unsignalized intersections within the study area.

1.3.2.4 Caltrans Transportation Impact Study Guide

In anticipation of SB 743 implementation, Caltrans released the Transportation Impact Study Guide (TISG) in May 2020, replacing the 2002 Guide for the Preparation of Traffic Impact Studies. Per the 2020 TISG, consistent with SB 743, Caltrans' primary review focus is also now VMT, replacing LOS as the metric used to evaluate traffic impacts in CEQA transportation analyses. Caltrans recommends use of the State Office of Planning and Research's (OPR) recommended thresholds for land use projects and recommends following the guidance on methods of VMT assessment found in OPR's Technical Advisory (OPR 2018).

In addition to VMT, the 2020 TISG states that it may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the State Highway System and connections with the State Highway System. Caltrans also notes that a future update of the TISG will include the basis for requesting transportation impact analysis not based on VMT and define elements to be included in non-VMT analysis.

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2 Existing Conditions

This section describes existing conditions within the study area. Characteristics are provided for the existing roadway, transit, bicycle, and pedestrian facilities.

2.1 Roadway System

Interstate 205 (I-205) is an east-west divided state highway that is generally 8 lanes and is located between Interstate 5 to the east, to Interstate 580 to the west. I-205 is in San Joaquin County and runs near Lathrop on the east and near Tracy on the west. The posted speed limit is 65 MPH and primary interchanges within the vicinity of the project site are located at Mountain House Parkway and E Eleventh Street.

Vasco Road is a north-south, 2-lane undivided roadway within the study area, extending from John Marsh Highway (CA 4) from the north, to Contra Costa County limits to the south. The posted speed limit is 55 MPH. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Vasco Road is designated as an Expressway in the Contra Costa County General Plan Roadway Network Plan, as shown in Figure 3.

State Route 4 (SR-4) is an east-west, 2-lane undivided roadway within the study area, extending from Marsh Creek Road to the west, to Byron Highway to the east. SR-4 then extends onto Byron Highway south of Marsh Creek Road for approximately one-half mile, at which point it splits from Byron Highway and continues towards the Contra Costa County limits to the east. SR-4 is a 4-lane undivided roadway when overlapping the one-half mile segment of Byron Highway. The posted speed limit is 50 MPH along the Marsh Creek Road/State Route 4 segment west of Byron Highway, and 55 MPH along the State Route 4 segment east of Byron Highway. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. The Marsh Creek Road/State Route 4 roadway segment is designated as an Expressway, and the State Route 4 roadway segment east of Byron Highway is designated an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Marsh Creek Road is an east-west, 2-lane undivided roadway within the study area, extending from Clayton City limits to the west, to Byron Highway to the east. East of Vasco Road, Marsh Creek Road becomes SR-4 until its junction with Byron Highway. The posted speed limit is 50 MPH. There are no paved sidewalks along either side of the roadway and parking is generally not permitted along either side of the roadway. West of Vasco Road, Marsh Creek Road is designated an Arterial road, whereas east of Vasco Road, the Marsh Creek/State Route 4 roadway segment is designated as an Expressway in the Contra Costa County General Plan Roadway Network Plan.

Byron Highway is a north-south, 2-lane undivided roadway within the study area, extending from Delta Road to the north to San Joaquin County to the south/southeast. Within San Joaquin County, Byron Highway becomes Byron Bethany Road which in turn becomes Byron Road at the San Joaquin County line. The posted speed limits within Byron City limits range between 25 and 35 MPH; outside of Byron City limits, posted speed limits range between 45 and 55 MPH. There are minimal sections of paved sidewalk along both sides of the roadway within both Byron and Tracy (San Joaquin County) city limits. There are no paved sidewalks outside of city limits, and parking is generally not permitted along either side of the roadway. Byron Highway is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan and as a Principal Arterial (and a Minor Arterial when Byron Highway becomes Byron Road) in Figure TM-1 of the San Joaquin County Mobility Element.

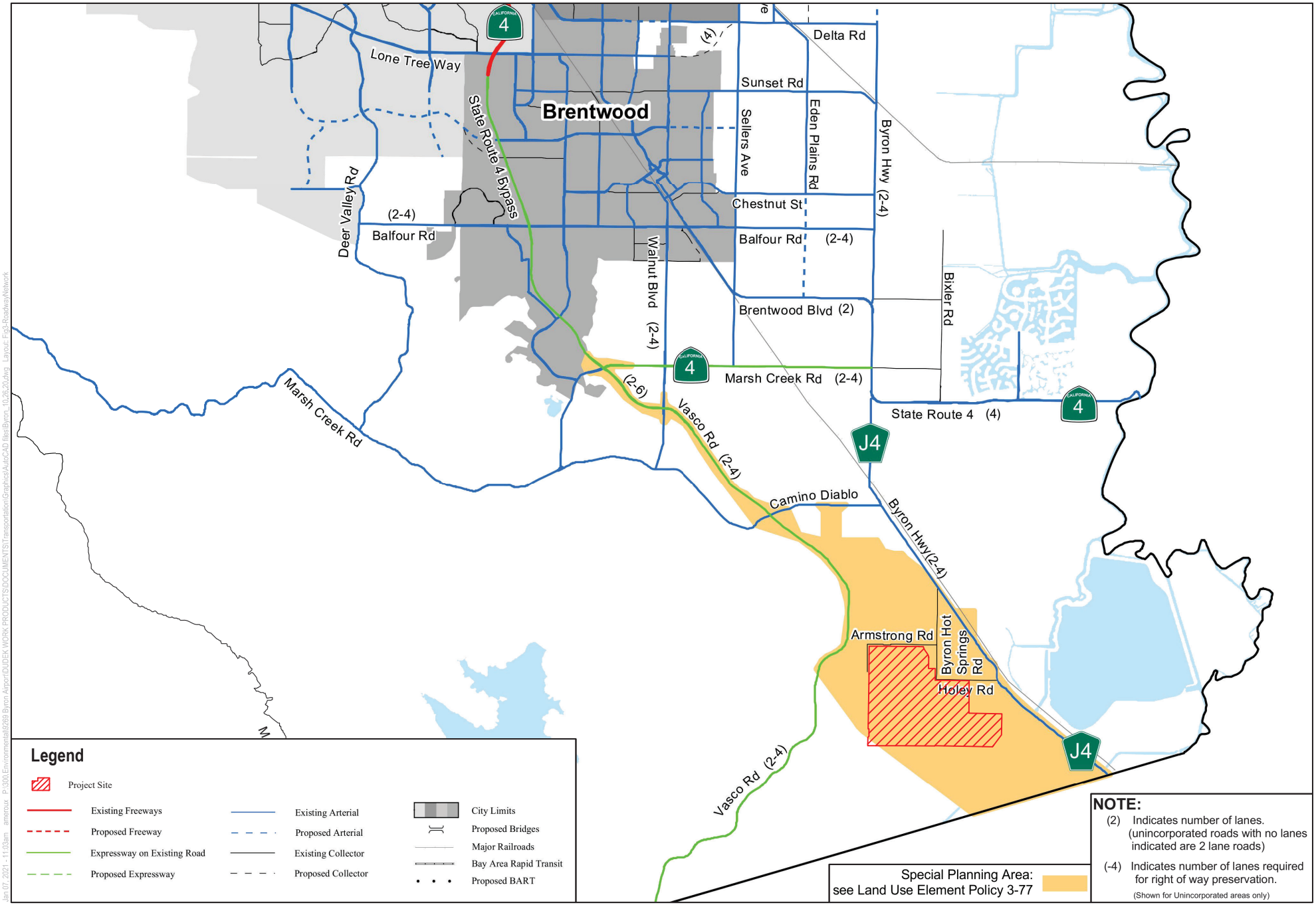
Camino Diablo is an east-west, 2-lane undivided roadway within the study area, extending from Byron Highway to the east, to Marsh Creek Road to the west. East of Byron Highway, Camino Diablo extends east and ends at a private road. The posted speed ranges from 25 MPH to 35 MPH within the unincorporated, census-designated place of Byron , and increases to 50 MPH west of Byron. There are small sections of paved sidewalk along Camino Diablo between Byron Highway and Holway Drive, and parking is generally not permitted along either side of the roadway. Camino Diablo is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Walnut Boulevard is a north-south, 2-lane undivided roadway within the study area, extending from Brentwood City limits to the north, to Camino Diablo to the south. The posted speed limit is 45 MPH. There are no paved sidewalks along either side of the roadway (until Brentwood City limits are reached), and parking is generally not permitted along either side of the roadway. Walnut Boulevard is designated as an Arterial road in the Contra Costa County General Plan Roadway Network Plan.

Mountain House Parkway is a north-south, 6-lane divided roadway within the study area, extending from Byron Highway to the north, to W Schulte Road to the south. South of W Schulte Road, Mountain House Parkway becomes Patterson Pass Road. The posted speed limit is 45 MPH. There are small sections of paved sidewalk along both sides of the road at the I-205 ramps as well as longer sections of paved sidewalk along the west side of the roadway north of W Grant Line Road. Mountain House Parkway is designated as a Minor Arterial in Figure TM-1 of the San Joaquin County Mobility Element.

Byron Hot Springs Road is a north-south, 2-lane undivided roadway within the study area, extending from Byron Highway to the north, and Holey Road to the south. There is no posted speed limit. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Bryon Hot Springs Road is designated as a Collector road in the Contra Costa County General Plan Roadway Network Plan.

Holey Road is an east-west, 2-lane undivided roadway within the study area, extending from Byron Hot Springs Road to the west, to Byron Highway to the east. There is no posted speed limit. There are no paved sidewalks along either side of the roadway, and parking is generally not permitted along either side of the roadway. Holey Road is designated as a Collector road in the Contra Costa County General Plan Roadway Network Plan.



SOURCE: Contra Costa County 2017

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FIGURE 3

Contra Costa County Roadway Network Plan

Byron Airport Development Program

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2.2 Transit System

Eastern Contra Costa Transit Authority (Tri Delta) Tri Delta Transit serves the eastern parts of Contra Costa County (CCTA 2019). However, there are no transit systems near the project site. The nearest Tri Delta Transit bus service is located north of the project area in the City of Brentwood. Routes 385, 391 and 393 operate and provide service at the nearest bus stop.

Route 385 operates between Brentwood Park and Ride and Antioch BART Station via Slatten Ranch Shopping Center. The service is currently available on weekdays only at a frequency of approximately an hour throughout the day.

Route 391 operates between Brentwood Park & Ride and Pittsburg Center Station. The service is currently available on weekdays only at a variable frequency between 25 minutes to an hour throughout the day.

Route 393 operates between Brentwood Park & Ride and Antioch BART Station. The service is currently available on weekends only at a frequency of approximately an hour throughout the day. **TRACER** The City of Tracy offers seven fixed bus routes. Routes A, B, and F operate along Grant Line road; however, no routes extend past the City limits to service areas near the project site.

The nearest passenger train service, including Bay Area Rapid Transit (BART) and Amtrak, is located in the City of Antioch to the north.

There are no other transit system facilities that service the project area. Figure 4 identifies the nearest transit facilities within the study area.

2.3 Pedestrian and Bicycle Facilities

The Contra Costa Countywide Bicycle & Pedestrian Plan (CBPP) identifies the following bicycle facility classifications and descriptions:

Shared-Use Path (Class I Bikeway) – Bike paths provide a completely separate right of way that is designated for the exclusive use of people riding bicycles and walking with minimal cross-flow traffic.

Bike Lane (**Class II Bikeway)** – Using special lane markings, pavement legends, and signage, bike lanes provide designated street space for bicyclists, typically adjacent to the outer vehicle travel lanes.

Buffered Bike Lanes (Class II Bikeway) – Increase separations through painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (such as driveways or intersections).

Bike Route (Class III Bikeway) – Provide enhanced mixed-traffic conditions for bicyclists through signage, sharrow striping, and/or traffic calming treatments, and provide continuity to a bikeway network.

Bicycle Boulevards (Class III Bikeway) – Further enhanced bike routes by encouraging slower speeds and discouraging non-local vehicle traffic using traffic diverters, chicanes, traffic circles, and speed tables.

Protected Bikeway (Class IV Bikeway) – Referred to as cycle tracks or separated bikeways, these are set aside for the exclusive use of bicycles and physically separated from vehicle traffic with vertical separation, including grade

separation, flexible posts, physical barriers, or on-street parking. As defined in the 2015 Federal Highway Administration Separated Bike Lane Planning and Design Guide, Class IV bikeways are differentiated from standard and buffered bike lanes by this vertical element (FHWA 2015).

In addition to the above classifications, the CBPP further categorizes existing and proposed bicycle facilities through a Level of Traffic Stress (LTS) analysis, which assigns a LTS score to the bicycle facility depending on the perceived stress of the cyclist. A brief description of each LTS score is provided below, as defined in the Contra Costa Countywide Bicycle and Pedestrian Plan. Low traffic stress correlates with a LTS score of 1 or 2, and high traffic stress correlates with a LTS score of 3 or 4.

LTS 1 – Physically separated from traffic or low-volume, mixed-flow traffic at 25 mph or less; bike lanes are six-feet wide or more

LTS 2 – Bicycle lanes are 5.5-feet wide or less, next to 30 mph auto traffic; unsignalized crossings of up to five lanes at 30 mph

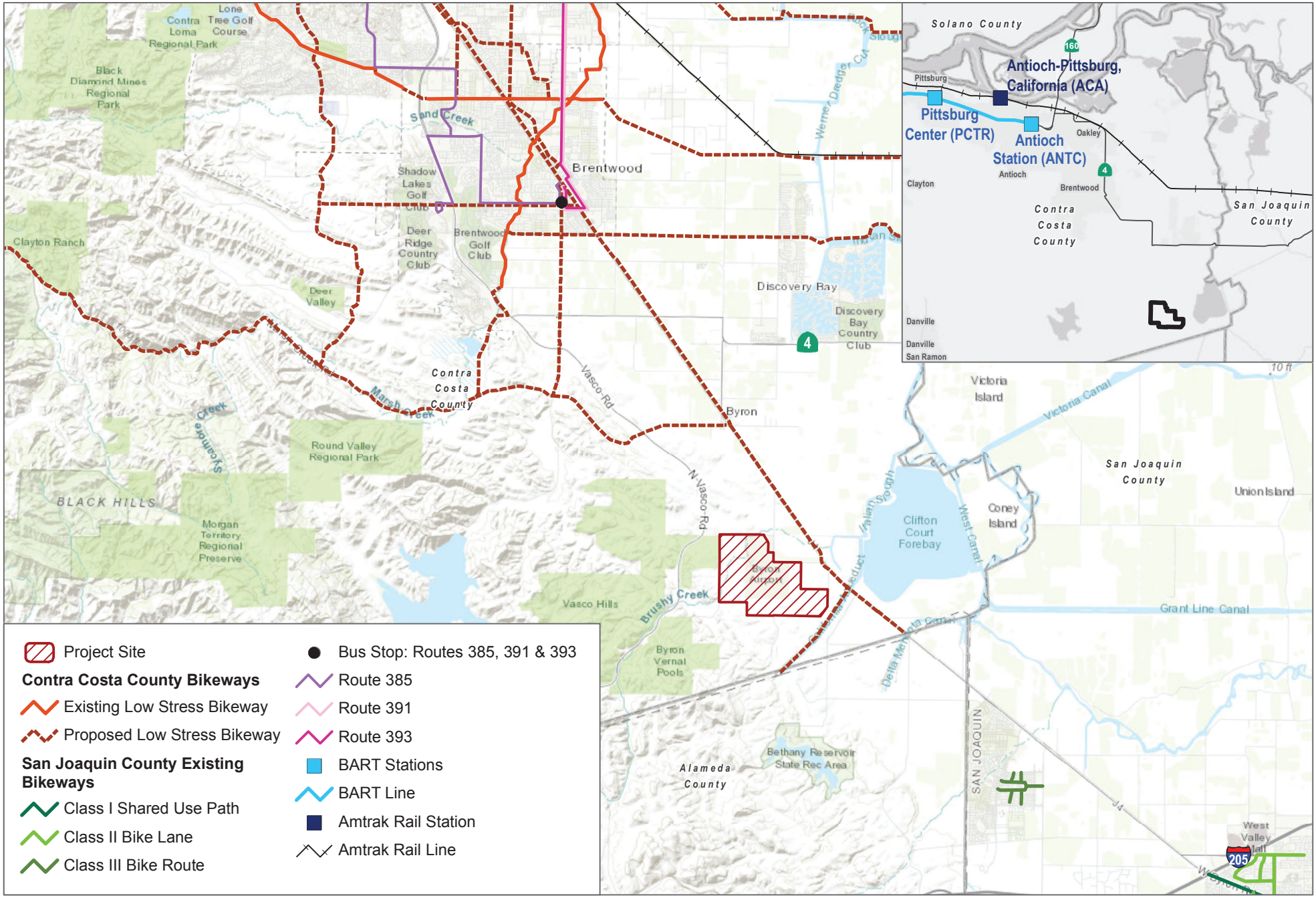
LTS 3 – Bicycle lanes next to 35 mph auto traffic, or mixed-flow traffic at 30 mph or less

LTS 4 – No dedicated bicycle facilities; traffic speeds 40 mph or more

In the study area, Marsh Creek Trail, a shared-use path (Class I Bikeway), runs north of Concord Avenue from Creek Road to Central Boulevard, and is approximately 10 miles northwest from the project site. Marsh Creek Trail bikeway can be accessed via Marsh Creek Road, south of Concord Avenue. Currently, there are no bicycle facilities along Marsh Creek Road; however, Contra Costa County is proposing a low stress bikeway along Marsh Creek Road, as well as Byron Highway and Camino Diablo, as shown in Figure 4A.

Local Bicycle Network in the County is shown on Figure 4B. Per CBPP, as shown on Figure 4B, Class II bicycle lanes are proposed along Byron Hot Springs Road and Holey Road from project site to Byron Highway. The local bicycle network would connect to the low-stress bikeway (Class II) proposed along Byron Highway.

The San Joaquin County Bicycle Master Plan also identifies similar bicycle facilities to those noted above, including Class I Shared Use Paths, Class II Bicycle Lanes, Class II Buffered Bicycle Lanes, and Class III Bicycle Routes (San Joaquin County 2020). The Mountain House community area includes several Class III Bicycles Routes; however, no other San Joaquin County bicycle or pedestrian facilities are located near the project site.



SOURCE: ESRI 2020, County of Contra Costa 2020, County of San Joaquin 2019, BART 2018, USDOT 2016

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FIGURE 4A

Transit and Regional Bicycle Facilities (Existing and Proposed)

Byron Airport Development Program

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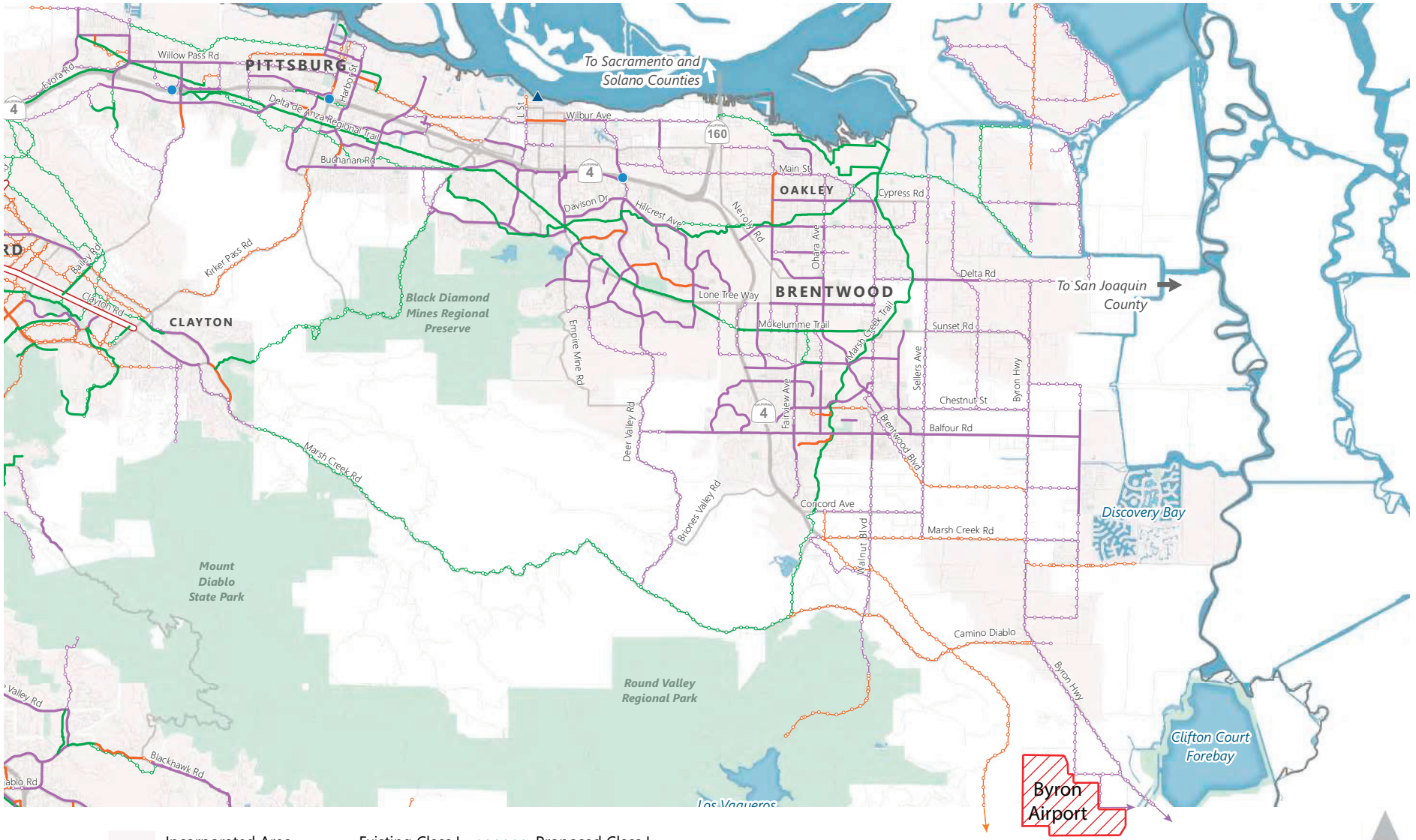

SOURCE: CBPP 2020

FIGURE 4b

Local Bicycle Networks (Existing and Proposed)

Byron Airport Development Program

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3 Project Traffic

This section documents the trip generation, distribution, and assignment of project traffic in the study area.

3.1 Trip Generation

Trip generation estimates for the proposed project are based on daily and AM and PM peak hour trip generation rates and fitted curve equations obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th and 10th Editions* (ITE 2012; 2017). As noted in Table 4 below, the ITE rate for General Aviation Airport (022) from the ITE *Trip General Manual, 9th Edition* was used for the proposed aviation land use. The 9th Edition provides rates per based aircraft (BA), which provides a more accurate representation of the proposed aviation trip generation compared to available rate per employee provided in the 10th Edition. Additionally, 10th Edition rates for ITE rate 022 are only derived from the empirical data of one study, which does not serve as a representative rate for the purposes of this analysis.

As the proposed project contains warehousing, industrial, general commercial, and office land uses, this project is considered a multi-use development. For the proposed general commercial land use, the ITE rate for Shopping Center (820) is the most reflective of trip generation and pass-by for this use. Pass-by trips were calculated using the average pass-by trip percentage presented within the ITE *Trip Generation Manual, 10th Edition,* for the Shopping Center land use. Although the project is not located in a highly populated setting, the project site is located within one mile of Byron Highway, which is a commute corridor between the City of Tracy and northern Contra Costa County. The site would be visible from Byron Highway and would have the potential to draw commuters to proposed commercial land uses that are not otherwise provided along this corridor. Therefore, pass-by trip percentages as provided for the Shopping Center land use in the *ITE Trip Generation Manual, 10th Edition*, are considered applicable to the proposed project.

Additionally, internal trip capture was estimated based on probable interactions between land uses that have potential to interact within the multi-use development. As such, internal trip capture is anticipated between the warehouse, industrial, general commercial, aviation, and office land uses and is shown under each land use in Table 4

Trip generation rates and the resulting trip generation estimates for the project are summarized in Table 4.

Table 4. Project Trip Generation for Byron Airport Development Program

Trip Rates[1]									
				AM Peak Hour			PM Peak Hour		
Land Use	*ITE Code*	*Units*	*Daily*	*% In*	*% Out*	*Total*	*% In*	*% Out*	*Total*
Mini-Warehouse	151	TSF	1.51	60%	40%	0.10	47%	53%	0.17
General Light Industrial	110	TSF	4.06	88%	12%	0.52	13%	87%	0.63
Shopping Center	820	TSF	61.96	62%	38%	2.16	48%	52%	5.57
General Office Building	710	TSF	10.68	86%	14%	1.26	16%	84%	1.15
General Aviation Airport[2]	022	BA	5.00	50%	50%	0.41	55%	45%	0.52

Table 4. Project Trip Generation for Byron Airport Development Program

Trip Generation										
					AM Peak Hour			PM Peak Hour		
Land Use	*ITE Code*	*Size*	*Units*	*Daily*	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Warehouse	151	274	TSF	414	16	11	27	22	25	47
To General Commercial				0	0	0	0	0	0	0
To Office				0	0	0	0	0	0	0
Industrial	110	213	TSF	865	97	13	111	17	117	134
To General Commercial				0	-3	0	-3	-2	-17	-19
To Office				0	0	0	0	0	0	0
General Commercial	820	91	TSF	5,639	122	75	197	243	264	507
To Aviation Uses				0	-1	-1	-2	-7	-9	-16
To Office				0	-3	-3	-6	-15	-4	-19
To Warehouse				0	0	0	0	0	0	0
To Industrial				0	0	-3	-3	-17	-2	-19
Office	710	81	TSF	865	88	14	102	15	78	93
To General Commercial				0	-3	-3	-6	-4	-15	-19
To Warehouse				0	0	0	0	0	0	0
To Industrial				0	0	0	0	0	0	0
Aviation Uses	022	167	BA	835	34	34	68	48	39	87
Project Trips				**8,617**	**348**	**138**	**486**	**300**	**476**	**776**
Shopping Center Pass-by (15% AM, 30% PM reduction)				*0*	*-52*	*-21*	*-73*	*-45*	*-71*	*-116*
Net New Project Trips				**8,617**	**296**	**117**	**413**	**255**	**405**	**660**

Notes: BA = Based Aircraft; TSF = Thousand Square Feet

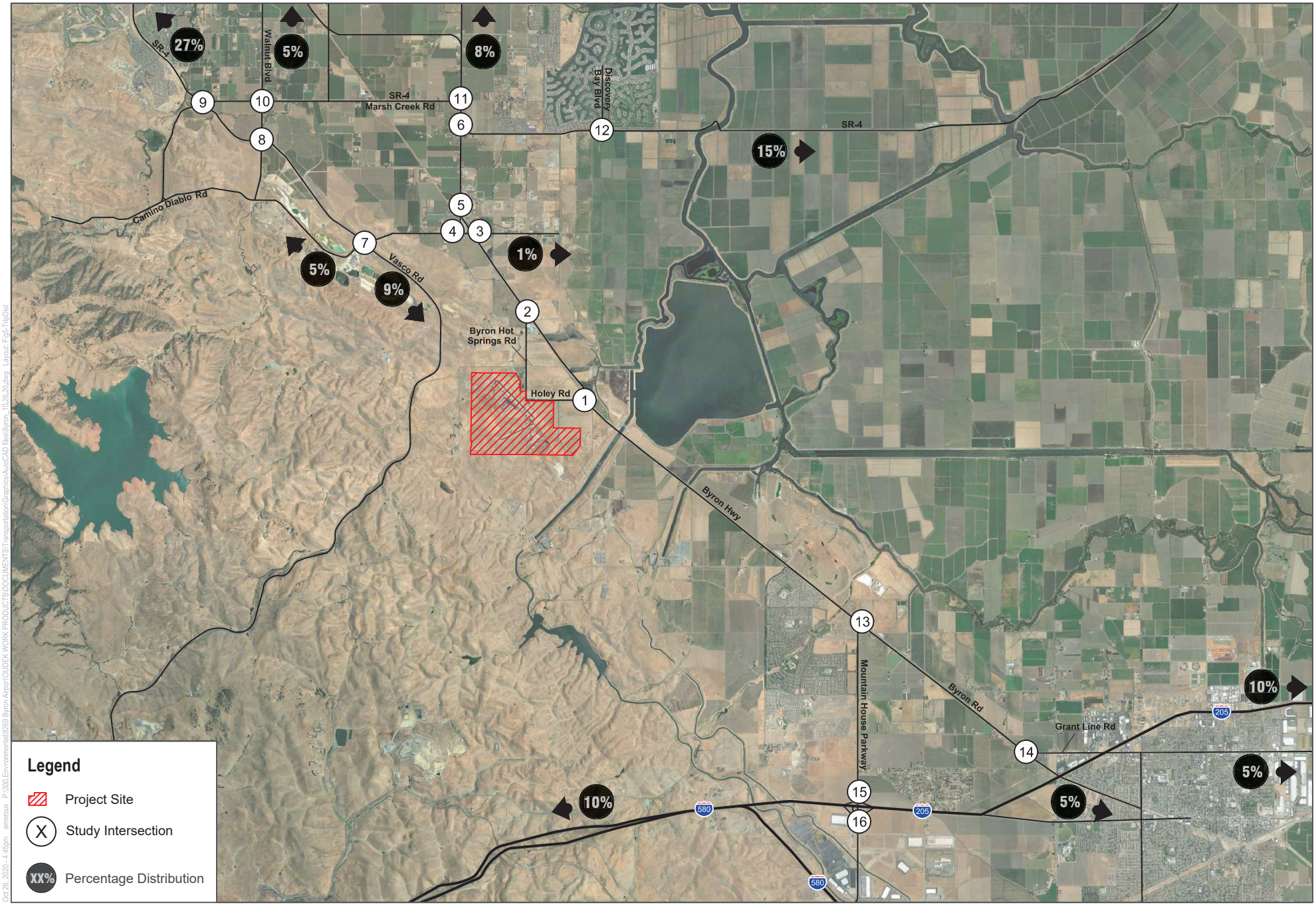
1 Trip rates based on fitted-curve equations or average rates from the ITE Trip Generation Manual, 10th Edition (ITE 2017).

2 Trips rate based on average rates for General Aviation Airport, provided in the Trip Generation Manual, 9th Edition (ITE 2012).

As shown in Table 4, the proposed project would generate 8,617 daily trips, 486 AM peak hour trips (348 inbound and 138 outbound), and 776 PM peak hour trips (300 inbound and 476 outbound). When accounting for shopping center pass-by trip reductions, the proposed project would generate 8,617 net new daily trips, 413 AM net new peak hour trips (296 inbound and 117 outbound), and 660 PM net new peak hour trips (255 inbound and 405 outbound).

3.2 Trip Distribution and Assignment

Project trip distribution percentages were based on logical travel paths to commute corridors throughout the study area and compared with empirical traffic counts and model distributions. Figure 5 identifies the project trip distribution percentages throughout the study area, and Figure 6 identifies the weekday AM and PM peak hour project trip assignments at all study area intersections.



SOURCE: Google Maps 2019

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FIGURE 5

Project Trip Distribution

Byron Airport Development Program

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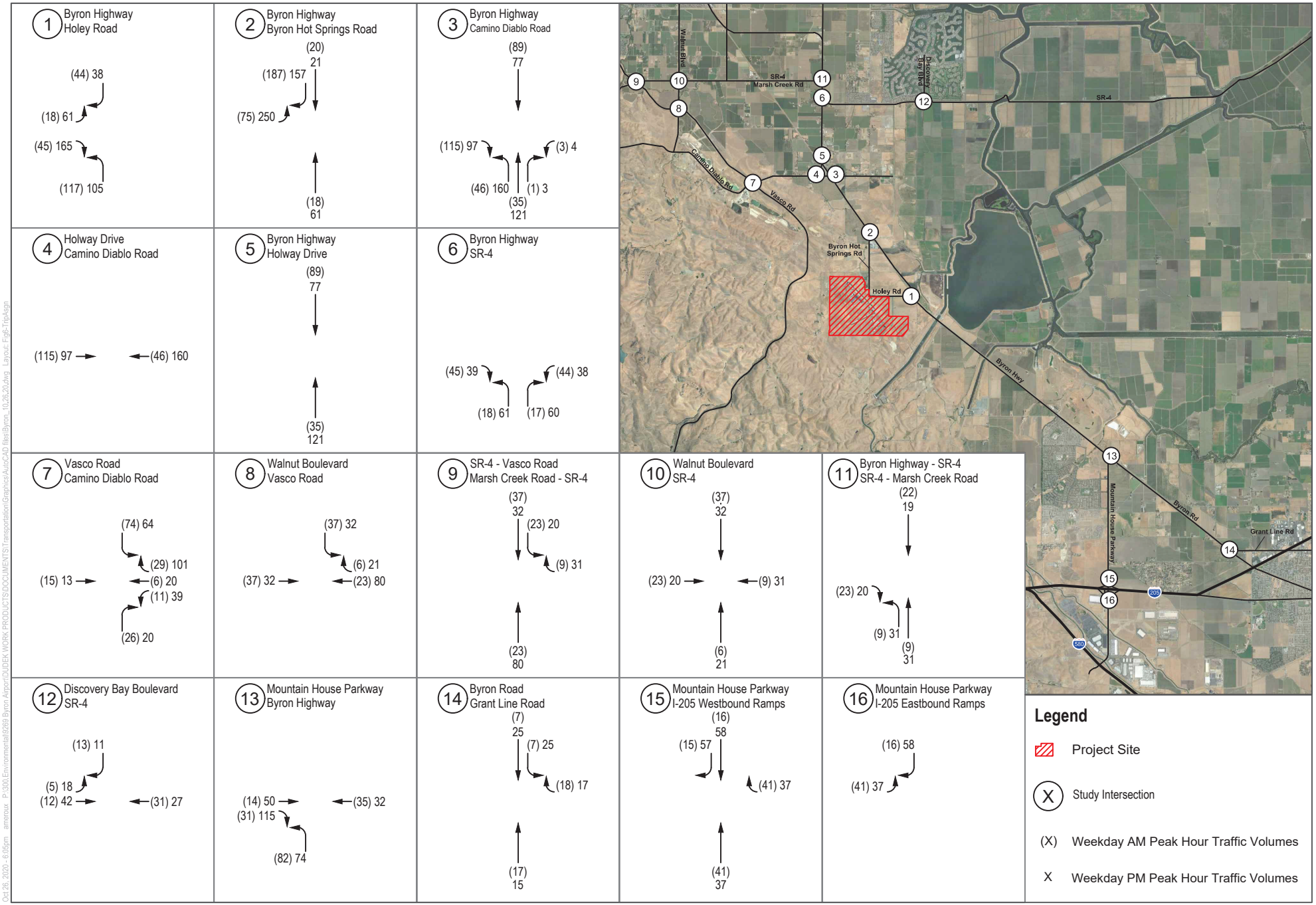

SOURCE: Google Maps 2019

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FIGURE 6

Project Trip Assignment

Byron Airport Development Program

Oct 26, 2020 - 6:05pm amarcus P:\300 Environmental\0269 Byron Airport\DUDEK WORK PRODUCTS\DOCUMENTS\Transportation\Graphics\AutoCAD files\Byron_10.26.20.dwg Layout: Fig6-TripAssgn

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4 Vehicle Miles Traveled Analysis

Pursuant to SB 743, the County Board of Supervisors has adopted the Contra Costa County Transportation Analysis Guidelines (TAG), June 2020, which establish the efficiency standards for VMT to ensure compliance with CEQA. Therefore, for purposes of this TIA, the VMT analysis methodologies and thresholds outlined in County's TAG and the Contra Costa Countywide Travel Demand Model (CCTA model) have been used.

4.1 Screening Analysis

Per the County's guidelines, if a project meets any one of the following criteria it would not require a detailed VMT analysis:

- Projects that:
  - Generate or attract fewer than 110 daily vehicle trips[1]: or,
  - Projects of 10,000 square feet or less of non-residential space or 20 residential units or less, or otherwise generating less than 836 VMT per day.

As shown in project trip generation, the project would generate 8,617 daily trips and therefore would not meet the small project screening criteria.

- Residential, retail, office projects, or mixed-use projects proposed within ½ mile of an existing major transit stop[2] or an existing stop along a high-quality transit corridor[3].

The project is not located within ½ mile of an existing major transit stop or an existing stop along a high-quality transit corridor per Public Resources Code Section 21155 and therefore, would not meet the transit proximity screening.

- Residential projects (home-based VMT) at 15% or below the baseline County-wide home-based average VMT per capita, or employment projects (employee VMT) at 15% or below the baseline Bay Area average commute VMT per employee in areas with low VMT that incorporate similar VMT reducing features (i.e., density, mix of uses, transit accessibility)

As shown in the following VMT analysis, the project is not located within area with low VMT and the project's employee VMT is above the baseline Bay Area average commute VMT per employee. Therefore, the project does not meet the low VMT screening.

- Public facilities (e.g., emergency services, passive parks (low-intensity recreation, open space), libraries, community centers, public utilities) and government buildings.

---

1 CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).). Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

2 Pub. Resources Code, § 21064.3 ("'Major transit stop' means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service, or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.").

3 Pub. Resources Code, § 21155 ("For purposes of this section, a high-quality transit corridor means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.").

The project proposes warehouse, office, and commercial uses which would complement the existing airport use. Since it is not proposing public facilities and government buildings, therefore, the project type screening would not apply.

The proposed project does not meet the screening criteria identified above; therefore, further assessment of project's VMT impact under base year conditions (year 2018) and cumulative conditions (year 2040) is provided below using available significance thresholds and guidance from the County.

4.2 VMT Analysis

4.2.1 Project Level Analysis

The 2010 CCTA model was utilized for VMT analysis of the proposed project. The CCTA is a trip-based model that has been developed using Metropolitan Transportation Commission (MTC) travel demand model. The 2010 Decennial update of the CCTA Model was a major update in which the land use, network assumptions and model processes were updated to reflect the most recent MTC travel demand model. The CCTA model uses TransCAD Version 5.0 (Build 1515) software and generally follows the processes of the MTC trip-based model while providing additional detail within Contra Costa. The model network is updated to reflect the MTC transportation 2035 (T-2035) RTP network. The traffic analysis zones (TAZs) in the Countywide Model began with MTC's 1,099-zone model for the Bay Area that existed at the time the Countywide Model was first developed. Later, approximately 1,700 TAZs were added in the Contra Costa/Tri-Valley Study Area.

The current MTC model consists of 3,120 TAZs, of which 1,495 are located within Contra Costa. Land use and demographic data are required for each TAZ. The demographic data provides the basis for estimating trip generation. Both the demographic and transportation network data are used in predicting trip distribution patterns and mode of travel. The land use data for the model is updated every two to four years. The model land use and demographic inputs for traffic zones within Contra Costa consist of variables such as number of households, residents, employment, household income, high school, and college enrollment etc. The highway and transit networks for the Countywide Model are based on the existing and planned transportation system, including freeways, arterials, major collectors, and selected minor collectors and include virtually all signalized intersections in the study area. The transit network is based on MTC's transit networks with refinements based upon local review by the transit operators. For both highway and transit networks, detailed networks within Contra Costa are combined with MTC networks outside the county. The CCTA Model uses the auto ownership, trip generation, trip distribution and mode choice modules within MTC's BAYCAST-90 model. The model is used to generate highway and transit outputs such as link volumes, intersection turn movements, volume to capacity ratios and vehicle miles traveled as standard outputs.

Consistent with standard modeling practice, to identify VMT from the project, a traffic analysis zone (TAZ) for the project was included in the CCTA model and select zone runs were conducted for year 2018 and 2040. Since the primary purpose of SB 743 is to reduce home-based automobile travel, only the employee VMT related to home-based work (HBW) passenger vehicle travel are reported from the model for the project, the County, and the Bay Area. The findings of the project's VMT analysis for the base year (Year 2018) with and without the project are shown in Table 5 below. Appendix A includes the VMT output from the CCTA model for year 2018 and 2040.

Table 5. Summary of Project's Home-Based-Work VMT per Employee

Criteria	Year 2018 (no Project)	Year 2018 (with Project)
Bay Area Commute VMT (Existing Baseline)	*14.9*	*14.9*
Contra Costa County VMT	14.0	14.0
Byron Airport Zone (Project) VMT	*22.7*	*21.2*
15% below Bay Area Average (Threshold of Significance)	12.7	12.7
Is the Project above or below Threshold?	-	Above the Threshold
% Reduction Required	-	*40%*

Source: Contra Costa Countywide Travel Demand Model

The HBW VMT per employee for the project is 21.2, for the County is 14.0 and for the Bay Area is 14.9. As shown in Table 5, the HBW VMT per employee under with Project scenario, decreases (from 22.7 to 21.2) nominally compared to the no project scenario. HBW VMT per employee is an efficiency metric which is the ratio of total HBW employee VMT and number of employees. Although the HBW VMT and number of employees in the airport zone increase under with project scenario compared to the no project scenario, the ratio of total HBW employee VMT and number of employees decreases nominally. A slight decrease in VMT per employee under with project conditions compared to without project indicates that the project would improve VMT efficiency in the region. However, it should be noted that the VMT significance of threshold requires comparison of the project VMT with the regional average (i.e. Bay Area Average), and not a comparison of with project and no projectscenario. The County threshold for Employment Projects (office, industrial, and institutional projects) is that the projectVMT should be 15% below Bay Area average commute VMT per employee (i.e., hone-based work VMT per employee).The project's HBW VMT per employee (21.2) is higher than the Bay Area VMT per employee (14.9). To meet thethreshold sof 15% below Bay Area Average and have a less than significant VMT impact, the HBW VMT per employeefor the project should be approximately 12.6, which would require a 40% reduction. Therefore, the proposed projectwould have a significant VMT impact. Transportation demand management strategies and mitigation measures thatcan potentially achieve VMT reduction are provided in Chapter 8.

It should be noted that the average trip length for home-based work trips for the Byron Airport Zone (Project) from the CCTA model is approximately 15.6 miles whereas the Bay Area average commute one-way trip length is 13.5 miles and the Contra Costa County home-based work trip length is 11.9 miles. The project site located within a low-density suburb where transit, walk or bike modes are not available. Therefore, a high home-based work VMT per employee for the project zone from the model is representative of the location of the project within the eastern portion of the County.

4.2.2 Cumulative Analysis

Per the County's guidelines, cumulative impacts should be evaluated for consistency with the County General Plan. If a project is consistent with the County General Plan (Envision 2040) and the General Plan remains consistent with its VMT projections as originally analyzed, the project's cumulative impacts shall be less-than significant. However, if the project is inconsistent with the adopted County General Plan, then the analysis should evaluate the project's cumulative VMT impacts and determine if the Countywide VMT increases or decreases with the proposed project relative to the VMT generated by full General Plan buildout.

It should be noted that the County is currently updating its General Plan (Envision 2040) and as mentioned in the project description, the project is proposing to update the ALUCP which would allow non-residential development

that are compatible with the land use plan for Byron Airport. Therefore, the project would be increasing jobs and hence employment related VMT compared to the current General Plan and ALUCP. Table6 provides the total employment VMT estimate from the CCTA model for the Contra Costa County and the Byron Airport zone for the year 2040. It should be noted that for VMT analysis, the cumulative analysis is based on comparing the total VMT with and without project for the Byron Airport Zone with the County, whereas the project analysis is based on comparing the efficiency metric i.e. the HBW VMT per employee of the project zone with the regional average (i.e. Bay Area Average).

Table 6. Cumulative VMT (Total Employment VMT) Criteria	Year 2040 (no Project)	Year 2040 (with Project)	Net Increase in VMT
Contra Costa County VMT	20,611,607	20,635,911	24,304
Byron Airport Zone (Project) VMT	2,557	32,046	29,489

Source: Contra Costa Countywide Travel Demand Model

Since the Countywide VMT would increase with the proposed project relative to the total VMT generated by the County under year 2040 conditions, the project's cumulative impacts would be considered significant.

5 Project Access, Queuing and Safety Considerations

5.1 Project Access

Regional access to Byron Airport and the project site is provided via SR-4 to the north, I-205 to the south, and Byron Highway to the east. Direct access to the project site is provided via Holey Road and Byron Hot Springs Road from Byron Highway. Both Holey Road and Byron Hot Springs Road are two-lane collector roads, with minor street stop control at their intersections with Byron Highway. Additionally, Armstrong Road provides a connection to Falcon Way and the western portion of the project site from Byron Hot Springs Road. Existing counts at these intersections are provided in Appendix B.

The levels of service at the two project access roads from Byron Highway (intersections #1 and #2) is provided in the following chapters and summarized in Table 7 below for all analysis scenarios.

Table 7. Project Access Level of Service

Scenario	Peak Hour	# 1. Byron Highway/Holey Road		#2. Byron Highway/Byron Hot Springs Road	
		Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
Existing plus Project	AM	25.1	D	**85.6**	**F**
	PM	**183.7**	**F**	**1695.7**	**F**
Future Year 2040 plus Project	AM	29.6	D	**525.5**	**F**
	PM	**525.5**	**F**	**4007.9**	**F**

Notes
1 Delay in seconds per vehicle
2 Level of Service (LOS)
XX – Unsatisfactory Level of Service

Both intersections were analyzed as two-way stop controlled (TWSC) intersections. As such, the turning movement with the highest delay is reported. As shown in Table 4, both project access study intersections are forecast to operate at LOS F during the PM peak hour at Intersection 1, and during both peak hours at intersection 2 in both study scenarios. The western leg of the intersection is stop controlled at both intersections, and the eastbound left-turning movement is the primary cause for the deficient LOS during all scenarios. All other movements at the intersection operate at LOS A or B.

The detailed LOS worksheets for all project access intersections are included in Appendix C. Improvement measures are identified for both intersections in Chapter 8.3.1.

5.2 Queuing Analysis

5.2.1 Project Access Driveways

A queuing analysis was prepared at the intersections of Holey Road and Byron Hot Springs Road with Byron Highway to determine the potential for queuing hazards both on the minor streets and along Byron Highway. Queuing

summaries for Existing and Future Year 2040 conditions are provided in Tables 5 and 6, respectively. Queuing reports are provided in Appendix D.

As shown in Tables 8 and 9, calculated 95th percentile (design) queues for the Existing and Future Year plus Project conditions, respectively, exceed available vehicle storage capacities at both intersections. As no turning pockets or two-way-left-turn (TWLTL) facilities are provided along Byron Highway at the project access study intersections, storage capacity does not exist and therefore has been assumed to be zero. For stop-controlled side-street movements, storage capacity is measured from the study intersection to the nearest paved intersecting roadway for the purpose of this analysis.

Queuing on Byron Highway, specifically at the northbound left turning movements onto Byron Hot Springs Road and Holey Road, could lead to increased delays and degradation of Byron Highway traffic operations. Although the project would directly not add northbound left-turning movements to the intersection of Byron Highway/Byron Hot Springs Road, increased project traffic at other movements (i.e. eastbound left-turning movement from Byron Hot Springs Road) would impact queueing of the northbound travel lane. As discussed in Chapter 5.1 and shown in Table 7, both intersections operate at deficient levels of service, and improvement measures are identified for both intersections in Chapter 8.3.1. Implementation of these improvement measures would reduce queuing at both intersections with improvements to the delay.

Table 8. Project Access Queuing Summary - Existing plus Project

No.	Intersection	Movement	Vehicle Storage Length[1]	Existing				Existing plus Project				Improvement Warranted?
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	
1	Byron Highway/Holey Road	EBLR	2040	22	No	28	No	56	No	330	No	No
		NBLT	0	3	**Yes**	15	**Yes**	207	**Yes**	204	**Yes**	**Yes[3]**
		SBTR	0	0	No	0	No	8	**Yes**	7	**Yes**	No[4]
2	Byron Highway/Byron Hot Springs Road	EBLR	1705	62	No	48	No	186	No	895	No	No
		NBLT	0	33	**Yes**	0	No	129	**Yes**	0	No	**Yes[3]**
		SBTR	0	9	**Yes**	7	**Yes**	16	**Yes**	20	**Yes**	No[4]

Source: Appendix D

Notes: NBLR = northbound left-through lane; EBLR = eastbound left-right lane; SBTR = southbound through-right lane.

1 Available storage length (feet) is measured from the study intersection to the nearest paved intersecting roadway for stop-controlled side-street movements. No existing storage lanes are provided along Byron Highway; therefore, the storage length is assumed to be zero.[2] Based on 95th percentile (design) queue length (feet) in SimTraffic 10

3 Queuing could result in delays and degradation of Byron Highway traffic operations.

4 Although queues may extend onto Byron Highway for SBTR movements, these lengths (less than one car length) would result in negligeable degradation to the flow of southbound traffic and would not warrant improvements.

Table 9. Project Access Queuing Summary – Future Year 2040 plus Project

No.	Intersection	Movement	Vehicle Storage Length1	Future Year 2040				Future Year 2040 plus Project				Improvement Warranted?
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	*95th Percentile Queue[2]*	*Exceeds Vehicle Storage Length?*	
1	Byron Highway/Holey Road	EBLR	2040	26	No	57	No	83	No	737	No	No
		NBLT	0	28	**Yes**	43	**Yes**	347	**Yes**	305	**Yes**	**Yes[3]**
		SBTR	0	0	No	0	No	13	**Yes**	7	**Yes**	No[4]
2	Byron Highway/Byron Hot Springs Road	EBLR	1705	866	No	136	No	857	No	859	No	No
		NBLT	0	62	**Yes**	0	No	195	**Yes**	0	**Yes**	**Yes[3]**
		SBTR	0	13	**Yes**	0	No	16	**Yes**	8	**Yes**	No[4]

Source: Appendix D

Notes: NBLR = northbound left-through lane; EBLR = eastbound left-right lane; SBTR = southbound through-right lane.

1 Available storage length is measured from the study intersection to the nearest paved intersecting roadway for stop-controlled side-street movements. No existing storage lanes are provided along Byron Highway; therefore, the storage length is assumed to be zero.

2 Based on 95th percentile (design) queue length in SimTraffic 10

3 Although queuing would not impact the nearest paved intersection roadway, queuing could increase delays and degradation of Byron Highway traffic operations.

4 Although queues may extend onto Byron Highway for SBTR movements, these lengths (less than one car length) would result in negligeable degradation to the flow of southbound traffic and would not warrant improvements.

5.2.2 Caltrans Off-Ramps

Due to the potential for the proposed project to add traffic to Caltrans facilities within the study area, the following Caltrans freeway off-ramps were analyzed for queuing impacts:

- Mountain House Parkway/ I-205 westbound ramps
- Mountain House Parkway/I-205 eastbound ramps

As shown in Table 10, no peak 95th percentile queues are expected to exceed the storage pocket lengths in the Existing plus Project conditions. However, as shown in Table 11, peak 95th percentile queues are expected to exceed storage pocket lengths in the Future Year 2040 plus Project, AM peak hour conditions at the Mountain House Parkway/I-205 westbound ramp intersection and for the following turning movements:

- Westbound left-thru lane (WBLT): This is a storage lane that extends from the intersection to approximately 700 feet from the stop bar. It is expected that forecast queues would extend past the available pocket length and contribute to queuing in the adjacent westbound right turn lane (WBR1 and WBR2), which serve as the primary off-ramp lanes from the freeway mainline.
- Westbound right-turn lane 1 (WBR1): This is a primary off-ramp lane that extends from the intersection to approximately 1,515 feet to the gore line at the I-205 mainline. It is expected that forecast queues would extend past the available storage length and contribute to existing queueing into the mainline.
- Westbound right-turn lane 2 (WBR2): This is a primary off-ramp lane that extends from the intersection to approximately 1,515 feet to the gore line at the I-205 mainline, and serves as an exit-only lane from the 11th Street on-ramp, approximately 1-mile upstream. It is expected that forecast queues would extend past the available storage length and contribute to existing queueing into the mainline within this exit-only lane.

When comparing the Future Year 2040 scenario with the addition of the proposed project, queueing is forecast to increase for all movements during the AM peak hour at the Mountain House Parkway/I-205 westbound ramps; vehicle traffic would continue to spill into the mainline lanes in Future Year 2040 no Project and plus Project conditions.

No current funded or planned improvements are identified at the I-205 westbound ramps with Mountain House Parkway. The TriLink (SR-239) Feasibility Study Final Report identifies potential alignments for the proposed SR-239 corridor between SR-4 to the north and I-580 and/or I-205 to the south, which would reduce traffic volumes on I-580, Vasco Road, and Byron Highway (CCTA 2014). As such, shifts in regional traffic patterns could also reduce congestion and queuing at the Mountain House Parkway/I-205 westbound ramps. However, as the SR-239 Feasibility Study does not identify specific improvements, nor are specific improvements planned or funded in the area, hazards related to queuing at this off-ramp would remain significant and unavoidable.

Table 10. Existing plus Project Caltrans Off-Ramp Queuing Summary

No.	Intersection	Movement	Pocket Length[1]	Existing Conditions				Existing plus Project				Improvement Warranted
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	
15	Mountain House Parkway/ I-205 westbound ramps	WBLT	700	278	No	167	No	250	No	164	No	No
		WBR1[3]	1515	54	No	53	No	53	No	60	No	No
		WBR2[3]	1515	51	No	50	No	53	No	50	No	No
16	Mountain House Parkway/ I-205 eastbound ramps	EBL[3]	1555	63	No	75	No	61	No	84	No	No
		EBLT[3]	1555	47	No	78	No	61	No	82	No	No
		EBR	465	57	No	38	No	63	No	37	No	No

Source: Appendix D

Notes: Caltrans = California Department of Transportation; I = Interstate; EBL = eastbound left-turn lane; EBR = eastbound right-turn lane; EBLT = eastbound left-thru lane; WBLT = westbound left-thru lane; WBR = westbound right-turn lane (#1, 2, etc. indicates multiple right turn lanes)

1 Measured in feet.

2 Based on 95th percentile (design) queue length in SimTraffic 10.

3 Primary off-ramp lane; approximate length measured from freeway mainline. Length measured from stop bar to gore line at mainline.

Table 11. Future Year 2040 plus Project Caltrans Off-Ramp Queuing Summary

No.	Intersection	Movement	Pocket Length[1]	Future Year 2040 Conditions				Future Year 2040 plus Project				Improvement Warranted
				AM Peak Hour		*PM Peak Hour*		*AM Peak Hour*		*PM Peak Hour*		
				95th Percentile Queue[2]	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	*95th Percentile Queue[2]*	*Exceeds Turn Pocket Length?*	
15	Mountain House Parkway/I-205 westbound ramps	WBLT	700	925	**Yes**	249	No	932	**Yes**	257	No	**Yes[4]**
		WBR1[3]	1515	2266	**Yes**	109	No	2386	**Yes**	109	No	**Yes**
		WBR2[3]	1515	2122	**Yes**	99	No	2306	**Yes**	105	No	**Yes**
16	Mountain House Parkway/ I-205 eastbound ramps	EBL[3]	1555	67	No	111	No	85	No	127	No	No
		EBLT[3]	1555	63	No	119	No	84	No	132	No	No
		EBR	465	66	No	44	No	66	No	42	No	No

Source: Appendix D

Notes: Caltrans = California Department of Transportation; I = Interstate; EBL = eastbound left-turn lane; EBR = eastbound right-turn lane; EBLT = eastbound left-thru lane; WBLT = westbound left-thru lane; WBR = westbound right-turn lane (#1, 2, etc. indicates multiple right turn lanes)

Bold – Queue exceeds storage length; Highlight – Queue exceeds storage length and impacts the freeway mainline.

1 Measured in feet.

2 Based on 95th percentile (design) queue length in SimTraffic 10.

3 Primary off-ramp lane; approximate length measured from freeway mainline. Length measured from stop bar to gore line at mainline.

4 Although queue does not impact mainline lanes, queue would contribute to queueing in adjacent lanes.

5.3 Pedestrian and Bicycle Access

As discussed in Chapter 4.3, Marsh Creek Trail, the nearest bicycle facility is a shared-use path (Class I Bikeway) that runs north of Concord Avenue from Creek Road to Central Boulevard, located approximately 10 miles northwest from the project site. Currently, there are no pedestrian facilities within the project vicinity. Proposed Class II bicycle lanes are planned along Byron Highway, Byron Hot Springs Road, and Holey Road, and are identified in Figure 4B, per the CBPP.

Due to the lack of connectivity and significant development in the immediate project vicinity, it is expected that pedestrian activity will remain very light. However, per the County's guidelines, the project is expected to provide continuous sidewalks along the project frontage. Pedestrian sidewalks, crosswalks, and accessible paths of travel should be provided within the project area as follows:

- Within the developed core to allow easy access to each building
- Where feasible, configure sidewalks to channel pedestrians to crosswalks
- Between public street and the developed core

Additionally, the project must comply with the County's Complete Streets Policy, which requires the needs of all users (including pedestrians, cyclists, motorists, and transit riders) to be met during street design. The County's Complete Streets Policy was adopted by Resolution No. 2016-374 by the Board of Supervisors of Contra Costa County on July 12, 2016 (Contra Costa County 2016).

6 Existing Traffic Conditions

The existing traffic controls and geometrics at the study area intersections is shown in Figure 7. This section details the existing traffic volumes and the existing intersection and Routes of Regional Significance operations within the study area.

6.1 Existing Traffic Operations

6.1.1 Traffic Volumes

As was described previously in Section 1.3 Analysis Methodology, the existing condition is representative of the year 2015, consistent with the project's NOP and DEIR. Therefore, all traffic counts utilized within this analysis were either collected in the year 2015 or collected in different years and subsequently adjusted to reflect the year 2015 counts.

Traffic counts were balanced to be consistent with 2015 volumes. Many of the 2015 volumes were for intersections located within the immediate vicinity of the project site. In order to provide a consistent analysis, and because the existing condition relies on the year 2015 as the baseline condition, all other intersections were balanced according to the 2015 intersection volumes. Therefore, volumes for other intersections, which were collected from 2011 to 2017, were then balanced in an iterative and systematic approach, and applied using engineering judgement to create a comprehensive 2015 baseline existing condition. Additionally, it must be noted that volume balancing takes into consideration cross streets, driveways, or other intersecting roadway facilities between study intersections. As such, discrepancies may exist when one or more roadway facility intersects between two study intersections, where vehicle traffic can enter or exit the primary roadway. For example, Bixler Road along with several smaller roadways and driveways, exist between intersection 6 (Byron Highway/SR-4) and intersection 12 (Discovery Bay Boulevard/SR-4), in which large traffic volumes can flow to or from SR-4 between the two intersections. Similar observations were made between several study intersections, including those along Marsh Creek Road – SR-4, between intersections 10 and 11; along SR-4 between intersections 1 and 13; and along Mountain House Parkway, between intersections 13 and 15.

The traffic counts were also balanced to be consistent with the 2015 volumes based on their original turning movement percentages. All counts were collected on a typical weekday non-holiday period. Traffic counts were obtained from other traffic studies in the area, historical counts, and from CCTA. Raw traffic count worksheets are provided in Appendix B. The following details which year the traffic counts were used for each intersection in chronological order:

- Intersection 11 (collected in 2011)
- Intersections 10 and 12 (collected in 2013)
- Intersections 1-7, 9, and 14 (collected in 2015)
- Intersections 8 and 13 (collected in 2016)
- Intersections 15 and 16 (collected in 2017)

The existing conditions analysis focuses on the weekday daily, AM (7:00 a.m. to 9:00 a.m.) and the PM (4:00 p.m. to 6:00 p.m.) peak periods. The peak periods represent the highest volume of traffic for the adjacent street system. The adjusted existing weekday AM and PM peak hour volumes are summarized in Figure 8.

6.1.2 Intersection Operations

An intersection LOS analysis was prepared for existing conditions using the HCM 6th Edition methodology via the Synchro LOS software for all study intersections as described in Section 1.3 Analysis Methodology. Table 12 shows the results of the existing conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, all the study area intersections are currently operating at satisfactory levels of service (at LOS D or better) except for the intersections of:

- Byron Highway/Byron Hot Springs Road – operates at LOS F (57.7 second delay) during the PM peak hour.
- Byron Highway/Holway Drive – operates at LOS F (65.9 second delay) during the PM peak hour.
- Walnut Boulevard/SR-4 – operates at LOS E (59.7 second delay) during the PM peak hour.
- Byron Road/Grant Line Road – operates at LOS E (65.9 second delay) during the AM peak hour and operates at LOS F (102.8 second delay) during the PM peak hour.

The intersections of Mountain House Parkway with I-205 ramps operate under the jurisdiction of Caltrans; therefore, as no LOS standards are currently available per the updated Caltrans TISG (May 2020) as discussed in Section 1.3, no inconsistencies can be concluded. However, both ramp intersections operate at satisfactory level of service goals (LOS D or better) per both Contra Costa County and San Joaquin County guidelines.

Table 12. Existing Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Existing			
				AM Peak		*PM Peak*	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
1	Byron Highway/Holey Road	Contra Costa County	TWSC	12.7	B	22.7	C
2	Byron Highway/Byron Hot Springs Road	Contra Costa County	TWSC	24.0	C	**57.7**	**F**
3	Byron Highway/Camino Diablo	Contra Costa County	Signal	28.1	C	33.3	C
4	Holway Drive/Camino Diablo	Contra Costa County	TWSC	20.2	C	33.9	D
5	Byron Highway/Holway Drive	Contra Costa County	TWSC	25.9	D	**65.9**	**F**
6	Byron Highway/SR-4	Contra Costa County	Signal	15.9	B	12.3	B
7	Vasco Road/Camino Diablo	Contra Costa County	Signal	22.2	C	45.1	D

Table 12. Existing Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Existing			
				AM Peak		*PM Peak*	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
8	Walnut Boulevard/Vasco Road	Contra Costa County	Signal	35.3	D	39.4	D
9	SR-4 - Vasco Road/Marsh Creek Road - SR-4	Contra Costa County	Signal	15.8	B	19.5	B
10	Walnut Boulevard/SR-4	Contra Costa County	Signal	23.5	C	**59.7**	**E**
11	Byron Highway - SR-4/SR-4 - Marsh Creek Road	Contra Costa County	Signal	14.5	B	16.3	B
12	Discovery Bay Boulevard/SR-4	Contra Costa County	Signal	21.0	C	27.3	C
13	Mountain House Parkway/Byron Highway	San Joaquin County	Signal	11.6	B	17.6	B
14	Byron Road/Grant Line Road	San Joaquin County	Signal	**65.9**	**E**	**102.8**	**F**
15	Mountain House Parkway/I-205 westbound ramps	Caltrans	Signal	12.4	B	9.2	A
16	Mountain House Parkway/I-205 eastbound ramps	Caltrans	Signal	4.3	A	6.7	A

Source: Appendix C
Notes: HCM = Highway Capacity Manual; TWSC = Two-Way Stop-Controlled
1 Delay in seconds per vehicle
2 Level of Service (LOS)
XX – Unsatisfactory Level of Service

6.1.3 Routes of Regional Significance Operations

A rural two-lane roadway segment analysis as outlined in Chapter 15 of the Highway Capacity Manual intersection LOS analysis was prepared for existing conditions using the HCM 6th Edition methodology via the HCS 7 software for all study area routes of regional significance as described in Section 1.3 Analysis Methodology. Table 13 shows the results of the existing conditions analysis. LOS worksheets are provided in Appendix C. As shown in the table, all the study area routes of regional significance are currently operating at satisfactory levels of service (at LOS D or better) except for the segments of:

Vasco Road, between Marsh Creek Road and Camino Diablo -- operates at LOS E (58.8 average speed and 13.7 follower density) during the AM peak hour and operates at LOS E (58.4 average speed and 18.1 follower density) during the PM peak hour.

Byron Highway, between SR-4 and San Joaquin County Line -- operates at LOS E (47.2 average speed and 12.2 follower density) during the PM peak hour.

Table 13. Existing Routes of Regional Significance Level of Service

Roadway Facility	Extent	No. of Segments	Existing					
			AM Peak Hour			PM Peak Hour		
			Average Speed[1]	*Follower Density*[2]	*LOS*	*Average Speed*[1]	*Follower Density*[2]	*LOS*
SR-4	Marsh Creek Road to Discovery Bay Boulevard	4	55.4	7.7	C	56.9	9.3	D
Vasco Road	Marsh Creek Road to Camino Diablo	2	58.8	13.7	**E**	58.4	18.1	**E**
Byron Highway	SR-4 to San Joaquin County Line	2	47.5	8.1	D	47.2	12.2	**E**
Camino Diablo	Vasco Road to Byron Highway	2	45.2	5.5	C	44.9	6.8	C
Walnut Boulevard	Marsh Creek Road to Vasco Road	1	48.2	5.9	C	47.8	10.0	C

Source: Appendix C
Notes:
1 Speed in units of miles per hour averaged across all segments within the facility
2 Follower density in units of followers/mile/lane
XX – Unsatisfactory Level of Service

As shown in the table, all the study area routes of regional significance are currently operating at satisfactory levels of service (at LOS D or better) except for the segments of:

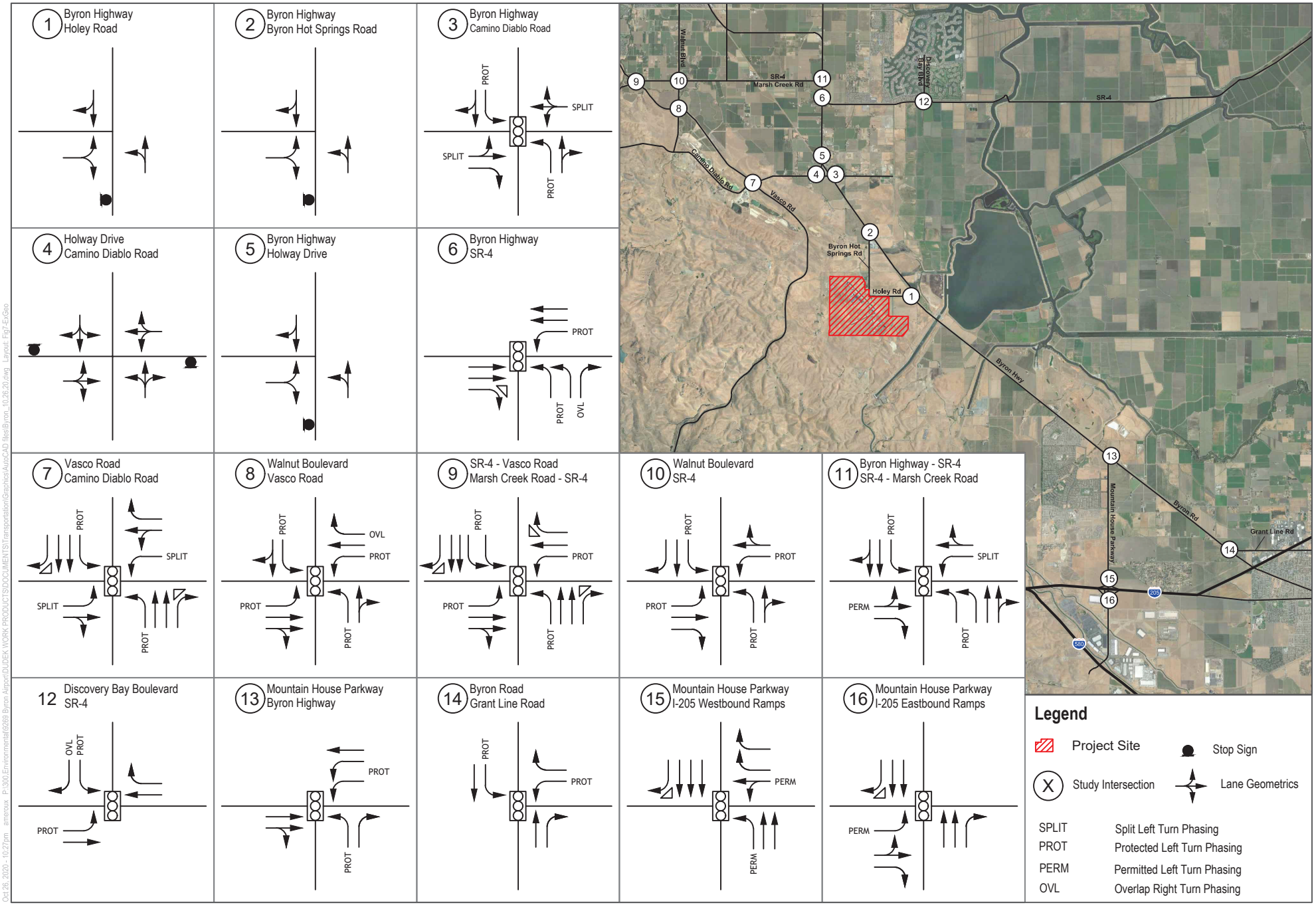
- Vasco Road, between Marsh Creek Road and Camino Diablo -- operates at LOS E (58.8 average speed and 13.7 follower density) during the AM peak hour and operates at LOS E (58.4 average speed and 18.1 follower density) during the PM peak hour.
- Byron Highway, between SR-4 and San Joaquin County Line -- operates at LOS E (47.2 average speed and 12.2 follower density) during the PM peak hour.

6.2 Existing plus Project Traffic Operations

This section details the Existing plus Project traffic volumes and intersection operations within the study area.

6.2.1 Traffic Volumes

Project traffic volumes shown in Figure 6 were added to the Existing traffic volumes shown in Figure 8 to derive the Existing plus Project traffic condition. Figure 9 shows the Existing plus Project traffic volumes.



SOURCE: Google Maps 2019

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FIGURE 7

Existing Intersection Controls and Geometrics

Byron Airport Development Program

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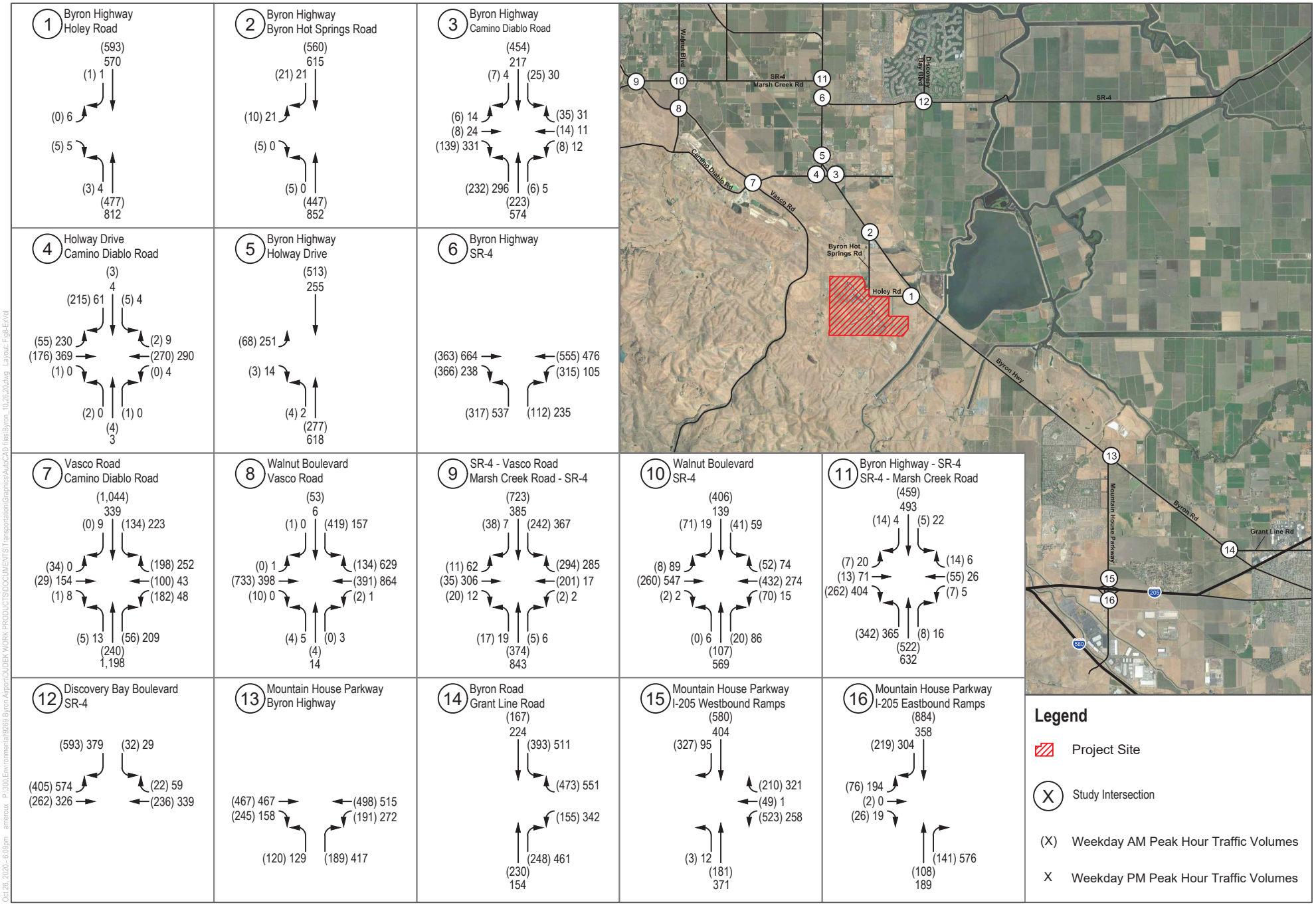

SOURCE: Google Maps 2019

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FIGURE 8

Existing Peak Hour Traffic Volumes

Byron Airport Development Program

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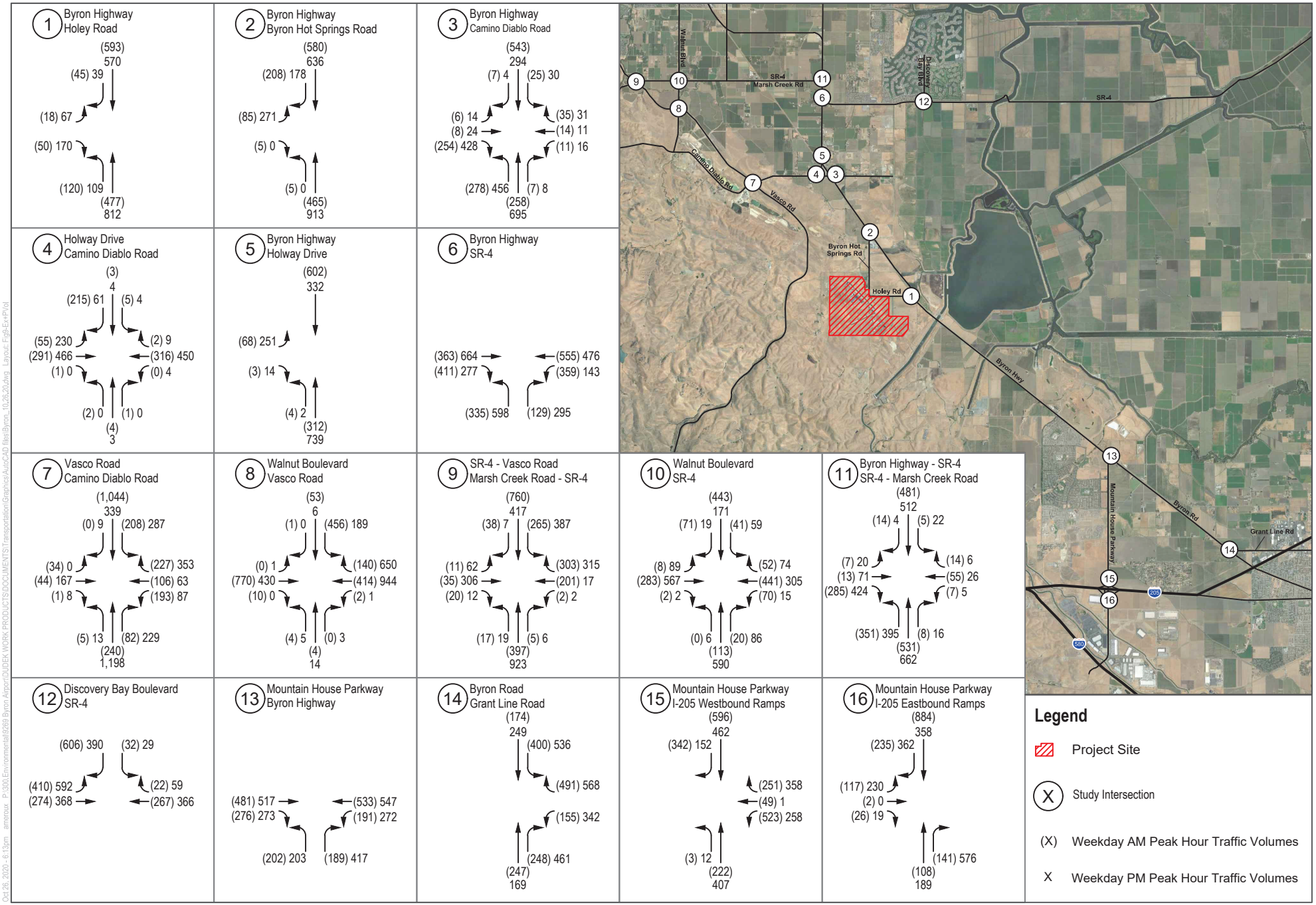

SOURCE: Google Maps 2019

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FIGURE 9

Existing plus Project Peak Hour Traffic Volumes

Byron Airport Development Program

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6.2.2 Intersection Operations

An intersection LOS analysis was prepared for the Existing plus Project conditions using the HCM 6th Edition methodology via the Synchro LOS software for all study intersections as described in Section 1.3 Analysis Methodology. Table 14 shows the results of the Existing plus Project conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, most of the study area intersections are forecast to operate at satisfactory levels of service (at LOS D or better), however the project's contribution to traffic to the following intersections would cause LOS to be inconsistent with LOS standards:

- Byron Highway/Holey Road – project adds 161.0 seconds of delay and degrades from LOS C to LOS F (183.7 second delay) during the PM peak hour.
- Byron Highway/Byron Hot Springs Road – project adds 61.6 seconds of delay and degrades from LOS C to LOS F (85.6 second delay) during the AM peak hour; remains at LOS F (>300 second delay) during the PM peak hour (project contribution is >300 second delay).
- Byron Highway/Camino Diablo – project adds 49.3 seconds of delay and degrades from LOS C to LOS F (82.6 second delay) during the PM peak hour.
- Holway Drive/Camino Diablo – project adds 98.3 seconds of delay and degrades from LOS D to LOS F (53.2 second delay) during the PM peak hour.
- Byron Highway/Holway Drive – remains at LOS F (164.2 second delay) during the PM peak hour (project contribution is 98.3 second delay).
- Vasco Road/Camino Diablo – project adds 23.8 seconds of delay and degrades from LOS D to LOS E (68.9 second delay) during the PM peak hour.
- Walnut Boulevard/Vasco Road – project adds 18.5 seconds of delay and degrades from LOS D to LOS E (57.9 second delay) during the PM peak hour.
- Walnut Boulevard/SR-4 – remains at LOS E (65.2 second delay) during the PM peak hour (project contribution is 5.5 second delay).
- Byron Road/Grant Line Road – remains at LOS E (72.0 second delay) during the AM peak hour (project contribution is 6.1 second delay); remains at LOS F (96.6 second delay) during the PM peak hour (project contribution is -6.2 second delay).

The intersections of Mountain House Parkway with I-205 ramps operate under the jurisdiction of Caltrans; therefore, as no LOS standards are currently available per the updated Caltrans TISG (May 2020) as discussed in Section 1.3, no inconsistencies can be concluded. However, both ramp intersections continue to operate at satisfactory level of service goals (LOS D or better) per both Contra Costa County and San Joaquin County guidelines.

6.2.3 Routes of Regional Significance Operations

A rural two-lane roadway segment analysis as outlined in Chapter 15 of the Highway Capacity Manual intersection LOS analysis was prepared for the Existing plus Project conditions using the HCM 6th Edition methodology via the HCS 7 software for all study area routes of regional significance as described in Section 1.3 Analysis Methodology. Table 15 shows the results of the Existing plus Project conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, all the study area routes of regional significance are will continue to operate at satisfactory levels of service (at LOS D or better) except for the segments of:

- Vasco Road, between Marsh Creek Road and Camino Diablo – continues to operate at LOS E (58.7 average speed and 14.8 follower density) during the AM peak hour and at LOS E (58.3 average speed and 19.8 follower density) during the PM peak hour.
- Byron Highway, between SR-4 and San Joaquin County Line – continues to operate at LOS E (47.0 average speed and 15.1 follower density) during the PM peak hour.

Where routes of regional significance are found to operate at deficient levels of service under two-lane highway analysis per the HCM, addition of a travel lane and re-analysis of the route as a suburban arterial roadway is recommended. Therefore, for the purposes of this analysis, recommended improvements would include the addition of one travel lane in either direction and re-analysis of the routes of regional significance as suburban arterial roadways, in accordance with the MTSOs described in the East County Action Plan. Therefore, improvement measures at signalized intersections provided in Chapter 8.3.1 for deficient intersection operations identified in Chapter 5.2.2 would also correlate to recommended improvements for the deficient routes of regional significance identified in Table 15.

The improvements identified in Chapter 8.3.1 for deficient intersections which necessitate additional roadway improvements to achieve the County's LOS standards, include lane widening, lane restriping, signalization, and other similar physical modifications. These improvements would require funding from additional sources such as the County's Development Mitigation Program or the Capital Road Improvement & Preservation Program (CRIPP). Although improving road infrastructure (i.e. adding lanes, signalization at intersections) may ultimately induce some level of vehicle travel, it does not create unusual project or site circumstances. Additionally, as discussed in Chapter 4.2, the proposed project is located within a high VMT TAZ and the HBW VMT per employee of the proposed project is significantly above the regional average. It should be noted that the project area is served primarily by vehicular modes and does not have transit, pedestrian, and bike accessibility under existing or buildout conditions. The improvements have been identified based on regional traffic projections and are required to maintain an acceptable level of traffic operations per the County's LOS standards. In order to improve accessibility to jobs in the region, the improvements identified in this TIA would need to be implemented. Therefore, the transportation improvements would not warrant additional analysis, or environmental review and the indirect impacts would be less than significant.

Table 14. Existing plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Existing				Existing plus Project				Change in Delay[1]		Inconsistent with County LOS Standard?[3]	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*AM*	*PM*	*AM*	*PM*
1	Byron Highway/ Holey Road	Contra Costa County	TWSC	12.7	B	22.7	C	25.1	D	**183.7**	**F**	12.4	161.0	No	Yes
2	Byron Highway/Byron Hot Springs Road	Contra Costa County	TWSC	24.0	C	**57.7**	**F**	**85.6**	**F**	**>300**	**F**	61.6	1638.0	Yes	Yes
3	Byron Highway/ Camino Diablo	Contra Costa County	Signal	28.1	C	33.3	C	54.7	D	**82.6**	**F**	26.6	49.3	No	Yes
4	Holway Drive/ Camino Diablo	Contra Costa County	TWSC	20.2	C	33.9	D	27.0	D	**53.2**	**F**	6.8	19.3	No	Yes
5	Byron Highway/ Holway Drive	Contra Costa County	TWSC	25.9	D	**65.9**	**F**	34.6	D	**164.2**	**F**	8.7	98.3	No	Yes
6	Byron Highway/SR-4	Contra Costa County	Signal	15.9	B	12.3	B	20.3	C	14.0	B	4.4	1.7	No	No
7	Vasco Road/ Camino Diablo	Contra Costa County	Signal	22.2	C	45.1	D	23.4	C	**68.9**	**E**	1.2	23.8	No	Yes
8	Walnut Boulevard/ Vasco Road	Contra Costa County	Signal	35.3	D	39.4	D	40.1	D	**57.9**	**E**	4.8	18.5	No	Yes
9	SR-4 - Vasco Road/Marsh Creek Road - SR-4	Contra Costa County	Signal	15.8	B	19.5	B	16.2	B	20.2	C	0.4	0.7	No	No
10	Walnut Boulevard/SR-4	Contra Costa County	Signal	23.5	C	**59.7**	**E**	24.0	C	**65.2**	**E**	0.5	5.5	No	Yes
11	Byron Highway - SR-4/SR-4 - Marsh Creek Road	Contra Costa County	Signal	14.5	B	16.3	B	14.7	B	17.4	B	0.2	1.1	No	No
12	Discovery Bay Boulevard/SR-4	Contra Costa County	Signal	21.0	C	27.3	C	23.2	C	29.8	C	2.2	2.5	No	No
13	Mountain House Parkway/Byron Highway	San Joaquin County	Signal	11.6	B	17.6	B	12.4	B	21.0	C	0.8	3.4	No	No

Table 14. Existing plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Existing				Existing plus Project				Change in Delay[1]		Inconsistent with County LOS Standard?[3]	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*AM*	*PM*	*AM*	*PM*
14	Byron Road/Grant Line Road	San Joaquin County	Signal	**65.9**	**E**	**102.8**	**F**	**72.0**	**E**	**96.6**	**F**	6.1	-6.2	Yes	Yes
15	Mountain House Parkway/I-205 westbound ramps	Caltrans	Signal	12.4	B	9.2	A	12.4	B	9.2	A	0.0	0.0	N/A[4]	N/A[4]
16	Mountain House Parkway/I-205 eastbound ramps	Caltrans	Signal	4.3	A	6.7	A	5.0	A	7.3	A	0.7	0.6	N/A[4]	N/A[4]

Source: Appendix C

Notes: HCM = Highway Capacity Manual; TWSC = Two-Way Stop-Controlled;

1 Delay in seconds per vehicle

2 Level of Service (LOS)

3 LOS standard D, as defined in the Contra Costa East County Action Plan and per TM-3.1 of the San Joaquin County General Plan Public Facilities and Services Element, where applicable.

4 Caltrans no longer has established LOS standards under the Transportation Impact Study Guide (TISG) released May 20, 2020.

XX – Unsatisfactory Level of Service

Table 15. Existing Plus Project Routes of Regional Significance Level of Service

Roadway Facility	Extent	No. of Segments	Existing						Existing plus Project					
			AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
			Average Speed	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*
SR-4	Marsh Creek Road to Discovery Bay Boulevard	4	55.4	7.7	C	56.9	9.3	D	55.2	8.1	D	55.0	9.9	D
Vasco Road	Marsh Creek Road to Camino Diablo	2	58.8	**13.7**	**E**	58.4	**18.1**	**E**	58.7	**14.8**	**E**	58.3	**19.8**	**E**
Byron Highway	SR-4 to San Joaquin County Line	2	47.5	8.1	D	47.2	**12.2**	**E**	47.3	9.9	D	47.0	**15.1**	**E**
Camino Diablo	Vasco Road to Byron Highway	2	45.2	5.5	C	44.9	6.8	C	45.0	6.4	C	44.7	8.7	C
Walnut Boulevard	Marsh Creek Road to Vasco Road	1	48.2	5.9	C	47.8	10.0	C	48.1	6.6	C	47.7	10.4	D

Source: Appendix C

Notes:

1 Speed in units of miles per hour averaged across all segments within the facility

2 Follower density in units of followers/mile/lane

XX – Unsatisfactory Level of Service

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7 Future Year 2040 Conditions

This section includes analysis of traffic operation under Future Year 2040 conditions which represents the long-term horizon period when the proposed project is constructed and fully occupied, and all approved land use changes and developments within the General Plan are implemented.

7.1 Future Year 2040 Traffic Operations

7.1.1 Traffic Volumes and Future Roadway Facility Improvements

As described in Section 4 Vehicle Miles Traveled Analysis, the CCTA model was utilized to determine the growth that is used within the Future Year 2040 condition. In addition to 2040 model growth, the following cumulative projects were also included in the Future Year 2040 volumes, as these projects were determined to not have been incorporated into the 2040 model. Cumulative projects are projects that are proposed and in the review process, but not yet fully approved; or projects that have been approved, but not fully constructed or occupied. Figure 10 identifies the locations of these cumulative projects and Table 16 identifies a summary of trip generation estimates.

Table 16. Cumulative Projects Trip Generation Summary

Trip Rates[1]										
Land Use	*ITE Code*	*Units*		*Daily*	*AM Peak Hour*			*PM Peak Hour*		
					% In	*% Out*	*Total*	*% In*	*% Out*	*Total*
Senior Adult Housing - Detached	251	DU		4.27	33%	67%	0.24	61%	39%	0.34
Trip Generation										
Land Use	*ITE Code*	*Size*	*Units*	*Daily*	*AM Peak Hour*			*PM Peak Hour*		
					In	*Out*	*Total*	*In*	*Out*	*Total*
1. St. Anne's Village (County)			Residential[2]	380	9	6	15	17	16	34
			Retail[2]	70	7	1	8	4	5	9
			Total	*450*	*16*	*7*	*23*	*21*	*21*	*43*
2. Pioneer Square (City of Brentwood)	251	72	DU	307	6	12	17	13	8	22
3. Trilogy at the Vineyards (City of Brentwood)	251	1600	DU	6,832	127	257	384	293	187	480
4. Los Medanos College (City of Brentwood)		*Community College[3]*		8,500	600	200	800	556	196	752
5. Cowell Ranch (City of Brentwood)	251	140	DU	598	11	23	34	26	16	42
6. Priority Area-1 Specific Plan (City of Brentwood)		*City of Brentwood SP[4]*		56,798	3,782	1,251	5,033	2,006	3,855	5,861
Total Cumulative Project Trip Generation				**73,485**	**4,542**	**1,749**	**6,291**	**2,915**	**4,284**	**7,200**

Notes: DU = Dwelling Unit

1 Trip rates from the ITE Trip Generation Manual, 10th Edition (ITE 2017).

2 Trip generation estimates from the St. Anne's Village – Transportation Impact Analysis Assumption Memorandum, Fehr & Peers, July 25, 2019.

[3] Trip generation estimates from the Brentwood Center Transportation Assessment, Fehr & Peers, April 20, 2015.
[4] Trip generation estimates from the Draft Environmental Impact Report for the Priority Area 1 Specific Plan, June 2018.

Additionally, several roadway facility improvements within the study area were forecast within the 2040 model year analysis. It is important to note that there may be several roadway improvements reflected in the 2040 model year network that while not within the immediate study area, have the potential to affect the traffic flow patterns represented in the existing conditions analysis. However, as it pertains to the study area network and analysis in this report, the following are some of the major roadway facility improvements within the study area that are included in the CCTA 2040 model per the Table A-3 in the 2017 CCTA Comprehensive Transportation Plan (CCTA 2017b):

- SR-4 expansion to four-lane roadway south of Marsh Creek Road and extension to Vasco Road
- Marsh Creek Road expansion to four-lane roadway from its juncture with Vasco Road to Byron Highway
- Byron Highway expansion to four-lane roadway between Mountain House Parkway and Grant Line Road
- Armstrong Road extended to connect Vasco Road with Byron Hot Springs Road, allowing for an east-west connection between Vasco Road and Byron Highway

The CCTA model base year is 2018, and the Future Year base year used in this analysis is 2040. Traffic volumes for the Future Year 2040 condition were forecast by calculating the incremental growth for each link in the network (between the approach and departure volumes for each study area intersection) between the years 2040 and 2018. The resulting output was then adjusted and balanced based on the calibration and validation procedures as described in the CCTA Technical Procedures. Link-level output adjustments are a typical process in traffic volume forecasting whereby the model is fine-tuned to replicate observed travel behavior in the study area prior to developing forecasts. Due to the addition of several new intersections, legs of intersections, and roadway additions within the 2040 network, manual adjustments were also utilized to adjust and balance traffic volumes. The total growth calculated for each approach and departure volume based on the ambient annual growth rate over the 22-year period was then grown an additional 3 years to derive existing 2015 conditions. Total growth over the 25-year period was then divided based on the existing turning movements percentages, as validated in the existing traffic volume counts, for each study area intersection.

All model plots utilized within the analysis are provided in Appendix E. The Future Year 2040 weekday AM and PM peak hour volumes are summarized in Figure 11.

7.1.2 Intersection Operations

An intersection LOS analysis was prepared for the Future Year 2040 conditions using HCM 6th Edition methodology via the Synchro LOS software in Chapter 1.3. Table 17 shows the results of the Future Year 2040 analysis. LOS worksheets are provided in Appendix C.

As shown in the table, all the study area intersections are forecast to operate at satisfactory levels of service (at LOS D or better) except for the intersections of:

- Byron Highway/Holey Road – LOS F (57.2 second delay) during the PM peak hour.
- Byron Highway/Byron Hot Springs Road – LOS F (153.3 second delay) during the AM peak hour; (279.8 second delay) during the PM peak hour.
- Holway Drive/Camino Diablo – LOS E (38.5 second delay) during the PM peak hour.
- Byron Highway/Holway Drive – LOS F (155.2 second delay) during the PM peak hour.

- Vasco Road/Camino Diablo – LOS E (84.5 second delay) during the PM peak hour.
- Walnut Boulevard/Vasco Road – LOS E (61.1 second delay) during the PM peak hour.
- Walnut Boulevard/SR-4 – LOS F (121.6 second delay) during the PM peak hour.
- Mountain House Parkway/Byron Highway – LOS F (128.7 second delay) during the PM peak hour.
- Byron Road/Grant Line Road – LOS F (274.6 second delay) during the AM peak hour; LOS F (>300 second delay) during the PM peak hour.

The intersections of Mountain House Parkway with I-205 ramps operate under the jurisdiction of Caltrans; therefore, as no LOS standards are currently available per the updated Caltrans TISG (May 2020) as discussed in Section 1.3, no inconsistencies can be concluded. However, both ramp intersections continue to operate at satisfactory level of service goals (LOS D or better) per both Contra Costa County and San Joaquin County guidelines.

Table 17. Future Year 2040 Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Future Year 2040			
				AM Peak		*PM Peak*	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
1	Byron Highway/Holey Road	Contra Costa County	TWSC	13.0	B	**57.2**	**F**
2	Byron Highway/Byron Hot Springs Road	Contra Costa County	TWSC	**153.3**	**F**	**279.8**	**F**
3	Byron Highway/Camino Diablo	Contra Costa County	Signal	32.7	C	53.6	D
4	Holway Drive/Camino Diablo	Contra Costa County	TWSC	23.4	C	**38.5**	**E**
5	Byron Highway/Holway Drive	Contra Costa County	TWSC	34.4	D	**155.2**	**F**
6	Byron Highway/SR-4	Contra Costa County	Signal	22.4	C	16.5	B
7	Vasco Road/Camino Diablo	Contra Costa County	Signal	29.8	C	**84.5**	**F**
8	Walnut Boulevard/Vasco Road	Contra Costa County	Signal	50.5	D	**61.1**	**E**
9a	SR-4 southbound ramps/SR-4 - Marsh Creek Road	Contra Costa County	Signal	7.3	A	7.2	A
9b	SR-4 northbound ramps/SR-4 - Marsh Creek Road	Contra Costa County	Signal	5.4	A	5.3	A

Table 17. Future Year 2040 Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Future Year 2040			
				AM Peak		*PM Peak*	
				Delay[1]	*LOS[2]*	*Delay[1]*	*LOS[2]*
10	Walnut Boulevard/SR-4	Contra Costa County	Signal	18.2	B	**121.6**	**F**
11	Byron Highway - SR-4/SR-4 - Marsh Creek Road	Contra Costa County	Signal	16.9	B	19.1	B
12	Discovery Bay Boulevard/SR-4	Contra Costa County	Signal	27.5	C	38.8	D
13	Mountain House Parkway/Byron Highway	San Joaquin County	Signal	30.3	C	**128.7**	**F**
14	Byron Road/Grant Line Road	San Joaquin County	Signal	**274.6**	**F**	**>300**	**F**
15	Mountain House Parkway/I-205 westbound ramps	Caltrans	Signal	34.7	C	11.7	B
16	Mountain House Parkway/I-205 eastbound ramps	Caltrans	Signal	6.2	A	34.0	C

Source: Appendix C
Notes: HCM = Highway Capacity Manual; TWSC = Two-Way Stop-Controlled
1 Delay in seconds per vehicle
2 Level of Service (LOS)
XX – Unsatisfactory Level of Service

7.1.3 Routes of Regional Significance Operations

A rural two-lane roadway segment analysis as outlined in Chapter 15 of the Highway Capacity Manual intersection LOS analysis was prepared for the Future Year 2040 conditions using the HCM 6th Edition methodology via the HCS 7 software for all study area routes of regional significance as described in Section 1.3 Analysis Methodology. It is important to note that due to the changes in the roadway network as described in Section 7.1.1 Traffic Volumes, the roadway segment of SR-4, between Marsh Creek Road and Discovery Bay Boulevard will no longer qualify as a two-lane rural highway under Future 2040 conditions. Therefore, for the purposes of the routes of regional significance analysis, and in accordance with the MTSOs described in the East County Action Plan, this segment has been analyzed as a suburban arterial roadway and therefore analyzed under the signalized intersection LOS operations analysis in Section 7.1.2 Intersection Operations. Table 18 shows the results of the Future Year 2040 conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, all the study area routes of regional significance are forecast to operate at satisfactory levels of service (at LOS D or better) except for the segments of:

- Vasco Road, between Marsh Creek Road and Camino Diablo – forecast to operate at LOS E (57.8 average speed and 24.4 follower density) during the AM peak hour and at LOS E (57.8 average speed and 24.4 follower density) during the PM peak hour.
- Byron Highway, between SR-4 and San Joaquin County Line – forecast to operate at LOS E (47.1 average speed and 12.6 follower density) during the AM peak hour and at LOS E (46.4 average speed and 25.0 follower density) during the PM peak hour.

- Camino Diablo, between Vasco Road and Byron Highway – forecast to operate at LOS E (44.2 average speed and 15.5 follower density) during the PM peak hour.
- Walnut Boulevard, between Marsh Creek Road and Vasco Road – forecast to operate at LOS E (46.9 average speed and 23.1 follower density) during the PM peak hour.

Table 18. Future Year 2040 Routes of Regional Significance Level of Service

Roadway Facility	Extent	No. of Segments	Existing					
			AM Peak Hour			PM Peak Hour		
			Average Speed[1]	*Follower Density*[2]	*LOS*	*Average Speed*[1]	*Follower Density*[2]	*LOS*
SR-4	Marsh Creek Road to Discovery Bay Boulevard	4	*No longer a two-lane rural highway under Future Year 2040 Conditions*					
Vasco Road	Marsh Creek Road to Camino Diablo	2	57.8	**24.4**	**E**	57.8	**24.4**	**E**
Byron Highway	SR-4 to San Joaquin County Line	2	47.1	**12.6**	**E**	46.4	**25.0**	**E**
Camino Diablo	Vasco Road to Byron Highway	2	44.7	9.3	D	44.2	**15.5**	**E**
Walnut Boulevard	Marsh Creek Road to Vasco Road	1	48.2	6.0	C	46.9	**23.1**	**E**

Source: Appendix C

Notes:

1 Speed in units of miles per hour averaged across all segments within the facility

2 Follower density in units of followers/mile/lane

XX – Unsatisfactory Level of Service

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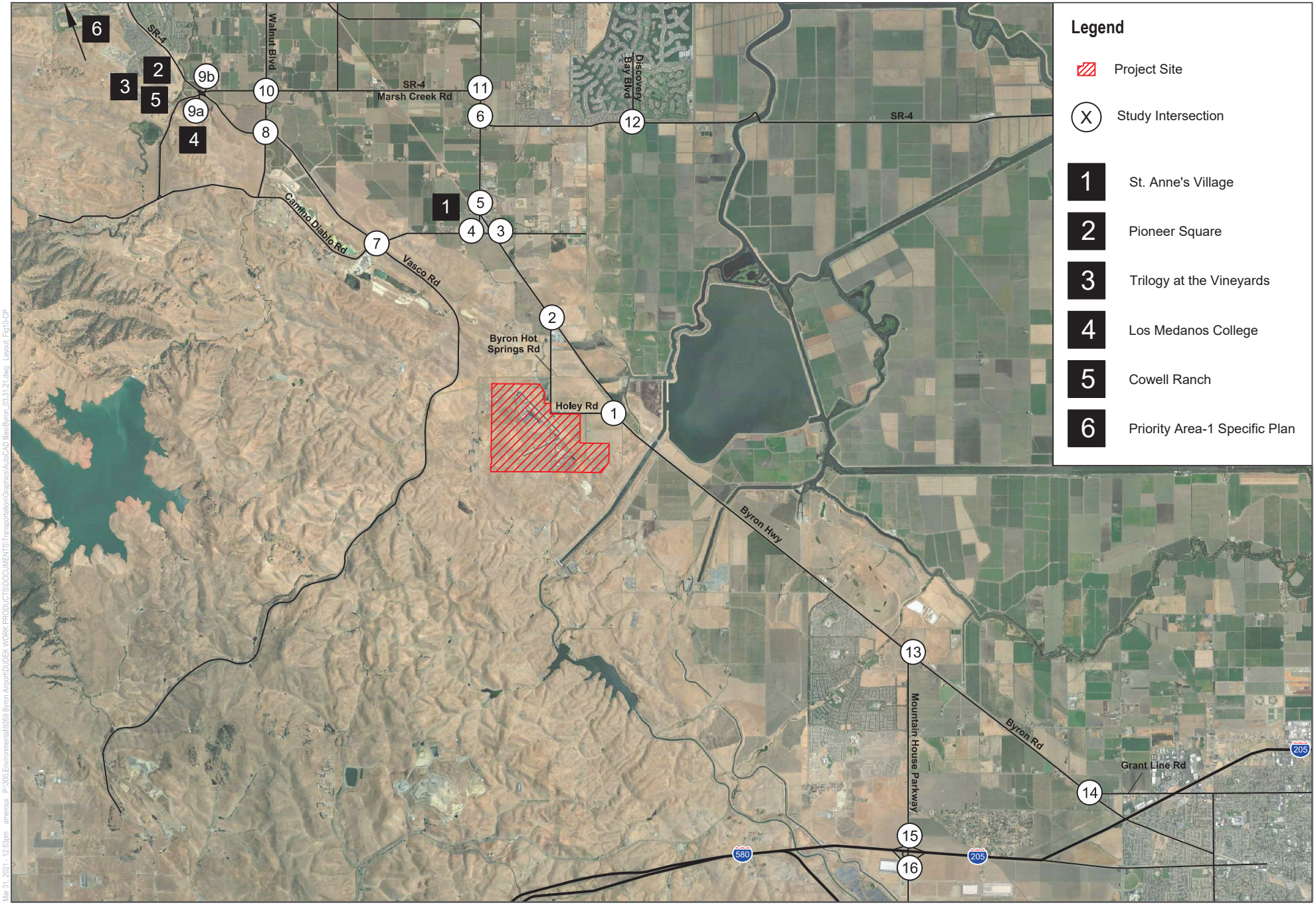

SOURCE: Google Maps 2019

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FIGURE 10

Cumulative Project Locations

Byron Airport Development Program

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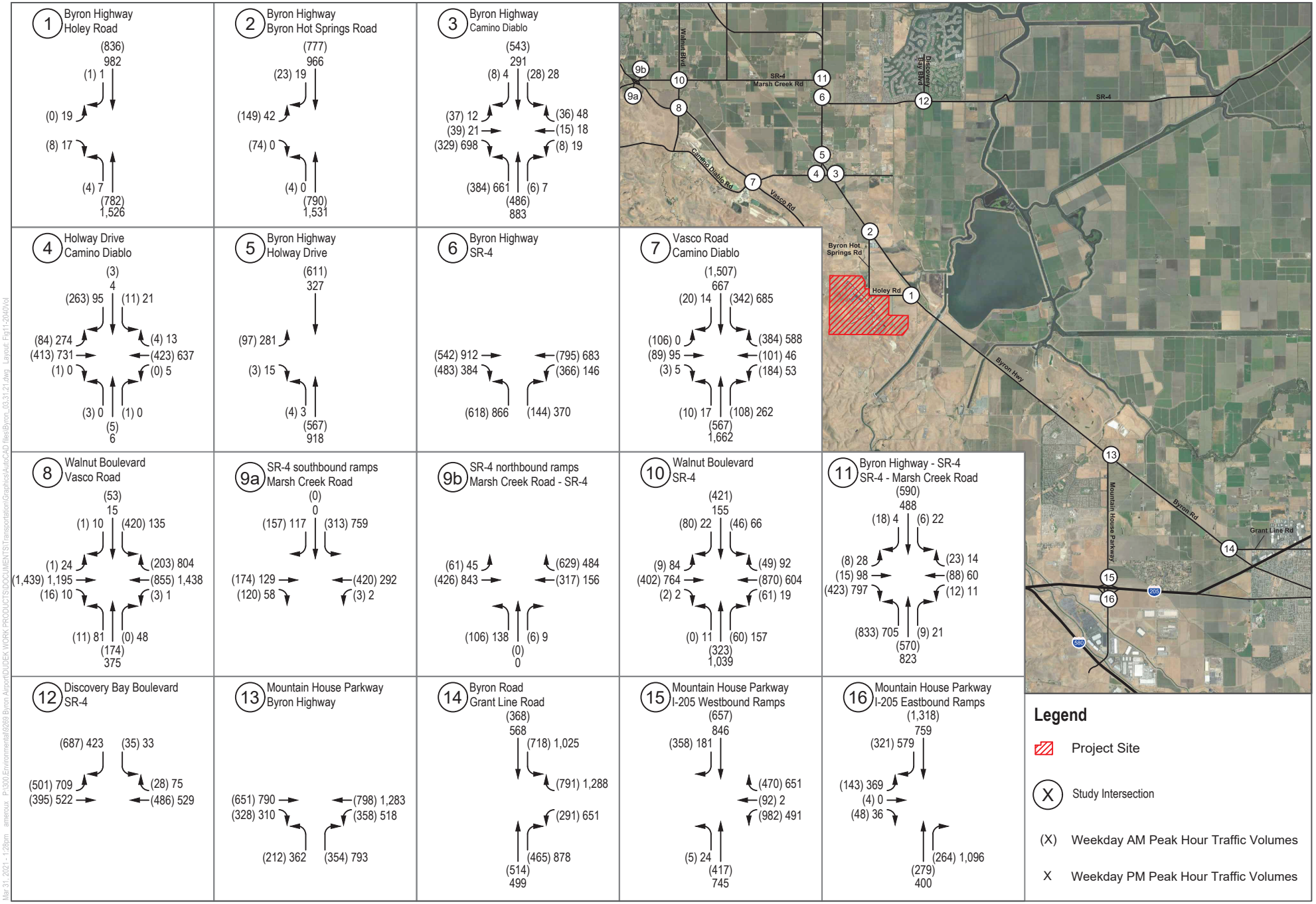

SOURCE: Google Maps 2019

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FIGURE 11

Future Year 2040 Peak Hour Traffic Volumes

Byron Airport Development Program

Mar 31, 2021 - 1:28pm amerioux P:\300 Environmental\9268 Byron Airport\DUDEK WORK PRODUCTS\DOCUMENTS\Transportation\Graphics\AutoCAD files\Byron_03.31.21.dwg Layout: Fig11-2040(Vol

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7.2 Future Year 2040 plus Project Traffic Operations

This section details the Cumulative (Year 2040) plus Project traffic volumes, as well as the intersection and Routes of Regional Significance operations within the study area.

7.2.1 Traffic Volumes

Project traffic volumes shown in Figure 6 were added to the Future Year 2040 traffic volumes shown in Figure 10 to derive the Future Year 2040 plus Project traffic condition. Figure 12 shows the Future Year 2040 plus Project traffic volumes.

7.2.2 Intersection Operations

An intersection LOS analysis was prepared for the Future Year 2040 plus Project conditions using the HCM 6th Edition methodology via the Synchro LOS software for all study intersections as described in Section 1.3 Analysis Methodology. Table 19 shows the results of the Future Year 2040 plus Project conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, most of the study area intersections are forecast to operate at satisfactory levels of service (at LOS D or better), however the project's contribution to traffic to the following intersections would cause LOS to be inconsistent with LOS standards:

- Byron Highway/Holey Road – remains at LOS F (>300 second delay) during the PM peak hour (project contribution is >300 second delay).
- Byron Highway/Byron Hot Springs Road – remains at LOS F (>300 second delay) during both the AM and PM peak hours (project contribution is >300 second delay for both peak hours).
- Byron Highway/Camino Diablo – project adds 39.7 seconds of delay and degrades from LOS C to LOS E (72.4 second delay) during the AM peak hour; project adds 98.7 seconds of delay and degrades from LOS D to LOS F (152.3 second delay) during the PM peak hour.
- Holway Drive/Camino Diablo – project adds 24.1 seconds of delay and degrades from LOS E to LOS F (62.6 second delay) during the PM peak hour.
- Byron Highway/Holway Drive – project adds 15.1 seconds of delay and degrades from LOS D to LOS E (49.5 second delay) during the AM peak hour; remains at LOS F (> 300 second delay) during the PM peak hour (project contribution is 166.2 second delay).
- Vasco Road/Camino Diablo – remains at LOS F (125.9 second delay) during the PM peak hour (project contribution is 41.4 second delay).
- Walnut Boulevard/Vasco Road – project adds 7.2 seconds of delay and degrades from LOS D to LOS E (57.7 second delay) during the AM peak hour; remains at LOS E (75.2 second delay) during the PM peak hour (project contribution is 14.1 second delay).
- Walnut Boulevard/SR-4 – remains at LOS F (130.3 second delay) during the PM peak hour (project contribution is 8.7 second delay).

- Mountain House Parkway/Byron Highway – remains at LOS F (126.9 second delay) during the PM peak hour (project contribution is -1.8 second delay).
- Byron Road/Grant Line Road – remains at LOS F (>300 second delay) during both the AM and PM peak hours (project contribution is 9.5 second delay in the AM peak hour and 5.9 second delay in the PM peak hour).

The intersections of Mountain House Parkway with I-205 ramps operate under the jurisdiction of Caltrans; therefore, as no LOS standards are currently available per the updated Caltrans TISG (May 2020) as discussed in Section 1.3, no inconsistencies can be concluded. However, both ramp intersections continue to operate at satisfactory level of service goals (LOS D or better) per both Contra Costa County and San Joaquin County guidelines.

7.2.3 Routes of Regional Significance Operations

A rural two-lane roadway segment analysis as outlined in Chapter 15 of the Highway Capacity Manual intersection LOS analysis was prepared for the Future Year 2040 plus Project conditions using the HCM 6th Edition methodology via the HCS 7 software for all study area routes of regional significance as described in Section 1.3 Analysis Methodology. Table 20 shows the results of the Future Year 2040 plus Project conditions analysis. LOS worksheets are provided in Appendix C.

As shown in the table, all the study area routes of regional significance are forecast to continue to operate at satisfactory levels of service (at LOS D or better) except for the segments of:

- Vasco Road, between Marsh Creek Road and Camino Diablo – forecast to continue to operate at LOS E (57.8 average speed and 24.4 follower density) during the AM peak hour and at LOS E (57.8 average speed and 24.4 follower density) during the PM peak hour.
- Byron Highway, between SR-4 and San Joaquin County Line – forecast to operate at LOS E (46.9 average speed and 14.6 follower density) during the AM peak hour and at LOS E (46.5 average speed and 24.2 follower density) during the PM peak hour.
- Camino Diablo, between Vasco Road and Byron Highway – forecast to operate at LOS E (44.0 average speed and 17.8 follower density) during the PM peak hour.
- Walnut Boulevard, between Marsh Creek Road and Vasco Road – forecast to continue to operate at LOS E (46.9 average speed and 23.7 follower density) during the PM peak hour.

Where routes of regional significance are found to operate at deficient levels of service under two-lane highway analysis per the HCM, addition of a travel lane and re-analysis of the route as a suburban arterial roadway is recommended. Therefore, for the purposes of this analysis, recommended improvements would include the addition of one travel lane in either direction and re-analysis of the routes of regional significance as suburban arterial roadways, in accordance with the MTSOs described in the East County Action Plan. Therefore, improvement measures at signalized intersections provided in Chapter 8.3.1 for deficient intersection operations identified in Chapter 7.2.2 would also correlate to recommended improvements for the deficient routes of regional significance identified in Table 20.

The improvements identified in Chapter 8.3.1 for deficient intersections which necessitate additional roadway improvements to achieve the County's LOS standards, include lane widening, lane restriping, signalization, and other similar physical modifications. These improvements would require funding from additional sources such as the County's Development Mitigation Program or the Capital Road Improvement & Preservation Program (CRIPP). Although improving road infrastructure (i.e. adding lanes, signalization at intersections) may ultimately induce some level of vehicle travel, it

does not create unusual project or site circumstances. Additionally, as discussed in Chapter 4.2, the proposed project is located within a high VMT TAZ and the HBW VMT per employee of the proposed project is significantly above the regional average. It should be noted that the project area is served primarily by vehicular modes and does not have transit, pedestrian, and bike accessibility under existing or buildout conditions. The improvements have been identified based on regional traffic projections and are required to maintain an acceptable level of traffic operations per the County's LOS standards. In order to improve accessibility to jobs in the region, the improvements identified in this TIA would need to be implemented. Therefore, the transportation improvements would not warrant additional analysis, or environmental review and the indirect impacts would be less than significant.

Table 19. Future Year 2040 plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Future Year 2040				Future Year 2040 plus Project				Change in Delay[1]		Inconsistent with County LOS Standard?[3]	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*AM*	*PM*	*AM*	*PM*
1	Byron Highway/Holey Road	Contra Costa County	TWSC	13.0	B	**57.2**	**F**	29.6	D	**>300**	**F**	16.6	1686.0	No	Yes
2	Byron Highway/Byron Hot Springs Road	Contra Costa County	TWSC	**153.3**	**F**	**279.8**	**F**	**525.5**	**F**	**>300**	**F**	372.2	3728.1	Yes	Yes
3	Byron Highway/Camino Diablo	Contra Costa County	Signal	32.7	C	53.6	D	**72.4**	**E**	**152.3**	**F**	39.7	98.7	Yes	Yes
4	Holway Drive/Camino Diablo	Contra Costa County	TWSC	23.4	C	**38.5**	**E**	32.5	D	**62.6**	**F**	9.1	24.1	No	Yes
5	Byron Highway/Holway Drive	Contra Costa County	TWSC	34.4	D	**155.2**	**F**	**49.5**	**E**	**>300**	**F**	15.1	166.2	Yes	Yes
6	Byron Highway/SR-4	Contra Costa County	Signal	22.4	C	16.5	B	32.6	C	19.1	B	10.2	2.6	No	No
7	Vasco Road/Camino Diablo	Contra Costa County	Signal	29.8	C	**84.5**	**F**	32.3	C	**125.9**	**F**	2.5	41.4	No	Yes
8	Walnut Boulevard/Vasco Road	Contra Costa County	Signal	50.5	D	**61.1**	**E**	**57.7**	**E**	**75.2**	**E**	7.2	14.1	Yes	Yes
9a	SR-4 southbound ramps/SR-4 - Marsh Creek Road	Contra Costa County	Signal	7.3	A	7.2	A	7.4	A	7.2	A	0.1	0.0	No	No
9b	SR-4 northbound ramps/SR-4 - Marsh Creek Road	Contra Costa County	Signal	5.4	A	5.3	A	5.3	A	5.3	A	-0.1	0.0	No	No
10	Walnut Boulevard/SR-4	Contra Costa County	Signal	18.2	B	**121.6**	**F**	18.4	B	**130.3**	**F**	0.2	8.7	No	Yes
11	Byron Highway - SR-4/SR-4 - Marsh Creek Road	Contra Costa County	Signal	16.9	B	19.1	B	17.4	B	19.7	B	0.5	0.6	No	No

Table 19. Future Year 2040 plus Project Peak Hour Intersection Level of Service

No.	Intersection	Jurisdiction	Control Type	Future Year 2040				Future Year 2040 plus Project				Change in Delay[1]		Inconsistent with County LOS Standard?[3]	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*Delay[1]*	*LOS[2]*	*AM*	*PM*	*AM*	*PM*
12	Discovery Bay Boulevard/SR-4	Contra Costa County	Signal	27.5	C	38.8	D	30.5	C	44.1	D	3.0	5.3	No	No
13	Mountain House Parkway/Byron Highway	San Joaquin County	Signal	30.3	C	**128.7**	**F**	34.3	C	**126.9**	**F**	4.0	-1.8	No	Yes
14	Byron Road/Grant Line Road	San Joaquin County	Signal	**274.6**	**F**	**>300**	**F**	**284.1**	**F**	**>300**	**F**	9.5	5.9	Yes	Yes
15	Mountain House Parkway/I-205 westbound ramps	Caltrans	Signal	34.7	C	11.7	B	35.8	D	11.8	B	1.1	0.1	N/A[4]	N/A[4]
16	Mountain House Parkway/I-205 eastbound ramps	Caltrans	Signal	6.2	A	34.0	C	6.7	A	36.5	D	0.5	2.5	N/A[4]	N/A[4]

Source: Appendix C

Notes: HCM = Highway Capacity Manual; TWSC = Two-Way Stop-Controlled

1 Delay in seconds per vehicle

2 Level of Service (LOS)

3 LOS standard D, as defined in the Contra Costa East County Action Plan and per TM-3.1 of the San Joaquin County General Plan Public Facilities and Services Element, where applicable.

4 Caltrans no longer has established LOS standards under the Transportation Impact Study Guide (TISG) released May 20, 2020.

XX – Unsatisfactory Level of Service

Table 20. Future Year 2040 Plus Project Routes of Regional Significance Level of Service

Roadway Facility	Extent	No. of Segments	Future Year 2040						Future Year 2040 plus Project					
			AM Peak Hour			*PM Peak Hour*			*AM Peak Hour*			*PM Peak Hour*		
			Average Speed	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*	*Average Speed*	*Follower Density*	*LOS*
SR-4	Marsh Creek Road to Discovery Bay Boulevard	4	*No longer a 2-lane highway under Future Year 2040 Conditions*											
Vasco Road	Marsh Creek Road to Camino Diablo	2	57.8	**24.4**	**E**	57.8	**24.4**	**E**	57.8	**24.4**	**E**	57.8	**24.4**	**E**
Byron Highway	SR-4 to San Joaquin County Line	2	47.1	**12.6**	**E**	46.4	**25.0**	**E**	46.9	**14.6**	**E**	46.5	**24.2**	**E**
Camino Diablo	Vasco Road to Byron Highway	2	44.7	9.3	D	44.2	**15.5**	**E**	44.6	10.4	D	44.0	**17.8**	**E**
Walnut Boulevard	Marsh Creek Road to Vasco Road	1	48.2	6.0	C	46.9	**23.1**	**E**	48.1	6.7	C	46.9	**23.7**	**E**

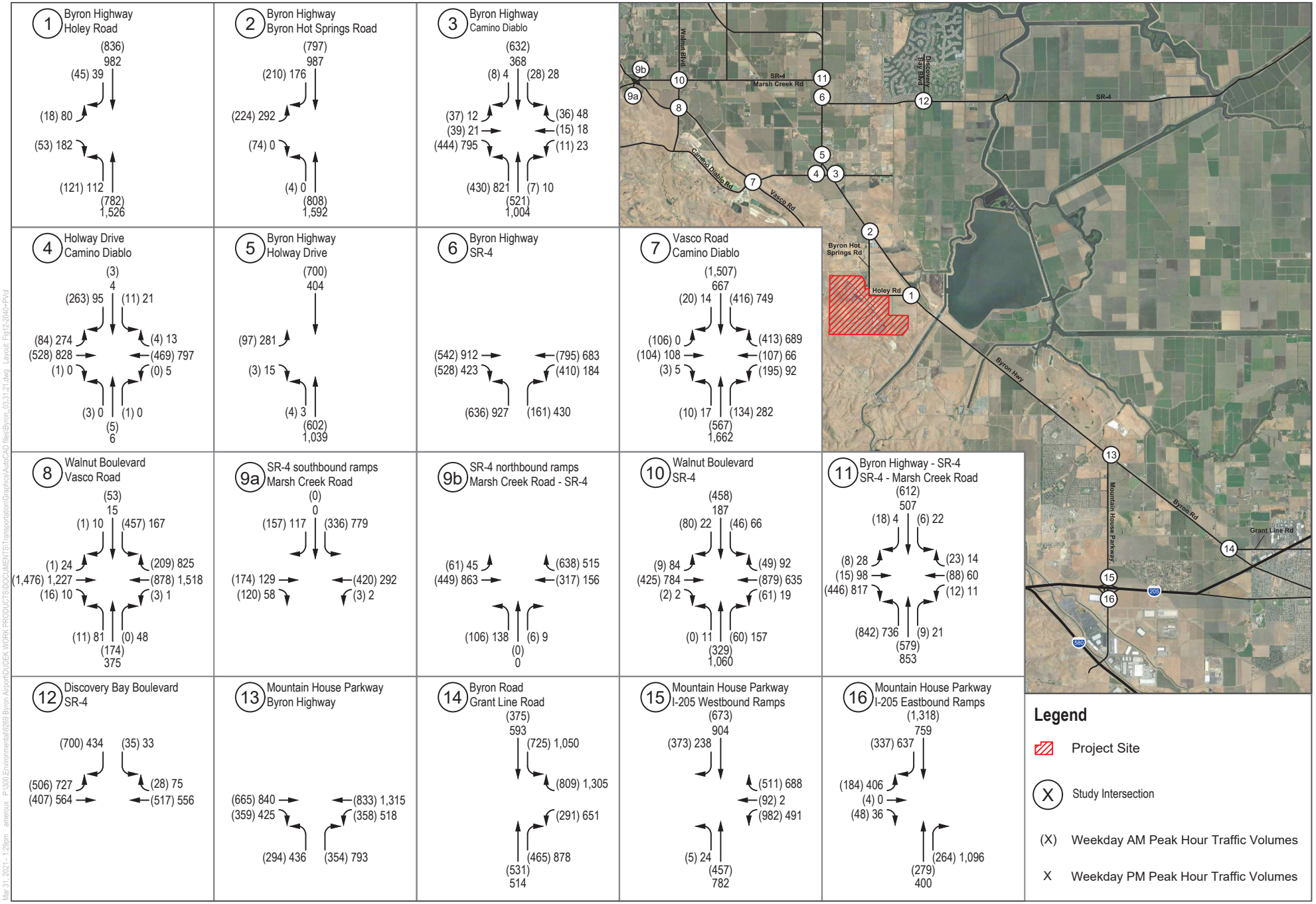
Source: Appendix C

Notes:

1 Speed in units of miles per hour averaged across all segments within the facility

2 Follower density in units of followers/mile/lane

XX – Unsatisfactory Level of Service



SOURCE: Google Maps 2019

DUDEK

NOT TO SCALE

FIGURE 12

Future Year 2040 plus Project Peak Hour Traffic Volumes

Byron Airport Development Program

Mar 31, 2021 - 1:29pm amerioux P:\300\Environmental\9268 Byron Airport\DUDEK WORK PRODUCTS\DOCUMENTS\Transportation\Graphics\AutoCAD files\Byron_03.31.21.dwg Layout: Fig12-2040+PVol

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8 Project Impacts, Mitigation Measures and Level of Service Improvements

8.1 Project Impacts

As shown in Chapter 4, the project would have a significant VMT impact. Following section provides a summary of measures that can implemented to mitigate the project's VMT impact.

8.2 Project Design Features and Mitigation Measures

Transportation Demand Management (TDM) measures can be implemented as project design features and/or mitigation measures for reducing VMT. The California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures, 2010 report has identified actions and changes to project features that reduce VMT. Additionally, the County's Transportation Demand Management Ordinance Guide published in December 2009 by the Department of Conservation & Development has outlined effective ways to reduce vehicle trips (hence VMT) added by new development projects.

Table 21 describes strategies from the County's TDM Ordinance Guide and CAPCOA as sample options that would be most effective in areas like the community of Byron and are appropriate for the project to avoid or reduce the significant impact. VMT reductions for each of the strategy (using the applicable range of effectiveness) that can be applied to the project have been estimated per CAPCOA's mitigation measure calculation provided in Fact Sheets of the document. Only the strategies that would be applicable to suburban locations such as the project's location were used. Further, high-level assumptions regarding project's site design were made since it was not available at the time of preparation of this study and a conservative estimate of employee participation was applied to the VMT reduction calculations.

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
Project Site Design Features (including Pedestrian Facilities) A comprehensive design that features pedestrian amenities, covered bus stops and adequate accessibility, benches, passenger loading zones, etc. To encourage walking, safe, and convenient pedestrian access and movement need to ensure as part of the project site design, the proposed project would include the following design elements: 1. Minimize walking distances along the internal street/path network to provide convenient connections between the different buildings, services, etc. 2. Design gathering areas where enhanced landscaping, adequate lighting, signage, and street furniture are provided so that walking can be naturally encouraged with the provision of such design elements. 3. Establish traffic calming devices where feasible on the internal street system. 4. Other design considerations that are safety related include the provision of adequate sight triangles at project driveways and internal intersections, as well as preventing parking encroachment within pedestrian sidewalks and walkways.	**LUT-9/3.1.9 Improve Design of Development** – Project design elements that enhance walkability and connectivity can be measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments.	3.0% - 21.3% VMT reduction **% VMT Reduction = Intersections * B;** Where Intersections = Percentage increase in intersections versus a typical ITE suburban development; B = Elasticity of VMT with respect to % of intersections (0.12 from CAPCOA). Since the project's site plan was not available at time of the preparation of this document, it was conservatively assumed that a 3**% VMT reduction** would be achieved using this measure.
	SDT-1/3.2.1 Provide Pedestrian Network Improvements - Providing a pedestrian access network to link areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. A project should provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. A project should minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.	0 – 2% VMT reduction **1% VMT reduction** is allowed for pedestrian accommodations within project site in urban and sub-urban context.
	SDT-2/3.2.2 Provide Traffic Calming Measures - Providing traffic calming measures encourages people to walk or bike instead of using a vehicle. This mode shift results in a decrease in VMT. Project design should include pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways should be	0.25 – 1% VMT reduction The reduction is based on % of streets within project with traffic calming improvements and % of intersections within project with traffic calming improvements. Since the project's site plan was not available at time of the

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
5. Give a priority to establishing and maintaining pedestrian facilities such as sidewalks, marked crosswalks and stop bars, in-pavement lighted crossing, bulb-outs and other traffic calming devices, street and pedestrian lighting, sheltered seating areas, and landscaping.	designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips with traffic calming features. Traffic calming features may include: marked crosswalks, count-down signal timers, curb extensions, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, roundabouts or mini-circles, on-street parking, planter strips with street trees, chicanes/chokers, and others.	preparation of this document, it was conservatively assumed 50% of project's on-site streets and 50% of project's on-site intersections would be designed with these considerations. This would allow **0.5% VMT reduction.**
Bicycling Facilities: The design measures listed below can be established by the project and approved as part of the development application review process: 1. Provide secure short- and long-term bicycle parking (i.e., bicycle racks and lockers, respectively) at prime locations of the development sites. 2. Provide showers, change facilities, and clothes lockers at convenient locations within business buildings in order to encourage cycling for longer distances. 3. Ensure safe and convenient access and movements of cyclists within development sites.	**SDT-5/3.2.5 Incorporate Bike Lane Street Design (on-site)** - A project should incorporate bicycle lanes, routes, and shared-use paths into street systems, new subdivisions, and large developments. These on-street bike accommodations can provide a continuous network of routes, facilitated with markings and signage. These improvements can help reduce peak-hour vehicle trips by making commuting by bike easier and more convenient for more people.	Grouped Strategy (LUT-9)
	SDT-6/ 3.2.6 Provide Bike Parking in Non-Residential Projects- A non-residential project should provide short-term and long-term bicycle parking facilities to meet peak season maximum demand. Bike Parking in Non-Residential Projects has minimal impacts as a standalone strategy and should be grouped with the Improve Design of Development strategy to encourage bicycling by providing strengthened street network characteristics and bicycle facilities.	0.625% reduction in VMT (from literature per CAPCOA)
	SDT-9/3.2.9 Dedicate Land for Bike Trails - Larger projects may be required to provide for, contribute to, or dedicate land for the provision of off-site bicycle trails linking the project to designated bicycle commuting routes in accordance with an adopted citywide or countywide bikeway plan. The benefits of Land Dedication for Bike Trails have not been	Grouped Strategy (LUT-9)

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
	quantified and should be grouped with the Improve Design of Development strategy to strengthen street network characteristics and improve connectivity to off-site bicycle networks.	
Transit Facilities: 1. Provide safe and direct site access to the public streets where transit services are provided. 2. Provide necessary transit facilities in the vicinity of project site (such as bus shelter, bus turnout, concrete pad, seating, lighting, etc.), in order to support transit use. 3. Establish an on-site information kiosk where information on transit routes, schedules, and fares can be provided. 4. Intersection geometry and road structure should be capable of supporting the length and weight of buses, including internal project circulation roads if bus or shuttle service is anticipated to enter the project site. 5. Communicate with the local transit agency (Tri Delta Transit) to seek changes/addition to bus route to support transit ridership for the project. 6. Provide shuttle service to main transit station during the commute periods.	**TST-2/3.5.2 Implement Transit Access Improvements** This project should improve access to transit facilities through sidewalk/ crosswalk safety enhancements and bus shelter improvements. The benefits of Transit Access Improvements alone have not been quantified and need to grouped with Transit Network Expansion (TST-3) and Transit Service Frequency and Speed (TST-4).	Grouped Strategy (TST-3 and TST-4)
	TST-3/3.5.3 Expand Transit Network –A project should expand the local transit network by adding or modifying existing transit service to enhance the service near the project site. This will encourage the use of transit and therefore reduce VMT.	0.1– 8.2% VMT reduction % VMT Reduction = Coverage * B * Mode * D Where Coverage = % increase in transit network coverage; B = elasticity of transit ridership with respect to service coverage (value from CAPCOA);Mode = existing transit mode shar; D = adjustments from transit ridership increase to VMT (0.67, from Appendix D of CAPCOA) Since the project is located in a sub-urban area with no existing transit service, a low range % VMT reduction (10% expansion, sub-urban) was assumed. Therefore, **0.1% VMT reduction** would be achieved using this measure.
Commute Trip Reduction Strategies 1 Rideshare/Carshare Initiatives • Designate a number of on-site parking spaces at prime locations (i.e., close to buildings access, well lit, etc.) for carpools	**TRT-3/3.4.2 Provide Ride-sharing Programs -** Increasing the vehicle occupancy by ride sharing will result in fewer cars driving the same trip, and thus a decrease in VMT. Ride-sharing program and a permanent transportation management association membership and funding requirement. Funding may	1 1– 15% commute VMT reduction % VMT Reduction = Commute *Employee Where Commute = % reduction in commute VMT (from CAPCOA); Employee = % employees

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
and vanpools privately operated by tenants. Short-term parking spaces or passenger loading areas are also needed for taxi and outside shuttle services. Establishing carpool/vanpool initiatives can reduce the overall demand for on-site parking.	be provided by Community Facilities, District, or County Service Area, or other non-revocable funding mechanism. Ride-sharing programs can be promoted through a multi-faceted approach such as: • Designating a certain percentage of parking spaces for ride sharing vehicles • Designating adequate passenger loading and unloading and waiting areas for ride-sharing vehicles • Providing a web site or message board for coordinating rides	eligible; Commute: 5% (low density suburb annual reduction in commute VMT (from CAPCOA). For the project, 50% of the employees were assumed to be eligible for participation in the program as 10% of the employees are estimated to be County Airport staff. % VMT Reduction = 5%*50% = 2.5%
2. Establish on-site car rental or carshare services so that tenants do not need to rely on personal cars for work-related purposes.	TRT-9/3.4.9 Implement Car-Sharing Program- A car-sharing project to allows people to have on-demand access to a shared fleet of vehicles on an as-needed basis. User costs are typically determined through mileage or hourly rates, with deposits and/or annual membership fees. The car-sharing program could be created through a local partnership or through one of many existing car-share companies. Employer-based car-sharing programs provide a means for business/day trips for alternative mode commuters and provide a guaranteed ride home option.	0.4 – 0.7% commute VMT reduction % VMT Reduction = A * B / C; where A = % reduction in car-share member annual VMT (from the literature); B = number of car share members per shared car (from the literature); C = deployment level based on urban or suburban context; A= 37% (per 1); B=20 (per 2); C = 1 shared car per 2,000 population for sub urban project setting from CAPCOA % VMT Reduction = 37%*20/2000 = 0.4%
3. Employer Sponsored Vanpool/Shuttle	TRT-11/3.4.11 Provide Employer-Sponsored Vanpool/Shuttle- Implementing an employer-sponsored vanpool or shuttle will usually service employees' commute to work while a shuttle will service nearby transit stations and surrounding commercial centers. Employer-sponsored vanpool programs entail an employer purchasing or leasing vans for employee use, and often subsidizing the cost of at least program administration, if not more. The driver usually receives personal use of the van, often	0.3%-13.4% commute VMT reduction % VMT Reduction = A * B * C; where A = % shift in vanpool mode share of commute trips (from CAPCOA); B = % employees eligible; C = adjustments from vanpool mode share to commute VMT; A =20% for larger employer; B = 50%; C = 0.676 (See CAPCOA Appendix C)

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
	for a mileage fee. Scheduling is within the employer's purview, and rider charges are normally set on the basis of vehicle and operating cost.	% VMT Reduction = 20%*50%*0.67= 6.7%
4. Flexible Work Schedules and Telecommuting Flexible Work Schedule programs established by employers govern the time period in which employees travel to and from work. Such programs influence employees' propensity to consider using transit, carpooling, and other alternatives to driving alone to work. Telecommuting exists in several forms, such as working at home, working at a satellite center with shorter commuting distance, and working at neighboring work centers that can be leased to several employees and where office equipment is provided.	**TRT-6/ 3.4.6 Encourage Telecommuting and Alternative Work Schedules-** Encouraging telecommuting and alternative work schedules reduces the number of commute trips and therefore VMT traveled by employees. Alternative work schedules could take the form of staggered starting times, flexible schedules, or compressed work weeks.	0.07%-5.5% commute VMT % Commute VMT Reduction = Commute; where commute = % reduction in commute (from Table) Assuming 4-day/40 hour week for 25% of employees % VMT Reduction = 3.75%
5. TDM Coordinator and/or Marketing Strategies. A TDM Coordinator is typically responsible for developing, marketing strategies, implementing and evaluating the TDM programs. The TDM Coordinator can be a designated on-site staff person (half- to full-time) with specific TDM responsibilities and authority. The Coordinator's responsibilities can also be contracted out with a commute company. Since educational and promotional activities are needed to launch TDM program, the TDM coordinator plays a key role in coordinating with transportation service providers (such as 511 Contra Costa), hosting various event and providing pertinent information to all tenets and employees regarding the facilities, programs and services available at the project site.	**TRT-7/ 3.4.8 Implement Commute Trip (CTR) Reduction Marketing/ Launch Targeted Behavioral Interventions** Implementing marketing strategies to reduce commute trips and information sharing are important components to successful commute trip reduction strategies. Implementing commute trip reduction strategies without a complementary marketing strategy will result in lower VMT reductions. Marketing strategies may include: • New employee orientation of trip reduction and alternative mode options • Event promotions • Publications	0.8%-4.0% commute VMT % VMT Reduction = A*B*C ; Where A = % reduction in commute vehicle trips; B = % employees eligible (50%); C=Adjustment from commute VT to commute VMT; A = 4% (from CAPCOA); C = 1.0 (Appendix C of CAPCOA) % VMT Reduction = 4%*50%*1 = 2.0%

Table 21. Transportation Demand Management and VMT Reduction Measures

Contra Costa Transportation Demand Management Ordinance Guide (2009)	Applicable CAPCOA (2010) Transportation Measures for VMT Reduction	Range of Effectiveness of VMT Reduction and Calculation using CAPCOA (2010)
6. Transit Incentive Employees can be provided with incentives to take transit to commute to work by providing subsidized transit passes/fares, participating in the regional transportation programs.	**TRT-4/3.4.4 Implement Subsidized or Discounted Transit Program** - Providing subsidized/discounted daily or monthly public transit passes may also provide free transfers between all shuttles and transit to participants. These passes can be partially or wholly subsidized by the employer or development.	0.3%-20% commute VMT reduction % VMT Reduction = A*B*C; where A = % reduction in commute VMT (from CAPCOA); B = % employees eligible (50%); C=Adjustment from commute VT to commute VMT using preferred literature table. **% VMT Reduction = 1.9%*50%*1= 1.0%**
Parking Supply and Demand Management Strategies - Establishing fees for on-site parking combined with a strong TDM program can help shift driver's behavior to the use of alternative modes of transportation and higher occupancy vehicles. However, there are no existing transit or alternative transportation facilities near the project that employees can use to access the project. Therefore, only selective parking management strategies that have been included previously such as preferential parking for ridesharing/carpooling programs and design of development to limit on-site conflict locations between vehicular parking and pedestrian/cyclists movements would be applicable to the project.		

Source: County TDM Ordinance Guide 2009 and CAPCOA 2010

Based on Table 21, following mitigation measures and VMT reduction percentage has been summarized for the proposed project.

MM-TRAF-1 **Project Site Design:** The project shall provide site design features that facilitate pedestrian amenities and promote accessibility for on-site pedestrian movement as well connections to immediate off-site locations. As shown Table 21, this measure would result a range of reduction in VMT.

MM-TRAF-2 **Bicycling Facilities:** The project shall provide adequate bike parking, change, and shower facilities on-site and improve accessibility for on-site bicycle movement as well connections to immediate off-site locations. As shown in Table 21, this measure would result in a 0.63% reduction in VMT. Low stress bikeway proposed along Byron Highway can be made accessible to bicyclists from the project if bike routes can be planned along Holey Road and Byron Hot Springs Road.

MM-TRAF-3 **Access to Transit and Expansion of Transit Network:** The project shall provide access to transit and expand transit network. The project should work with Tri Delta Transit to add transit service in the project vicinity and provide connections with the cities of Antioch, Brentwood, Pittsburg and Oakley and other incorporated areas. As shown Table in 21,this measure was assumed to result in a conservative 0.1% reduction in VMT since there are no known transit service improvement or expansion projects near the project site. However, once transit coverage is increased, this VMT reduction could increase, however it would not reduce the Project's VMT to a less than significant level.

MM-TRAF-4 **Ride-Sharing and Car-Sharing Programs for Employees:** The project shall provide/promote/subsidize ride-sharing programs to the employees by utilizing approaches such as designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading/unloading and waiting areas for ride-sharing vehicles, and providing a website or message boards for coordinating rides. Increasing the vehicle occupancy by utilizing ride sharing will result in fewer cars driving the same trip, thereby decreasing the VMT. As shown in Table in 21, providing ride-sharing and car-sharing programs to approximately 50% of the employees would result in a 2.5% and 0.4% reduction in VMT.

MM-TRAF-5 **Employer-Sponsored Vanpool/Shuttle:** The project shall provide an employer-sponsored vanpool and shuttle for use by employees for commutes to work, and bus/transit station. The vanpool and shuttle will be available to all employees; however, the calculations conservatively assume the program would be offered to/utilized by 50 percent of employees. As shown in Table 6, providing employer-sponsored vanpool/shuttle to approximately 50% of the employees, would result in a 6.7% reduction in VMT.

MM-TRAF-6 **Encourage Telecommuting and Alternative Work Schedules for Employees:** According to CAPCOA, encouraging telecommuting and alternative work schedules would reduce the number of commute trips, thereby reducing the project's VMT. Staggered start times, flexible schedules, or compressed work weeks are examples of alternative work schedules. Because retail and industrial/warehouse operations may require most of the employees to be on-site 24-hours per day, alternative work schedules may be feasible for a majority of the employees. The project shall implement a 4-day/40-hour work schedules for approximately 25% of the employees. As shown in Table 21, with 25% employee participation in an alternate work schedule consisting of a 4-day/40- hour work week, a VMT reduction of 3.75% would result.

MM-TRA-7 **Implement Commute Trip Reduction Marketing:** The project shall implement marketing strategies to reduce commute trips. The marketing strategies would include new employee orientation of trip reduction and alternative mode options, event promotions and publications. Although the marketing would target all employees, a conservative assumption of marketing to only 50 percent of the employees was utilized in the calculation. As shown in Table 21, implementing/promoting commute trip reduction marketing to approximately 50% of the employees, would result in a 2.0% reduction in VMT.

MM-TRAF-8 **Implement Subsidized or Discounted Transit Program for Employees:** The project shall provide subsidized or discounted daily or monthly public transit passes to the employees. Although subsidized or discounted transit program would be available to all employees, the VMT reduction calculation conservatively assumes that the program would be available to and utilized by a maximum of 50% of employees. As shown in Table 22, implementing subsidized or discounted transit program to approximately 50% of the employees, would result in a 1.0% reduction in VMT.

Table 22. VMT Reduction Summary

Mitigation Measure	CAPCOA Category	Project VMT Reduction (%)
MM-TRAF-1 The Project shall provide site design features that facilitate pedestrian amenities and promote accessibility for pedestrians.	LUT-9 SDT-1 SDT-2	3.0% 1.0% 0.5%
MM-TRAF-2 The project shall provide adequate bike parking, change, and shower facilities on-site and improve accessibility for on-site bicycle movement as well connections to immediate off-site locations.	SDT-6	0.63%
MM-TRAF-3 The Project shall facilitate access to transit and expand transit network.	TST-3	0.10%
MM-TRAF-4 The Project shall provide ride-sharing and car-sharing programs for approximately 50% of the employees.	TRT-3 TRT-9	2.5% 0.40%
MM-TRAF-5 The Project shall provide employer sponsored vanpool/shuttle service for approximately 50% of the employees.	TRT-11	6.7%
MM-TRAF-6 The Project shall encourage alternative work schedules for approximately 25% of the employees (no telecommuting assumed).	TRT-6	3.75%
MM-TRAF-7 The Project shall Implement CTR Marketing/ Launch Targeted Behavioral Interventions for approximately 50% of the employees.	TRT-7	2.0%
MM-TRAF-8 The Project shall implement subsidized or discounted transit programs for approximately 50% of the employees.	TRT-4	1.0%
	Total	**19.7%**[1]

1 The calculated reductions do not sum to a total since the effect of individual strategy reductions are multiplicative not additive. Total % VMT Reduction = 1-(1-A)*(1-B)*(1-C) where A, B, C equals reductions for individual strategies.

The proposed project's VMT with mitigation is summarized in Table 23. The VMT reductions associated with the above mitigation measures are applied incrementally, resulting in a lower net reduction in comparison to the sum of the numbers. The 19.7 % reduction in VMT is applied to the Project's HBW VMT per employee and results in 17.0

HBW VMT per employee, which is still above the 15% below the Bay Area average threshold of 12.6 HBW VMT per employee. Even with the implementation of the mitigation measures, the proposed project's significant impact cannot be fully mitigated. Therefore, the proposed project would result in a significant and unavoidable impact.

Per preliminary estimates based on building square footage proposed for each use, the buildout of the project comprises of approximately 800 employees. Therefore, the County may require that as a condition of approval, the individual project tenants prepare TDM or CTR Program that establish performance standards (i.e., trip reduction requirements) which can be monitored on a regular basis. The project applicant/tenants should also work with 511 Contra Costa and use their county-wide program to reduce commuter trips by providing information, resources, and tools that promote mobility options such as biking, using transit, walk, micro mobility, car pool, van pool, working from home and guaranteed ride home.

Table 23. Project VMT with Mitigation Measures

Criteria	Year 2018 (with Project)
Bay Area Commute Average VMT ***(Existing Baseline)***	14.9
Contra Costa County VMT	14.0
Byron Airport Zone VMT (Project)	21.2
15% below Bay Area Average (Threshold)	***12.7***
Mitigation Reduction	19.7%
Project with Mitigation Measures	***17.0***
Is the Project above or below Threshold with Mitigation	Above the Threshold

Source: Contra Costa Countywide Travel Demand Model and Table 22

8.3 Level of Service Improvements

As shown in Chapter 6 and 7, several intersections within the study are operate or are forecast to operate at unsatisfactory levels of service per Contra Costa or San Joaquin County criteria. Recommended improvement measures are outlined for intersections operating at deficient levels of service for all plus Project scenarios in the following discussion. LOS worksheets detailing intersection operations with the addition of recommended improvement measures are provided in Appendix C.

8.3.1 Improvement Measures

8.3.1.1 Existing plus Project

The proposed project would create an impact to the delay in the Existing plus Project condition at the 9 intersections as described in Chapter 6. Improvements are described for each impacted intersection below:

Intersection #1 – Byron Highway/Holey Road

The delay at this intersection increases by 161.0 seconds during the PM peak hour (from LOS C to LOS F) with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 1

- Add a center acceleration lane on Byron Highway to accommodate a two-stage gap acceptance from eastbound left turning movements.

Implementation of **Improvement 1** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, as the intersection of Byron Highway/Holey Road is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum volume requirements of the peak hour signal warrant, the Existing plus Project peak hour traffic volumes would satisfy the warrant (see Appendix F). As such, installation of a signal at this intersection would satisfy as an alternative improvement measure to **Improvement 1**.

Intersection #2 – Byron Highway/Byron Hot Springs Road

The delay at this intersection increases by 61.6 seconds during the AM peak hour (from LOS C to LOS F) and by greater than 300 seconds during the PM peak hour, further degrading the existing LOS F conditions, with the addition of Project traffic. Additionally, as the intersection of Byron Highway/Byron Hot Springs Road is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum volume requirements of the peak hour signal warrant, the Existing plus Project peak hour traffic volumes would satisfy the warrant (see Appendix F).

As such, the following improvement is recommended:

Improvement 2

- Install a traffic signal at the intersection, maintaining existing lane geometrics.

Implementation of **Improvement 2** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #3 – Byron Highway/Camino Diablo

The delay at this intersection increases by 49.3 seconds during the PM peak hour (from LOS C to LOS F) with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 3

- Add eastbound right turn overlap phasing.

Implementation of **Improvement 3** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #4 –Holway Drive/Camino Diablo

The delay at this intersection increases by 19.3 seconds during the PM peak hour (from LOS D to LOS F) with the addition of Project traffic. As the intersection of Holway Drive/Camino Diablo is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum volume requirements of the peak hour signal warrant, the Existing plus Project peak hour traffic volumes would not satisfy the warrant (see Appendix F). A signal would not be recommended as an appropriate improvement measure.

Additionally, conversion of this intersection to an all-way stop controlled (AWSC) intersection would not be recommended due to high eastbound and westbound traffic volume on Camino Diablo due to the potential for queuing into the adjacent Byron Highway/Camino Diablo intersection approximately 850 to the west. Additionally, the construction of a TWLTL, east or westbound left turning pockets, or additional two-stage gap acceptance measures would not improve the intersection to satisfactory conditions. Therefore, no feasible improvement measures are recommended, and the intersection would **not be compliant with the County's LOS standards**. However, it should be noted that the northbound traffic volumes on Holway Drive serve as the primary driver for the intersection's deficient operations, with less than 10 vehicles utilizing the northbound lane (southern leg) of the intersection per hour.

Intersection #5 – Byron Highway/Holway Drive

The delay at this intersection increases by 98.3 seconds during the PM peak hour (from LOS C to LOS F) with the addition of Project traffic. As the intersection of Byron Highway/Holway Drive is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum volume requirements of the peak hour signal warrant, the Existing plus Project peak hour traffic volumes would satisfy the warrant (see Appendix F).

As such, the following improvement is recommended:

Improvement 4

- Install a traffic signal at the intersection, maintaining existing lane geometrics.

Implementation of **Improvement 4** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #7 – Vasco Road/Camino Diablo

The delay at this intersection increases by 23.8 seconds during the PM peak hour (from LOS D to LOS E) with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 5

- Restripe the westbound thru-left turn lane to a westbound thru-right turn lane.

Implementation of **Improvement 5** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #8 – Walnut Boulevard/Vasco Road

The delay at this intersection increases by 18.5 seconds during the PM peak hour (from LOS D to LOS E) with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 6

- Convert the southbound left-turn phasing from protected to protected-permitted.

Implementation of **Improvement 6** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #10 – Walnut Boulevard/SR-4

The delay at this intersection increases by 5.5 seconds during the PM peak hour, further degrading the existing LOS E conditions with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 7

- Restripe the eastbound thru and eastbound right turn lanes to an eastbound thru-right lane.
- Add an additional receiving leg for eastbound traffic on the western leg of the intersection.

Implementation of **Improvement 7** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Intersection #14 – Byron Road/Grant Line Road

The delay at this intersection increases by 6.1 seconds during the AM peak hour, further degrading the existing LOS E conditions, and decreases by 6.2 seconds during the PM peak hour at LOS F, with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 8

- Add westbound right turn overlap phasing.

Implementation of **Improvement 8** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with San Joaquin County LOS standards**.

8.3.1.2 Future Year 2040 plus Project

The proposed project would create an impact to the delay in the Future Year plus Project condition at the 10 intersections as described in Chapter 7. Improvements are described for each impacted intersection below:

Intersection #1 – Byron Highway/Holey Road

The delay at this intersection increases by 81.8 seconds during the AM peak hour, further degrading the Future Year 2040 LOS F conditions, with the addition of Project traffic. Although the delay does not increase in the PM peak hour with the addition of project traffic, the delay would remain greater than 50 seconds (LOS F). As the intersection of Byron Highway/Holey Road is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum volume requirements of the peak hour signal warrant, the Future Year 2040 plus Project peak hour traffic volumes would satisfy the warrant during the PM peak hour (see Appendix F). As such, the following improvement is recommended:

Improvement 9

- Install a traffic signal at the intersection.
- Add a separate eastbound right turn lane and a separate northbound left turn lane.
- Add an additional receiving lane for southbound traffic on the southern leg of the intersection.

Implementation of **Improvement 9** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, County of Contra Costa identifies several proposed (funded and unfunded) projects in the Capital Road Improvement & Preservation Program (CRIPP) for funding year (FY) 2020/21 and FY 2026/27. Although the improvements outlined in **Improvement 9** are not included in the CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Byron Highway/Holey Road are included below for informational purposes:

- **(Unfunded) III-15. Byron Highway Safety Improvements (Various Locations)** – This project proposes to construct safety improvements at various locations along Byron Highway to include shoulder widening, drainage improvements, and intersection improvements.
- **(Unfunded) III-16. Byron Highway Widening – Camino Diablo to the Alameda County Line (East County Regional AOB)** – This project proposes to widen 5 miles of roadway shoulders on Byron Highway from Camino Diablo to the Alameda County Line.
- **(Unfunded) III-54. SR239/Trilink: Vasco Road-Byron Highway Connector –** This project proposes to construct a new roadway as part of the future Route 239 connector between Vasco Road and Byron Highway.

Intersection #2 – Byron Highway/Byron Hot Springs Road

The delay at this intersection increases by greater than 300 seconds during both the AM and PM peak hours, further degrading the Future Year 2040 LOS F conditions, with the addition of Project traffic. As recommended per **Improvement 2**, the intersection meets peak hour traffic signal warrants under Existing plus Project conditions, and a signal would be recommended. A peak hour traffic signal warrant per the CA MUTCD was reviewed for Future Year

2040 plus Project conditions to determine whether the installation of a traffic signal may be warranted at this intersection in this analysis scenario as well. Based on the minimum volume requirements of the peak hour signal warrant, the Future Year 2040 plus Project peak hour traffic volumes would satisfy the warrant (see Appendix F). As such, the following improvement is recommended:

Improvement 10

- Install a traffic signal at the intersection per **Improvement 2**.
- Add an additional northbound and southbound thru lane.
- Add an additional receiving lane for both northbound and southbound traffic on the northern and southern legs of the intersection, respectively.

Implementation of **Improvement 10** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 10** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Byron Highway/Byron Hot Springs Road are included below for informational purposes:

- **(Unfunded) III-17. Byron Highway Widening – Chestnut Street to State Route 4 (East County Regional AOB)** – This project proposes to widen shoulders for 1.6 miles of Byron Highway from Chestnut Street to State Route 4.
- **(Unfunded) III-16. Byron Highway Widening – Camino Diablo to the Alameda County Line (East County Regional AOB)** – This project proposes to widen 5 miles of roadway shoulders on Byron Highway from Camino Diablo to the Alameda County Line.
- **(Unfunded) III-54. SR239/Trilink: Vasco Road-Byron Highway Connector –** This project proposes to construct a new roadway as part of the future Route 239 connector between Vasco Road and Byron Highway.

Intersection #3 – Byron Highway/Camino Diablo

The delay at this intersection increases by 109.5 seconds during the AM peak hour, and by 84.6 seconds during PM peak hour, further degrading the Future Year 2040 LOS F conditions, with the addition of Project traffic.

Implementation of **Improvement 3**, as recommended under Existing plus Project conditions, would improve intersection operations to satisfactory conditions during Future Year 2040 plus Project conditions as well. No additional improvement measures would be necessary, and the intersection would be **compliant with the County's LOS standards**.

Intersection #4 –Holway Drive/Camino Diablo

The delay at this intersection increases by 79.6 seconds during the AM peak hour and 24.1 seconds during the PM peak hour, further degrading the Future Year 2040 LOS F conditions, with the addition of Project traffic. As the intersection of Holway Drive/Camino Diablo is a TWSC intersection, a peak hour traffic signal warrant per the CA MUTCD was reviewed to determine whether the installation of a traffic signal may be warranted at this intersection. Based on the minimum

volume requirements of the peak hour signal warrant, the Future Year 2040 plus Project peak hour traffic volumes would satisfy the warrant (see Appendix F). As such, the following improvement is recommended:

Improvement 11

- Install a traffic signal at the intersection.
- Add a separate eastbound left turn lane with protected phasing.

Implementation of **Improvement 11** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 11** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Holway Drive/Camino Diablo are included below for informational purposes:

- **(Unfunded) III-21. Camino Diablo Widening – Vasco Road to Byron Highway (East County Regional AOB)** – This project proposes to widen shoulders on Camino Diablo from Vasco Road east to Byron Highway.
- **(Unfunded) III-34. Holway Drive Safety Improvements – Main Street to Camino Diablo Road (CTPL) –** This project proposes to connect sidewalks, curb ramps, and crosswalks.

Intersection #5 – Byron Highway/Holway Drive

The delay at this intersection increases by 15.1 seconds during the AM peak hour (from LOS D to LOS E), and by 166.2 seconds during PM peak hour, further degrading the Future Year 2040 LOS F conditions with the addition of Project traffic.

Implementation of **Improvement 4**, as recommended under Existing plus Project conditions, would improve intersection operations to satisfactory conditions during Future Year 2040 plus Project conditions as well. No additional improvement measures would be necessary, and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 4** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Byron Highway/Holway Drive are included below for informational purposes:

- **(Unfunded) III-15. Byron Highway Safety Improvements (Various Locations)** – This project proposes to construct safety improvements at various locations along Byron Highway to include shoulder widening, drainage improvements, and intersection improvements.
- **(Unfunded) III-19. Byron Highway Widening – SR 4 to Camino Diablo (East County Regional AOB)** – This project proposes to widen shoulders along Byron Highway from State Route 4 south to Camino Diablo.
- **(Unfunded) III-34. Holway Drive Safety Improvements – Main Street to Camino Diablo Road (CTPL) –** This project proposes to connect sidewalks, curb ramps, and crosswalks.

Intersection #6 – Byron Highway/SR-4

The delay at this intersection increases by 19.3 second during the AM peak hour (from LOS D to LOS E) with the addition of project traffic. As such, the following improvement is recommended:

Improvement 12

- Add eastbound right turn overlap phasing.

Implementation of **Improvement 12** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 12** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Byron Highway/SR-4 are included below for informational purposes:

- **(Unfunded) III-17. Byron Highway Widening – Chestnut Street to State Route 4 (East County Regional AOB)** – This project proposes to widen shoulders for 1.6 miles of Byron Highway from Chestnut Street to State Route 4.
- **(Unfunded) III-19. Byron Highway Widening – SR 4 to Camino Diablo (East County Regional AOB)** – This project proposes to widen shoulders along Byron Highway from State Route 4 south to Camino Diablo.
- **(Unfunded) III-55. State Route 4 & Byron Highway (South) Intersection Widening – Phase 2 (East County Regional AOB)** – This project proposes to widen the existing pavement on Byron Highway's portion of the intersection to provide turn lanes onto State Route 4.
- **(Unfunded) III-57. State Route 4 Widening – Bixler Road to Discovery Bay Boulevard – Complete Streets and Bridge Widening (Discovery Bay AOB) –** This project proposes to widen about 1.2 miles of State Route 4 from Bixler Road to Discovery Bay Boulevard in cooperation with Caltrans.
- **(Unfunded) III-58. State Route 4 Widening – Byron Highway to Regatta Drive (Discovery Bay AOB) –** This project proposes to widen State Route 4 between Byron Highway and Regatta Drive.

Intersection #7 – Vasco Road/Camino Diablo

The delay at this intersection increases by 26.6 seconds during the PM peak hour, further degrading the Future Year 2040 LOS F conditions with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 13

- Restripe the westbound left-turn lane as a thru-left turn lane .
- Restripe the westbound thru-left and right-turn lanes into one channelized right-turn lane.
- Add an additional southbound left-turn lane.
- Add an additional westbound thru lane.
- Add an additional receiving lane for northbound traffic on the northern leg of the intersection.

Implementation of **Improvement 13** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 13** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Vasco Road/Camino Diablo are included below for informational purposes:

- **(Unfunded) III-21. Camino Diablo Widening – Vasco Road to Byron Highway (East County Regional AOB) –** This project proposes to widen shoulders on Camino Diablo from Vasco Road east to Byron Highway.
- **(Unfunded) III-54. SR239/Trilink: Vasco Road-Byron Highway Connector** – This project proposes to construct a new roadway as part of the future Route 239 connector between Vasco Road and Byron Highway.
- **(Unfunded) III-60. Vasco Road / Camino Diablo Intersection Improvements (East County Regional AOB)** – This project is to modify the intersection at Vasco Road and Camino Diablo. Improvements include dual left turn lanes on westbound Camino Diablo, dual right turn lanes on eastbound Camino Diablo, lengthen the 4-lane section on Vasco Road near the intersection, and maintain the exclusive right lane on northbound Vasco Road.

Intersection #8 – Walnut Boulevard/Vasco Road

The delay at this intersection increases by 7.2 seconds during the AM peak hour, further degrading the Future Year 2040 LOS E conditions, and by 14.1 seconds during the PM peak hour, further degrading the Future Year 2040 LOS F conditions with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 14

- Convert the southbound left-turn phasing from protected to protected-permitted per **Improvement 6**.
- Add an additional westbound thru lane.
- Add an additional receiving lane for westbound traffic on the western leg of the intersection.
- Convert the existing westbound right turn lane to a channelized westbound right turn lane.

Implementation of **Improvement 14** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 14** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Walnut Boulevard/Vasco Road are included below for informational purposes:

- **(Unfunded) III-54. SR239/Trilink: Vasco Road-Byron Highway Connector –** This project proposes to construct a new roadway as part of the future Route 239 connector between Vasco Road and Byron Highway.

Intersection #10 – Walnut Boulevard/SR-4

The delay at this intersection increases by 8.7 seconds during the PM peak hour, further degrading the Future Year 2040 LOS F conditions with the addition of Project traffic. As such, the following improvement is recommended:

Improvement 15

- Restripe the eastbound thru and eastbound right turn lanes to an eastbound thru-right lane and add an additional receiving leg for eastbound traffic on the western leg of the intersection per **Improvement 7.**
- Add an additional northbound thru lane.
- Add an additional receiving lane for northbound traffic on the northern leg of the intersection.

Implementation of **Improvement 15** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with the County's LOS standards**.

Additionally, although the improvements outlined in **Improvement 15** are not included in the County of Contra Costa CRIPP, projects listed in the CRIPP that may contribute to the necessary roadway widening or other intersection improvements at Walnut Boulevard/Vasco Road are included below for informational purposes:

- **(Unfunded) III-42. Marsh Creek Road Improvements (East County Regional AOB)** – This project is to construct various roadway and intersection improvements along Marsh Creek Road to include shoulder widening to enhance bicycle use and drainage improvements.
- **(Unfunded) III-54. SR239/Trilink: Vasco Road-Byron Highway Connector –** This project proposes to construct a new roadway as part of the future Route 239 connector between Vasco Road and Byron Highway.

Intersection #13 – Mountain House Parkway/Byron Highway

The delay at this intersection decreases by 1.8 seconds during the PM peak hour at LOS F with the addition of Project traffic. However, delays are greater than 100 seconds in both Future Year 2040 and Future Year 2040 plus Project conditions. As such, the following improvement is recommended: **Improvement 16**

- Add northbound right turn overlap phasing.
- Add an additional westbound thru lane.
- Add an additional receiving lane for westbound traffic on the western leg of the intersection.

Implementation of **Improvement 16** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with San Joaquin County LOS standards**.

Intersection #14 – Byron Road/Grant Line Road

The delay at this intersection increases by 9.5 seconds during the AM peak hour and 5.9 seconds during the PM peak hour, further degrading the Future Year 2040 LOS F conditions during both peak hours with the addition of Project traffic. As such, the following improvement is recommended: **Improvement 17**

- Add westbound right turn overlap phasing per Improvement **8**.
- Add an additional westbound right-turn lane.

- Add an additional southbound left-turn lane.
- Add an additional northbound thru lane.
- Add northbound right turn overlap phasing.

Implementation of **Improvement 17** would improve intersection operations to satisfactory conditions and the intersection would be **compliant with San Joaquin County LOS standards**. However, it must be noted that the following right-of way constraints exist at this intersection that could limit the construction of these improvement measures:

- Union Pacific Railroad (UPRR) line crossing the eastern leg of the intersection.
- Private residence on the western boundary of the intersection.
- Private residence at the southeastern corner of the intersection.

8.3.1.3 Fair-Share

Table 24 provides a summary of the recommended improvements discussed above and fair-share percentages at all study intersections under the Future Year 2040 plus Project conditions.

Table 24. Project Fair-Share and Improvement Summary

No.	Intersection	Jurisdiction	Future Year 2040 plus Project						Recommended Improvements
			AM Peak			*PM Peak*			
			Project Traffic Volume (vph)	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	*Project Traffic Volume (vph)*	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	
1	Byron Highway/Holey Road	Contra Costa County	224	594	27.38%	369	747	33.06%	**Improvement 9** • Install a traffic signal at the intersection. • Add a separate eastbound right turn lane and a separate northbound left turn lane. • Add an additional receiving lane for southbound traffic on the southern leg of the intersection.
2	Byron Highway/Byron Hot Springs Road	Contra Costa County	300	594	33.56%	489	747	39.56%	**Improvement 10** • Install a traffic signal at the intersection per Improvement 2. • Add an additional northbound and southbound thru lane. • Add an additional receiving lane for both northbound and southbound traffic on the northern and southern legs of the intersection, respectively.
3	Byron Highway/Camino Diablo	Contra Costa County	289	595	32.69%	462	748	38.18%	**Improvement 3** • Add eastbound right turn overlap phasing.
4	Holway Drive/Camino Diablo	Contra Costa County	161	347	31.69%	257	649	28.37%	**Improvement 11** • Install a traffic signal at the intersection.

Table 24. Project Fair-Share and Improvement Summary

No.	Intersection	Jurisdiction	Future Year 2040 plus Project						Recommended Improvements
			AM Peak			*PM Peak*			
			Project Traffic Volume (vph)	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	*Project Traffic Volume (vph)*	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	
									• Add a separate eastbound left turn lane with protected phasing.
5	Byron Highway/Holway Drive	Contra Costa County	124	314	28.31%	198	166	54.40%	**Improvement 4** • Install a traffic signal at the intersection, maintaining existing lane geometrics.
6	Byron Highway/SR-4	Contra Costa County	124	629	16.47%	198	520	27.58%	**Improvement 12** • Add eastbound right turn overlap phasing.
7	Vasco Road/Camino Diablo	Contra Costa County	161	479	25.16%	257	850	23.22%	**Improvement 13** • Restripe the westbound left-turn lane as a thru-left turn lane. • Restripe the westbound thru-left and right-turn lanes into one channelized right-turn lane. • Add an additional southbound left-turn lane. • Add an additional westbound thru lane. • Add an additional receiving lane for northbound traffic on the northern leg of the intersection.

Table 24. Project Fair-Share and Improvement Summary

No.	Intersection	Jurisdiction	Future Year 2040 plus Project						Recommended Improvements
			AM Peak			*PM Peak*			
			Project Traffic Volume (vph)	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	*Project Traffic Volume (vph)*	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	
8	Walnut Boulevard/Vasco Road	Contra Costa County	103	477	17.76%	165	846	16.32%	**Improvement 14** • Convert the southbound left-turn phasing from protected to protected-permitted per Improvement 6. • Add an additional westbound thru lane. • Add an additional receiving lane for westbound traffic on the western leg of the intersection. • Convert the existing westbound right turn lane to a channelized westbound right turn lane.
10	Walnut Boulevard/SR-4	Contra Costa County	75	584	11.38%	104	471	18.02%	**Improvement 15** • Restripe the eastbound thru and eastbound right turn lanes to an eastbound thru-right lane and add an additional receiving leg for eastbound traffic on the western leg of the intersection per Improvement 7. • Add an additional northbound thru lane. • Add an additional receiving lane for northbound traffic on the northern leg of the intersection.

Table 24. Project Fair-Share and Improvement Summary

No.	Intersection	Jurisdiction	Future Year 2040 plus Project						Recommended Improvements
			AM Peak			*PM Peak*			
			Project Traffic Volume (vph)	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	*Project Traffic Volume (vph)*	*Other Related Projects Traffic Volume (vph)*	*Project Percentage Share (%)[1]*	
13	Mountain House Parkway/Byron Highway	San Joaquin County	162	594	21.43%	271	747	26.62%	**Improvement 16** • Add northbound right turn overlap phasing. • Add an additional westbound thru lane. • Add an additional receiving lane for westbound traffic on the western leg of the intersection.
14	Byron Road/Grant Line Road	San Joaquin County	49	392	11.13%	82	513	13.71%	**Improvement 17** • Add westbound right turn overlap phasing per **Improvement 8**. • Add an additional westbound right-turn lane. • Add an additional southbound left-turn lane. • Add an additional northbound thru lane. • Add northbound right turn overlap phasing.

Notes: vph = vehicles per hour

[1] Project fair share percentage calculated as the project-related traffic at the study intersection divided by the addition of traffic from cumulative projects and the project traffic (Project Percentage Share = Project Traffic ÷ (Project + Other Related Project Traffic)).

9 Findings and Recommendations

Based on the traffic analysis of the proposed project, the following findings on VMT and LOS analysis are made:

- As discussed in Chapter 5.2.1, queuing at project access intersections are not forecast to exceed storage capacities. However, excessive queuing on Byron Highway could lead to increased delays and degradation of Byron Highway traffic operations. Both intersections are forecast to operate at deficient levels of service, and improvement measures are identified for both intersections under **Improvement 1** and **Improvement 2** under Existing plus Project conditions, and under **Improvement 9** and **Improvement 10** under Future Year 2040 plus Project conditions. Implementation of these improvement measures would reduce queuing at both intersections with improvements to the delay.
- As discussed in Chapter 5.2.2, queuing at the Mountain House Parkway/I-205 westbound off-ramps is forecast to extend into the mainline in the Future Year 2040 plus Project, AM peak hour conditions. When comparing the Future Year 2040 scenario with the addition of the proposed project, queueing is forecast to increase for all movements during the AM peak hour at the Mountain House Parkway/I-205 westbound ramps; however, 95th percentile queuing indicates that the total ramp queuing would only increase by approximately 1 foot. As this is a negligible amount (less than one vehicle car length), project impacts to the westbound mainline would be less-than-significant.
- The project's detailed VMT analysis was conducted using the Contra Costa Countywide Travel Demand Model. The County threshold for employment projects is that the project's home-based work VMT per employee should be 15% below Bay Area average commute VMT per employee (i.e., hone-based work VMT per employee). The HBW VMT per employee for the project is 21.2, for the County is 14.0 and for the Bay Area is 14.9. Since the project's HBW VMT per employee (21.2) is higher than the Bay Area VMT per employee (14.9), the proposed project would have a significant VMT impact.
- To meet the threshold of 15% below Bay Area Average and have a less than significant VMT impact, the HBW VMT per employee for the project should be approximately 12.6, which would require a 40% reduction. Transportation demand management strategies and mitigation measures that can potentially achieve VMT reduction are provided in Chapter 8.
- As shown in Chapter 8, a 19.7 % reduction in VMT in Project's HBW VMT per employee can be achieved from the mitigation measure that results in 17.0 HBW VMT per employee. Even with the implementation of the mitigation measures, the proposed project's significant impact cannot be fully mitigated. Therefore, the proposed project would result in a significant and unavoidable VMT impact.
- The County may require that as a condition of approval, the individual project tenants prepare TDM or CTR Program that establish performance standards (i.e., trip reduction requirements) which can be monitored on a regular basis. Or the County may require The TDM program to be developed comprehensively for the entire project with flexibility to adjust to changing conditions (i.e. lower or higher VMT generating tenants), innovation and technological advancements.
- The project applicant/tenants should also work with 511 Contra Costa and use their county-wide program to reduce commuter trips by providing information, resources, and tools that promote mobility options such as biking, using transit, walk, micro mobility, car pool, van pool, working from home and guaranteed ride home.
- Nine (9) intersections are forecast to operate at deficient levels of service per Contra Costa and San Joaquin County LOS standards during Existing plus Project conditions. Implementation of **Improvement 1** through **Improvement 8** would improve levels of service at all intersections to be in compliance with both County's standards, with the exception of intersection #4 (Holway Drive/Camino Diablo). Constraining right-of-way

widths and high traffic volumes on Camino Diablo limit the possibilities for intersection improvements. Peak hour traffic signal warrants are also not met at this intersection.

- Eleven (11) intersections are forecast to operate at deficient levels of service per Contra Costa and San Joaquin County LOS standards during Future Year 2040 plus Project conditions. Implementation of **Improvement 9** through **Improvement 17** would improve levels of service at all intersections to be in compliance with both County's standards.

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Appendix A

CCTA Model Output for VMT

VMT with Byron Airport Project - Year 2018

County	2018 Population	2018 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	880,591	752,296	3,224,157	8,087,556	7,130,364	13,711,975
San Mateo	755,948	426,546	5,150,476	8,065,811	12,202,651	15,242,407
Santa Clara	1,957,684	1,141,087	12,793,643	16,567,762	30,416,102	33,793,280
Alameda	1,647,778	843,838	12,885,806	12,525,545	25,383,504	25,313,012
Contra Costa	1,143,338	401,386	12,246,436	5,623,428	22,096,242	16,321,281
Solano	447,508	140,952	6,042,953	2,231,935	9,205,344	4,734,752
Napa	140,305	80,125	1,519,373	1,363,250	2,698,622	2,453,274
Sonoma	504,085	233,582	6,039,855	4,316,204	10,807,856	8,008,286
Marin	254,804	127,421	1,813,469	2,934,677	4,254,772	4,617,193
Grand Total	7,732,041	4,147,233	61,716,168	61,716,168	124,195,458	124,195,458
Byron Airport Numbers	19	846	429	17,904	6,522	30,859

VMT - No Project - Year 2018

COUNTY:1	2018 Population	2018 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	880,591	752,296	3,224,329	8,090,880	7,130,483	13,721,573
San Mateo	755,948	426,546	5,150,339	8,069,771	12,201,549	15,246,447
Santa Clara	1,957,684	1,141,087	12,791,645	16,576,128	30,410,286	33,803,262
Alameda	1,647,778	843,838	12,886,033	12,536,170	25,381,999	25,326,638
Contra Costa	1,143,338	401,386	12,267,201	5,609,828	22,130,099	16,299,615
Solano	447,508	140,952	6,042,822	2,232,979	9,204,818	4,736,033
Napa	140,305	80,125	1,519,260	1,363,947	2,698,118	2,454,224
Sonoma	504,085	233,582	6,038,899	4,318,708	10,805,629	8,011,414
Marin	254,804	127,421	1,813,453	2,935,570	4,254,261	4,618,037
Grand Total	7,732,041	4,147,233	61,733,980	61,733,980	124,217,243	124,217,243
Byron Airport Numbers	19	62	432	1,405	1,457	2,551

Difference

COUNTY:1	2018 Population	2018 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	-	-	(172)	(3,324)	(118)	(9,599)
San Mateo	-	-	137	(3,960)	1,102	(4,039)
Santa Clara	-	-	1,998	(8,366)	5,815	(9,982)
Alameda	-	-	(228)	(10,625)	1,505	(13,626)
Contra Costa	-	-	(20,765)	**13,601**	(33,857)	**21,665**
Solano	-	-	131	(1,045)	526	(1,281)
Napa	-	-	113	(697)	504	(950)
Sonoma	-	-	957	(2,504)	2,227	(3,129)
Marin	-	-	16	(892)	511	(844)
Grand Total	-	-	(17,812)	(17,812)	(21,785)	(21,785)
Byron Airport Numbers	-	784	(3)	**16,498**	5,065	**28,309**

VMT Metrics - Project with Byron Airport - Year 2018

County	HBW_RES PR Per Capita	HBW_EMP PR Per Job	TOT_RES PR Per Capita	TOT EMP 2040 Per Job
San Francisco	3.7	10.8	8.1	18.2
San Mateo	6.8	18.9	16.1	35.7
Santa Clara	6.5	14.5	15.5	29.6
Alameda	7.8	14.8	15.4	30.0
Contra Costa	**10.7**	**14.0**	**19.3**	**40.7**
Solano	13.5	15.8	20.6	33.6
Napa	10.8	17.0	19.2	30.6
Sonoma	12.0	18.5	21.4	34.3
Marin	7.1	23.0	16.7	36.2
Total	8.0	14.9	16.1	29.9
Byron Airport Zone	**22.6**	**21.2**	**343.2**	**36.5**

VMT Metrics - No-Project - Year 2018

County	HBW_RES PR Per Capita	HBW_EMP PR Per Job	TOT_RES PR Per Capita	TOT EMP 2040 Per Job
San Francisco	3.7	10.8	8.1	18.2
San Mateo	6.8	18.9	16.1	35.7
Santa Clara	6.5	14.5	15.5	29.6
Alameda	7.8	14.9	15.4	30.0
Contra Costa	**10.7**	**14.0**	**19.4**	**40.6**
Solano	13.5	15.8	20.6	33.6
Napa	10.8	17.0	19.2	30.6
Sonoma	12.0	18.5	21.4	34.3
Marin	7.1	23.0	16.7	36.2
Total	8.0	14.9	16.1	30.0
Byron Airport Zone	**22.7**	**22.7**	**76.7**	**41.1**

VMT with Byron Airport Project - Year 2040

County	2040 Population	2040 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	1,169,981	872,405	3,835,346	9,269,755	8,754,872	15,962,839
San Mateo	915,423	471,989	5,805,988	9,149,544	13,816,517	18,087,851
Santa Clara	2,537,758	1,289,686	15,963,908	17,986,015	36,529,486	39,843,315
Alameda	2,080,846	948,532	14,575,670	13,526,301	29,229,346	27,840,360
Contra Costa	1,380,951	498,179	13,014,504	7,210,440	24,797,146	20,635,911
Solano	510,281	150,941	6,170,808	2,673,948	9,959,261	5,589,000
Napa	158,040	83,350	1,780,096	1,683,135	3,288,589	2,867,690
Sonoma	596,566	243,545	7,444,978	5,692,954	14,831,119	9,612,739
Marin	277,241	134,934	1,973,326	3,372,532	4,602,957	5,369,588
Grand Total	9,627,087	4,693,561	70,564,624	70,564,624	145,809,293	145,809,293
Byron Airport Numbers	19	844	427	18,565	6,569	32,046

VMT - No Project - Year 2040

COUNTY:1	2040 Population	2040 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	1,169,981	872,405	3,835,279	9,272,724	8,754,632	15,970,897
San Mateo	915,423	471,989	5,805,468	9,153,067	13,815,199	18,093,055
Santa Clara	2,537,758	1,289,686	15,960,394	17,993,899	36,522,853	39,853,251
Alameda	2,080,846	948,532	14,574,768	13,535,269	29,226,286	27,852,061
Contra Costa	1,380,951	497,395	13,034,260	7,195,739	24,828,335	20,611,607
Solano	510,281	150,941	6,170,841	2,674,956	9,958,752	5,589,619
Napa	158,040	83,350	1,779,963	1,683,793	3,288,096	2,868,296
Sonoma	596,566	243,545	7,444,159	5,695,490	14,828,187	9,615,449
Marin	277,241	134,934	1,973,162	3,373,357	4,602,474	5,370,577
Grand Total	9,627,087	4,692,777	70,578,292	70,578,292	145,824,813	145,824,813
Byron Airport Numbers	19	60	433	1,391	1,401	2,557

Difference

COUNTY:1	2040 Population	2040 Employment	Home Based Work Residential VMT	Home Based Work Employment VMT	Total Residential VMT	Total Employment VMT
San Francisco	-	-	67	(2,969)	240	(8,059)
San Mateo	-	-	521	(3,523)	1,318	(5,204)
Santa Clara	-	-	3,514	(7,883)	6,633	(9,936)
Alameda	-	-	902	(8,968)	3,060	(11,701)
Contra Costa	-	784	(19,756)	**14,701**	(31,188)	**24,304**
Solano	-	-	(33)	(1,007)	509	(619)
Napa	-	-	133	(659)	493	(606)
Sonoma	-	-	819	(2,536)	2,933	(2,709)
Marin	-	-	164	(825)	483	(988)
Grand Total	-	784	(13,668)	(13,668)	(15,520)	(15,520)
Byron Airport Numbers	-	784	(6)	**17,174**	5,168	**29,489**

VMT Metrics - Project with Byron Airport - Year 2040

County	HBW_RES PR Per Capita	HBW_EMP PR Per Job	TOT_RES PR Per Capita	TOT EMP 2040 Per Job
San Francisco	3.28	10.63	7.48	18.30
San Mateo	6.34	19.39	15.09	38.32
Santa Clara	6.29	13.95	14.39	30.89
Alameda	7.00	14.26	14.05	29.35
Contra Costa	**9.42**	**14.47**	**17.96**	**41.42**
Solano	12.09	17.72	19.52	37.03
Napa	11.26	20.19	20.81	34.41
Sonoma	12.48	23.38	24.86	39.47
Marin	7.12	24.99	16.60	39.79
Total	7.33	15.03	15.15	31.07
Byron Airport Zone	**22.45**	**22.00**	**345.76**	**37.97**

VMT Metrics - No-Project - Year 2040

County	HBW_RES PR Per Capita	HBW_EMP PR Per Job	TOT_RES PR Per Capita	TOT EMP 2040 Per Job
San Francisco	3.28	10.63	7.48	18.31
San Mateo	6.34	19.39	15.09	38.33
Santa Clara	6.29	13.95	14.39	30.90
Alameda	7.00	14.27	14.05	29.36
Contra Costa	**9.44**	**14.47**	**17.98**	**41.44**
Solano	12.09	17.72	19.52	37.03
Napa	11.26	20.20	20.81	34.41
Sonoma	12.48	23.39	24.86	39.48
Marin	7.12	25.00	16.60	39.80
Total	7.33	15.04	15.15	31.07
Byron Airport Zone	**22.78**	**23.19**	**73.76**	**42.61**

Appendix B

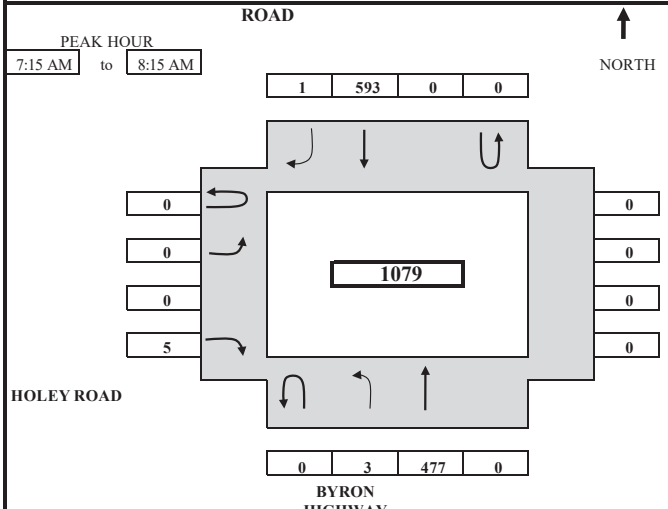
Traffic Counts

B.A.Y.M.E.T.R.I.C.S.

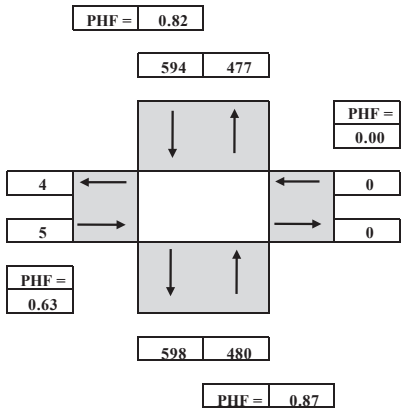
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**T**	9:00 AM
E-W APPROACH:	HOLEY ROAD	**JURISDICTION**	BYRON	**FILE:**	3510124-1AM

PEAK HOUR 7:15 AM to 8:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUN				WESTBOUN				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		2	115				137	0		0		1					**255**
7:15 AM	to	7:30 AM		3	225				318	0		0		3					**549**
7:30 AM	to	7:45 AM		3	334				461	0		0		4					**802**
7:45 AM	to	8:00 AM		3	456				599	0		0		4					**1062**
8:00 AM	to	8:15 AM		5	592				730	1		0		6					**1334**
8:15 AM	to	8:30 AM		6	680				844	1		0		6					**1537**
8:30 AM	to	8:45 AM		6	788				935	1		0		7					**1737**
8:45 AM	to	9:00 AM		6	888				1043	1		0		7					**1945**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	2	115	0	0	0	137	0	0	0	0	1	0	0	0	0	**255**
7:15 AM	to	7:30 AM	0	1	110	0	0	0	181	0	0	0	0	2	0	0	0	0	**294**
7:30 AM	to	7:45 AM	0	0	109	0	0	0	143	0	0	0	0	1	0	0	0	0	**253**
7:45 AM	to	8:00 AM	0	0	122	0	0	0	138	0	0	0	0	0	0	0	0	0	**260**
8:00 AM	to	8:15 AM	0	2	136	0	0	0	131	1	0	0	0	2	0	0	0	0	**272**
8:15 AM	to	8:30 AM	0	1	88	0	0	0	114	0	0	0	0	0	0	0	0	0	**203**
8:30 AM	to	8:45 AM	0	0	108	0	0	0	91	0	0	0	0	1	0	0	0	0	**200**
8:45 AM	to	9:00 AM	0	0	100	0	0	0	108	0	0	0	0	0	0	0	0	0	**208**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	3	456	0	0	0	599	0	0	0	0	4	0	0	0	0	**1062**
7:15 AM	to	8:15 AM	0	3	477	0	0	0	593	1	0	0	0	5	0	0	0	0	**1079**
7:30 AM	to	8:30 AM	0	3	455	0	0	0	526	1	0	0	0	3	0	0	0	0	**988**
7:45 AM	to	8:45 AM	0	3	454	0	0	0	474	1	0	0	0	3	0	0	0	0	**935**
8:00 AM	to	9:00 AM	0	3	432	0	0	0	444	1	0	0	0	3	0	0	0	0	**883**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND				SOUTHBOUND				EASTBOUN				WESTBOUN				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	3	477	0	0	0	593	1	0	0	0	5	0	0	0	0	**1079**
PHF BY MOVEMENT	0.00	0.38	0.88	0.00	0.00	0.00	0.82	0.25	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.87				0.82				0.63				0.00				0.92
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	72		71		69		69		0		0		0		1		**141**
TRUCK PERCENTAGE	15.0%		14.9%		11.6%		11.5%		0.0%		0.0%		0.0%		25.0%		**13.1%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR:	0				0				0				0				**0**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				**0**

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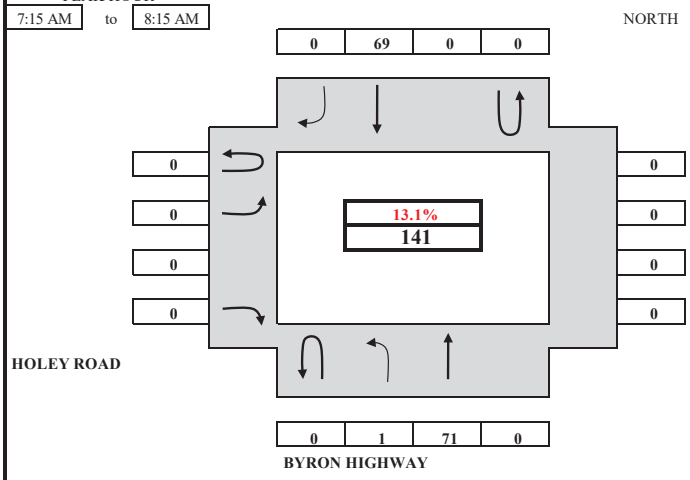
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

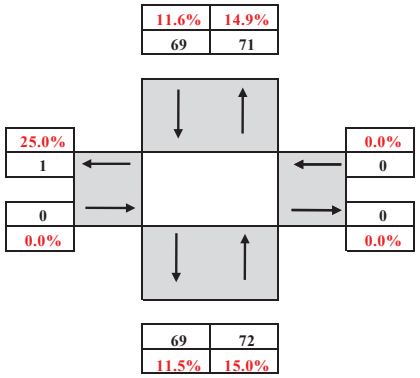
PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-1AM**

PEAK HOUR
7:15 AM to 8:15 AM

NORTH



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	12				12	0		0		1					**25**
7:15 AM	to	7:30 AM		0	30				28	0		0		1					**59**
7:30 AM	to	7:45 AM		0	51				43	0		0		1					**95**
7:45 AM	to	8:00 AM		0	61				55	0		0		1					**117**
8:00 AM	to	8:15 AM		1	83				81	0		0		1					**166**
8:15 AM	to	8:30 AM		1	95				98	0		0		1					**195**
8:30 AM	to	8:45 AM		1	112				115	0		0		2					**230**
8:45 AM	to	9:00 AM		1	130				128	0		0		2					**261**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	12	0	0	0	12	0	0	0	0	1	0	0	0	0	**25**
7:15 AM	to	7:30 AM	0	0	18	0	0	0	16	0	0	0	0	0	0	0	0	0	**34**
7:30 AM	to	7:45 AM	0	0	21	0	0	0	15	0	0	0	0	0	0	0	0	0	**36**
7:45 AM	to	8:00 AM	0	0	10	0	0	0	12	0	0	0	0	0	0	0	0	0	**22**
8:00 AM	to	8:15 AM	0	1	22	0	0	0	26	0	0	0	0	0	0	0	0	0	**49**
8:15 AM	to	8:30 AM	0	0	12	0	0	0	17	0	0	0	0	0	0	0	0	0	**29**
8:30 AM	to	8:45 AM	0	0	17	0	0	0	17	0	0	0	0	1	0	0	0	0	**35**
8:45 AM	to	9:00 AM	0	0	18	0	0	0	13	0	0	0	0	0	0	0	0	0	**31**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	61	0	0	0	55	0	0	0	0	1	0	0	0	0	**117**
7:15 AM	to	8:15 AM	0	1	71	0	0	0	69	0	0	0	0	0	0	0	0	0	**141**
7:30 AM	to	8:30 AM	0	1	65	0	0	0	70	0	0	0	0	0	0	0	0	0	**136**
7:45 AM	to	8:45 AM	0	1	61	0	0	0	72	0	0	0	0	1	0	0	0	0	**135**
8:00 AM	to	9:00 AM	0	1	69	0	0	0	73	0	0	0	0	1	0	0	0	0	**144**

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7:15 AM to 8:15 AM

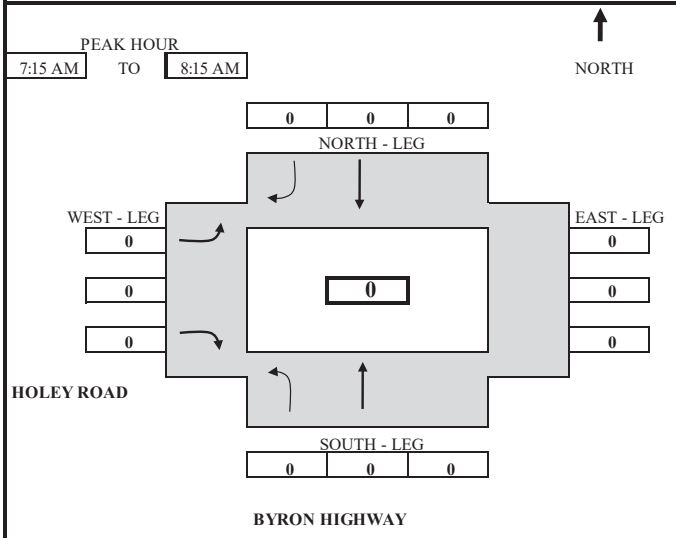
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	72	71	69	69	0	0	0	1	141
TRUCK PERCENTAGE	15.0%	14.9%	11.6%	11.5%	0.0%	0.0%	0.0%	25.0%	13.1%

B.A.Y.M.E.T.R.I.C.S.

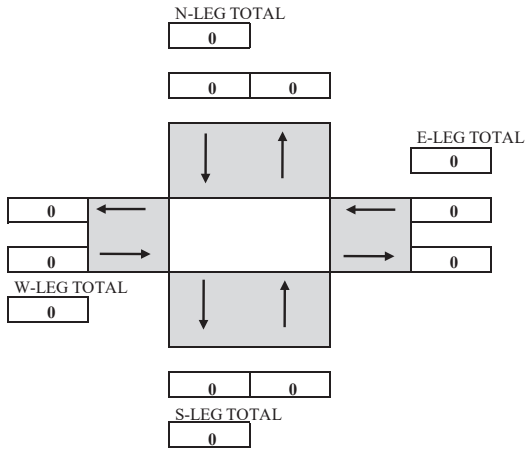
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-1AM**

PEAK HOUR 7:15 AM TO 8:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:15 AM to 8:15 AM

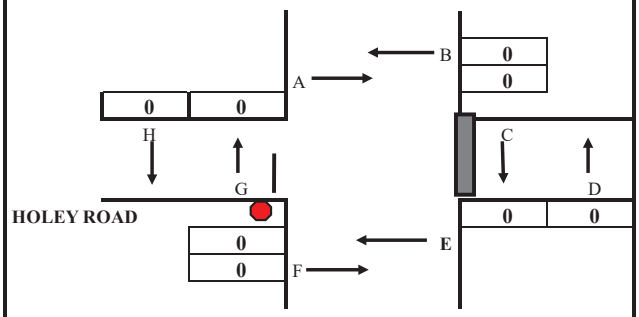
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3510124-1AM**

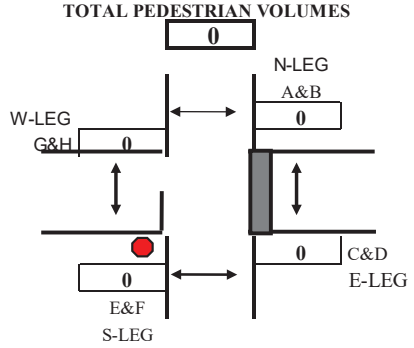
PEAK HOUR
07:15 AM TO 08:15 AM



LEGEND:
CROSSWALK
SIDEWALK
STOP CONTROL LINE
STOP

BYRON HIGHWAY
N-LEG
S-LEG
E-LEG
W-LEG

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***Fax: (510) 232-1272***

12:00 AM to 12:00 AM

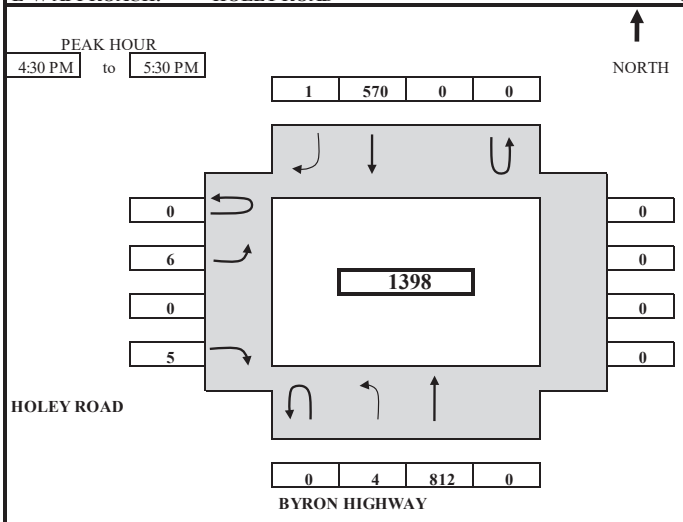
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

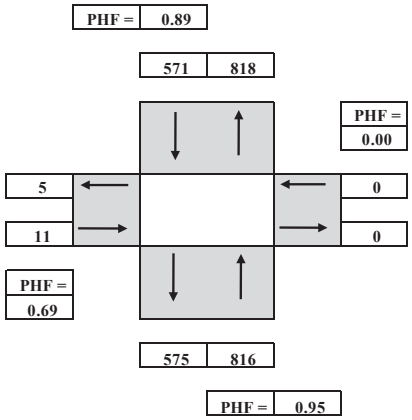
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-1AM**

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		2	162				120	0		4		0					**288**
4:15 PM	to	4:30 PM		4	342				242	0		5		2					**595**
4:30 PM	to	4:45 PM		5	540				402	0		8		3					**958**
4:45 PM	to	5:00 PM		7	733				549	0		9		5					**1303**
5:00 PM	to	5:15 PM		8	940				676	1		10		5					**1640**
5:15 PM	to	5:30 PM		8	1154				812	1		11		7					**1993**
5:30 PM	to	5:45 PM		16	1364				956	1		11		7					**2355**
5:45 PM	to	6:00 PM		19	1535				1079	1		12		7					**2653**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	2	162	0	0	0	120	0	0	4	0	0	0	0	0	0	**288**
4:15 PM	to	4:30 PM	0	2	180	0	0	0	122	0	0	1	0	2	0	0	0	0	**307**
4:30 PM	to	4:45 PM	0	1	198	0	0	0	160	0	0	3	0	1	0	0	0	0	**363**
4:45 PM	to	5:00 PM	0	2	193	0	0	0	147	0	0	1	0	2	0	0	0	0	**345**
5:00 PM	to	5:15 PM	0	1	207	0	0	0	127	1	0	1	0	0	0	0	0	0	**337**
5:15 PM	to	5:30 PM	0	0	214	0	0	0	136	0	0	1	0	2	0	0	0	0	**353**
5:30 PM	to	5:45 PM	0	8	210	0	0	0	144	0	0	0	0	0	0	0	0	0	**362**
5:45 PM	to	6:00 PM	0	3	171	0	0	0	123	0	0	1	0	0	0	0	0	0	**298**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	7	733	0	0	0	549	0	0	9	0	5	0	0	0	0	**1303**
4:15 PM	to	5:15 PM	0	6	778	0	0	0	556	1	0	6	0	5	0	0	0	0	**1352**
4:30 PM	to	5:30 PM	0	4	812	0	0	0	570	1	0	6	0	5	0	0	0	0	**1398**
4:45 PM	to	5:45 PM	0	11	824	0	0	0	554	1	0	3	0	4	0	0	0	0	**1397**
5:00 PM	to	6:00 PM	0	12	802	0	0	0	530	1	0	3	0	2	0	0	0	0	**1350**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	4	812	0	0	0	570	1	0	6	0	5	0	0	0	0	**1398**
PHF BY MOVEMENT	0.00	0.50	0.95	0.00	0.00	0.00	0.89	0.25	0.00	0.50	0.00	0.63	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.95				0.89				0.69				0.00				0.96
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	35		35		54		54		0		0		0		0		**89**
TRUCK PERCENTAGE	4.3%		4.3%		9.5%		9.4%		0.0%		0.0%		0.0%		0.0%		**6.4%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR:	0				0				0				0				**0**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG:	0				0				0				0				**0**

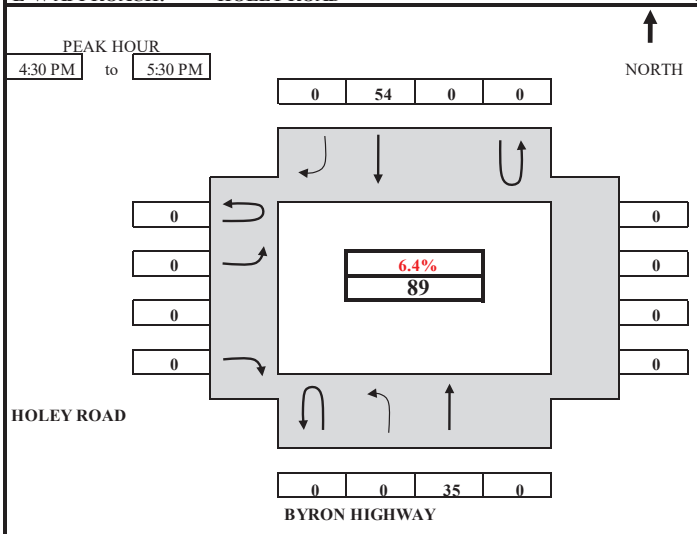
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

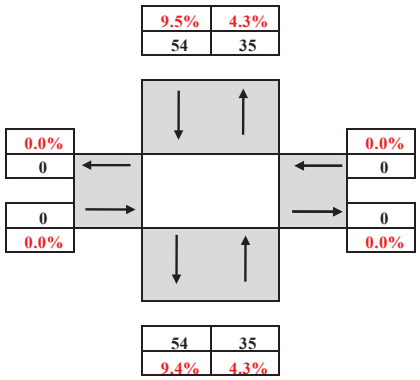
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-1AM**

PEAK HOUR
4:30 PM to 5:30 PM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DA A																			
4:00 PM	to	4:15 PM		0	11				20	0		0		1					
4:15 PM	to	4:30 PM		1	19				31	0		0		1					
4:30 PM	to	4:45 PM		1	32				38	0		0		1					
4:45 PM	to	5:00 PM		1	40				59	0		0		1					
5:00 PM	to	5:15 PM		1	46				73	0		0		1					
5:15 PM	to	5:30 PM		1	54				85	0		0		1					
5:30 PM	to	5:45 PM		1	61				94	0		0		1					
5:45 PM	to	6:00 PM		1	66				99	0		0		1					
4:00 PM	to	4:15 PM	0	0	11	0	0	0	20	0	0	0	0	1	0	0	0	0	**32**
4:15 PM	to	4:30 PM	0	1	8	0	0	0	11	0	0	0	0	0	0	0	0	0	**20**
4:30 PM	to	4:45 PM	0	0	13	0	0	0	7	0	0	0	0	0	0	0	0	0	**20**
4:45 PM	to	5:00 PM	0	0	8	0	0	0	21	0	0	0	0	0	0	0	0	0	**29**
5:00 PM	to	5:15 PM	0	0	6	0	0	0	14	0	0	0	0	0	0	0	0	0	**20**
5:15 PM	to	5:30 PM	0	0	8	0	0	0	12	0	0	0	0	0	0	0	0	0	**20**
5:30 PM	to	5:45 PM	0	0	7	0	0	0	9	0	0	0	0	0	0	0	0	0	**16**
5:45 PM	to	6:00 PM	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	**10**
HOURLY OTALS																			
4:00 PM	to	5:00 PM	0	1	40	0	0	0	59	0	0	0	0	1	0	0	0	0	**101**
4:15 PM	to	5:15 PM	0	1	35	0	0	0	53	0	0	0	0	0	0	0	0	0	**89**
4:30 PM	to	5:30 PM	0	0	35	0	0	0	54	0	0	0	0	0	0	0	0	0	**89**
4:45 PM	to	5:45 PM	0	0	29	0	0	0	56	0	0	0	0	0	0	0	0	0	**85**
5:00 PM	to	6:00 PM	0	0	26	0	0	0	40	0	0	0	0	0	0	0	0	0	**66**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

4:30 PM to 5:30 PM

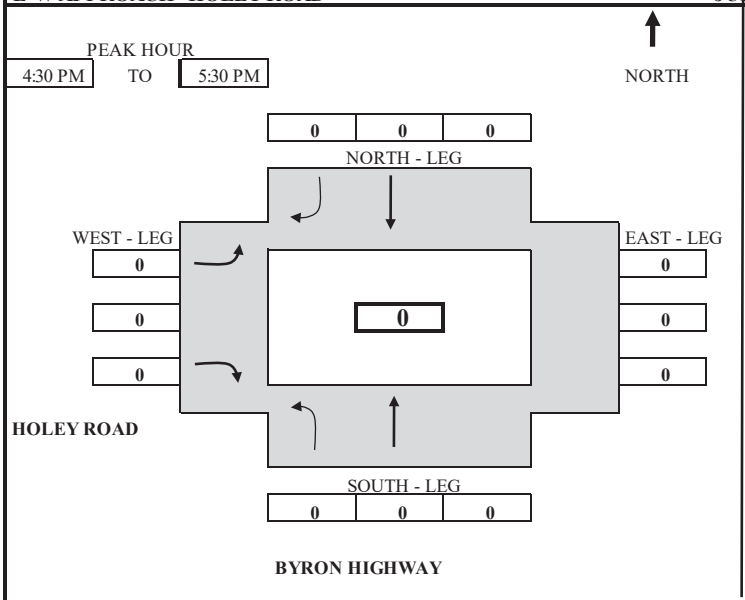
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	35	35	54	54	0	0	0	0	89
TRUCK PERCENTAGE	4.3%	4.3%	9.5%	9.4%	0.0%	0.0%	0.0%	0.0%	6.4%

B.A.Y.M.E.T.R.I.C.S.

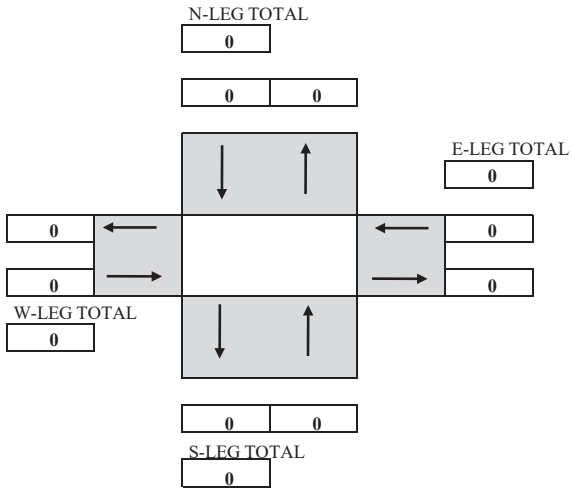
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-1AM**

PEAK HOUR
4:30 PM TO 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:30 PM to 5:30 PM

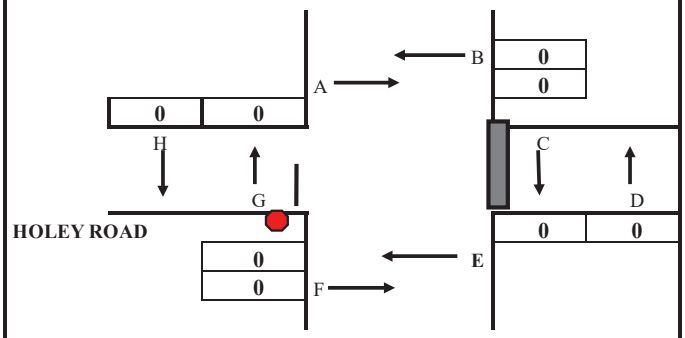
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**HOLEY ROAD**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-1AM**

PEAK HOUR
04:30 PM TO 05:30 PM

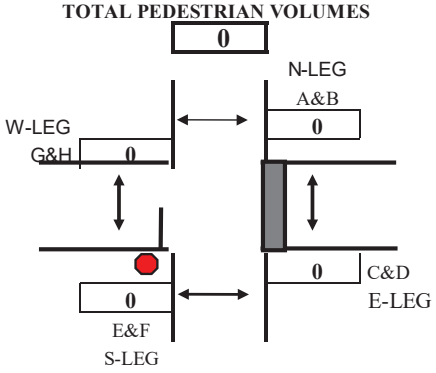


LEGEND:

CROSSWALK	N-LEG
SIDEWALK	S-LEG
STOP CONTROL LINE	E-LEG
STOP	W-LEG

BYRON HIGHWAY

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***ax: (510) 232-1272***

12:00 AM to 12:00 AM

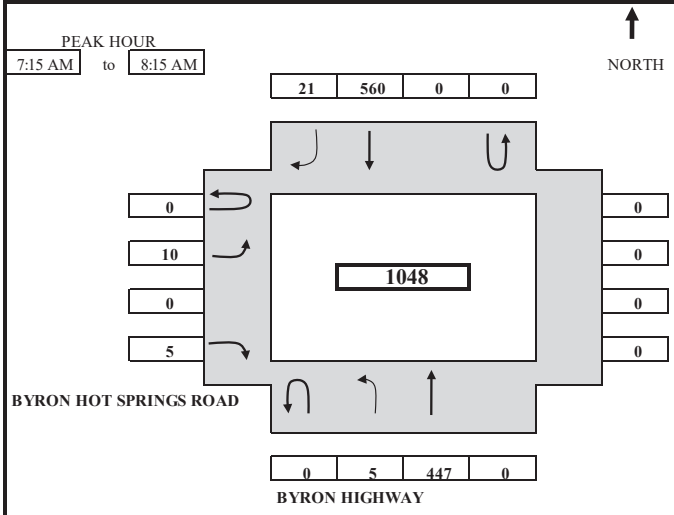
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

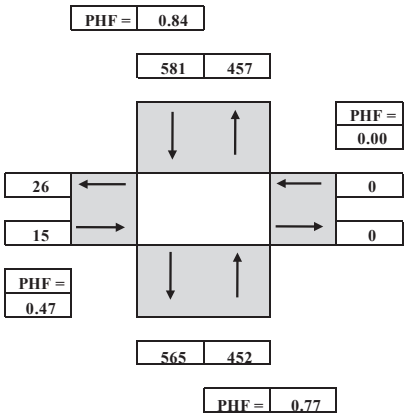
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	BYRON HOT SPRINGS ROAD	**JURISDICTION:**	BYRON	**FILE:**	3510124-2AM

PEAK HOUR 7:15 AM to 8:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																		
7:00 AM	7:15 AM		1	125				137	6		5		0					**274**
7:15 AM	7:30 AM		1	221				306	10		6		0					**544**
7:30 AM	7:45 AM		3	316				434	15		11		3					**782**
7:45 AM	8:00 AM		3	429				563	19		13		4					**1031**
8:00 AM	8:15 AM		6	572				697	27		15		5					**1322**
8:15 AM	8:30 AM		6	670				817	30		18		9					**1550**
8:30 AM	8:45 AM		6	768				918	31		21		9					**1753**
8:45 AM	9:00 AM		7	878				1028	36		22		9					**1980**
TOTAL BY PERIOD																		
7:00 AM	7:15 AM	0	1	125	0	0	0	137	6	0	5	0	0	0	0	0	0	**274**
7:15 AM	7:30 AM	0	0	96	0	0	0	169	4	0	1	0	0	0	0	0	0	**270**
7:30 AM	7:45 AM	0	2	95	0	0	0	128	5	0	5	0	3	0	0	0	0	**238**
7:45 AM	8:00 AM	0	0	113	0	0	0	129	4	0	2	0	1	0	0	0	0	**249**
8:00 AM	8:15 AM	0	3	143	0	0	0	134	8	0	2	0	1	0	0	0	0	**291**
8:15 AM	8:30 AM	0	0	98	0	0	0	120	3	0	3	0	4	0	0	0	0	**228**
8:30 AM	8:45 AM	0	0	98	0	0	0	101	1	0	3	0	0	0	0	0	0	**203**
8:45 AM	9:00 AM	0	1	110	0	0	0	110	5	0	1	0	0	0	0	0	0	**227**
HOURLY TOTALS																		
7:00 AM	8:00 AM	0	3	429	0	0	0	563	19	0	13	0	4	0	0	0	0	**1031**
7:15 AM	8:15 AM	0	5	447	0	0	0	560	21	0	10	0	5	0	0	0	0	**1048**
7:30 AM	8:30 AM	0	5	449	0	0	0	511	20	0	12	0	9	0	0	0	0	**1006**
7:45 AM	8:45 AM	0	3	452	0	0	0	484	16	0	10	0	6	0	0	0	0	**971**
8:00 AM	9:00 AM	0	4	449	0	0	0	465	17	0	9	0	5	0	0	0	0	**949**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	5	447	0	0	0	560	21	0	10	0	5	0	0	0	0	**1048**
PHF BY MOVEMENT	0.00	0.42	0.78	0.00	0.00	0.00	0.83	0.66	0.00	0.50	0.00	0.42	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.77				0.84				0.47				0.00				0.90
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	75		80		77		72		8		0		0		8		**160**
TRUCK PERCENTAGE	16.6%		17.5%		13.3%		12.7%		53.3%		0.0%		0.0%		30.8%		**15.3%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR:	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				0				0				**0**

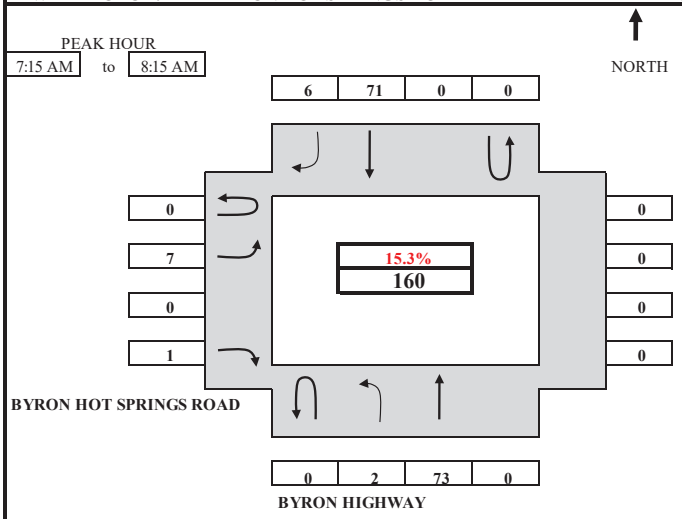
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

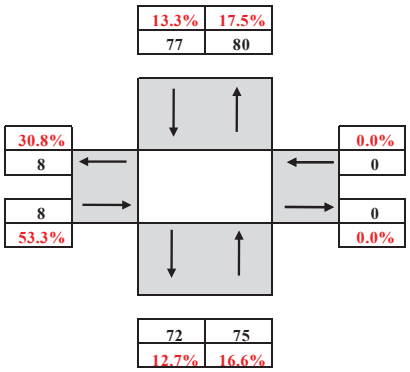
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**BYRON HOT SPRINGS ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-2AM**

PEAK HOUR
7:15 AM to 8:15 AM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DA A																			
7:00 AM	to	7:15 AM		0	12				12	0		1		0					**25**
7:15 AM	to	7:30 AM		0	30				27	1		1		0					**59**
7:30 AM	to	7:45 AM		0	51				43	2		2		0					**98**
7:45 AM	to	8:00 AM		0	66				57	2		6		1					**132**
8:00 AM	to	8:15 AM		2	85				83	6		8		1					**185**
8:15 AM	to	8:30 AM		3	96				96	7		10		5					**217**
8:30 AM	to	8:45 AM		3	110				111	7		10		5					**246**
8:45 AM	to	9:00 AM		3	128				127	8		11		5					**282**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	12	0	0	0	12	0	0	1	0	0	0	0	0	0	**25**
7:15 AM	to	7:30 AM	0	0	18	0	0	0	15	1	0	0	0	0	0	0	0	0	**34**
7:30 AM	to	7:45 AM	0	0	21	0	0	0	16	1	0	1	0	0	0	0	0	0	**39**
7:45 AM	to	8:00 AM	0	0	15	0	0	0	14	0	0	4	0	1	0	0	0	0	**34**
8:00 AM	to	8:15 AM	0	2	19	0	0	0	26	4	0	2	0	0	0	0	0	0	**53**
8:15 AM	to	8:30 AM	0	1	11	0	0	0	13	1	0	2	0	4	0	0	0	0	**32**
8:30 AM	to	8:45 AM	0	0	14	0	0	0	15	0	0	0	0	0	0	0	0	0	**29**
8:45 AM	to	9:00 AM	0	0	18	0	0	0	16	1	0	1	0	0	0	0	0	0	**36**
HOURLY OTALS																			
0 7:00 AM	to	8:00 AM	0	0	66	0	0	0	57	2	0	6	0	1	0	0	0	0	**132**
1 7:15 AM	to	8:15 AM	0	2	73	0	0	0	71	6	0	7	0	1	0	0	0	0	**160**
0 7:30 AM	to	8:30 AM	0	3	66	0	0	0	69	6	0	9	0	5	0	0	0	0	**158**
0 7:45 AM	to	8:45 AM	0	3	59	0	0	0	68	5	0	8	0	5	0	0	0	0	**148**
0 8:00 AM	to	9:00 AM	0	3	62	0	0	0	70	6	0	5	0	4	0	0	0	0	**150**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

7:15 AM to 8:15 AM

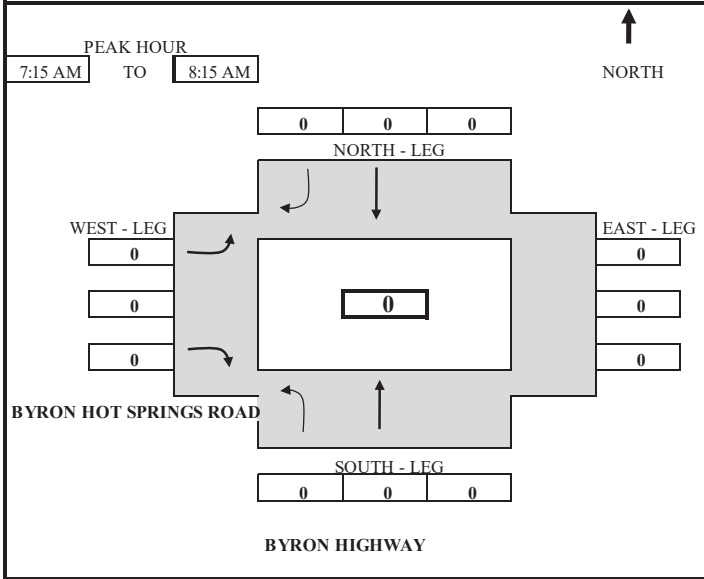
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	75	80	77	72	8	0	0	8	160
TRUCK PERCENTAGE	16.6%	17.5%	13.3%	12.7%	53.3%	0.0%	0.0%	30.8%	15.3%

B.A.Y.M.E.T.R.I.C.S.

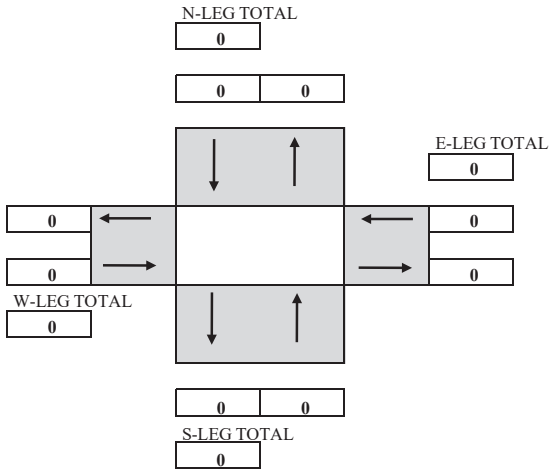
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**BYRON HOT SPRINGS ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-2AM**

PEAK HOUR 7:15 AM TO 8:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME From		TO	NB (SOUTH - LEG) LEFT	NB THRU	NB RIGHT	SB (NORTH - LEG) LEFT	SB THRU	SB RIGHT	EB (WEST - LEG) LEFT	EB THRU	EB RIGHT	WB (EAST - LEG) LEFT	WB THRU	WB RIGHT	TOTAL
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:15 AM to 8:15 AM

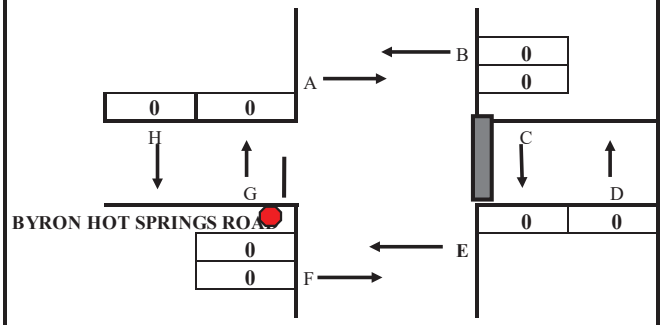
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**BYRON HOT SPRINGS ROAD**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3510124-2AM**

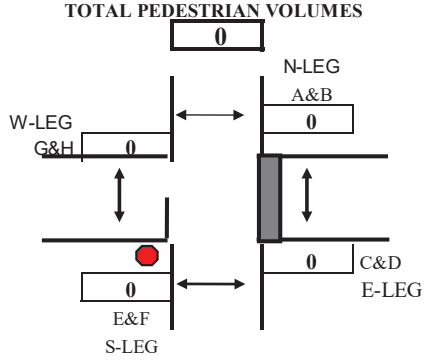
PEAK HOUR
07:15 AM TO 08:15 AM



LEGEND:

	BYRON HIGHWAY	
	CROSSWALK	N-LEG
	SIDEWALK	S-LEG
	STOP CONTROL LINE	E-LEG
	STOP	W-LEG

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***ax: (510) 232-1272***

12:00 AM to 12:00 AM

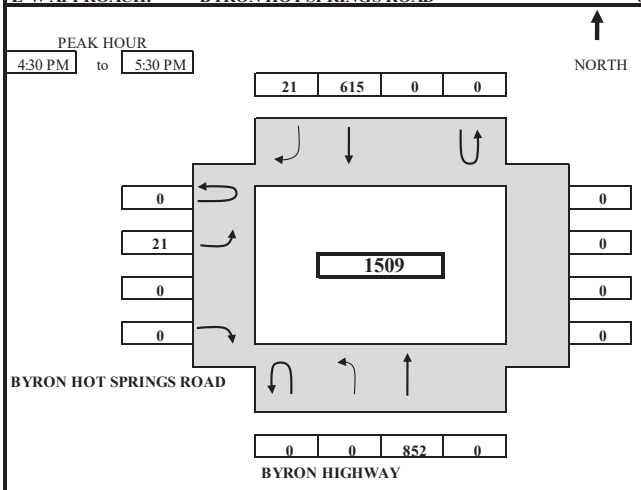
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

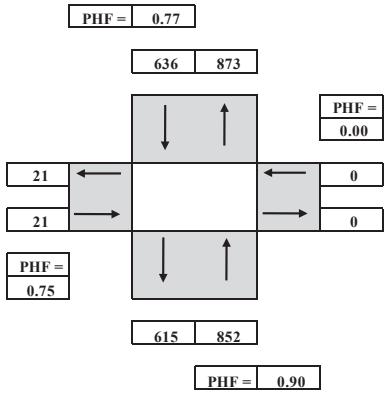
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	BYRON HOT SPRINGS ROAD	**JURISDICTION:**	BYRON	**FILE:**	3510124-2PM

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		2	157				118	5		4		1					**287**
4:15 PM	to	4:30 PM		2	323				256	13		11		1					**606**
4:30 PM	to	4:45 PM		2	541				393	19		15		1					**971**
4:45 PM	to	5:00 PM		2	709				524	24		22		1					**1282**
5:00 PM	to	5:15 PM		2	946				669	30		27		1					**1675**
5:15 PM	to	5:30 PM		2	1175				871	34		32		1					**2115**
5:30 PM	to	5:45 PM		3	1374				948	36		40		2					**2403**
5:45 PM	to	6:00 PM		4	1560				1085	37		45		3					**2734**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	2	157	0	0	0	118	5	0	4	0	1	0	0	0	0	**287**
4:15 PM	to	4:30 PM	0	0	166	0	0	0	138	8	0	7	0	0	0	0	0	0	**319**
4:30 PM	to	4:45 PM	0	0	218	0	0	0	137	6	0	4	0	0	0	0	0	0	**365**
4:45 PM	to	5:00 PM	0	0	168	0	0	0	131	5	0	7	0	0	0	0	0	0	**311**
5:00 PM	to	5:15 PM	0	0	237	0	0	0	145	6	0	5	0	0	0	0	0	0	**393**
5:15 PM	to	5:30 PM	0	0	229	0	0	0	202	4	0	5	0	0	0	0	0	0	**440**
5:30 PM	to	5:45 PM	0	1	199	0	0	0	77	2	0	8	0	1	0	0	0	0	**288**
5:45 PM	to	6:00 PM	0	1	186	0	0	0	137	1	0	5	0	1	0	0	0	0	**331**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	2	709	0	0	0	524	24	0	22	0	1	0	0	0	0	**1282**
4:15 PM	to	5:15 PM	0	0	789	0	0	0	551	25	0	23	0	0	0	0	0	0	**1388**
4:30 PM	to	5:30 PM	0	0	852	0	0	0	615	21	0	21	0	0	0	0	0	0	**1509**
4:45 PM	to	5:45 PM	0	1	833	0	0	0	555	17	0	25	0	1	0	0	0	0	**1432**
5:00 PM	to	6:00 PM	0	2	851	0	0	0	561	13	0	23	0	2	0	0	0	0	**1452**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	852	0	0	0	615	21	0	21	0	0	0	0	0	0	**1509**
PHF BY MOVEMENT	0.00	0.00	0.90	0.00	0.00	0.00	0.76	0.88	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	OVERALL
PHF BY APPROACH	0.90				0.77				0.75				0.00				0.86
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	35		38		62		53		3		0		0		9		**100**
TRUCK PERCENTAGE	4.1%		4.4%		9.7%		8.6%		14.3%		0.0%		0.0%		42.9%		**6.6%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR:	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY LEG:	0				0				0				0				**0**

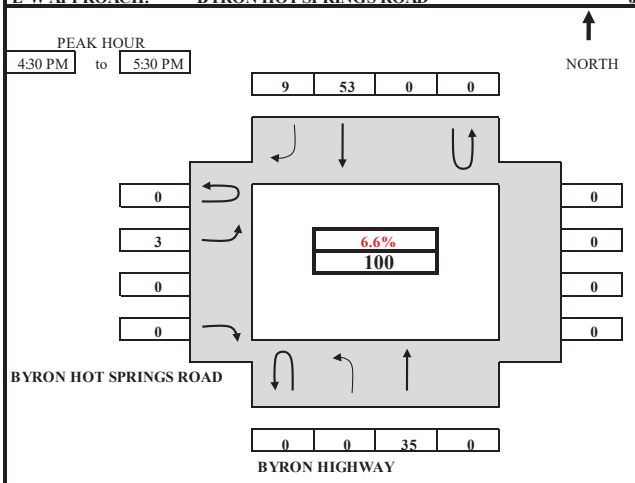
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

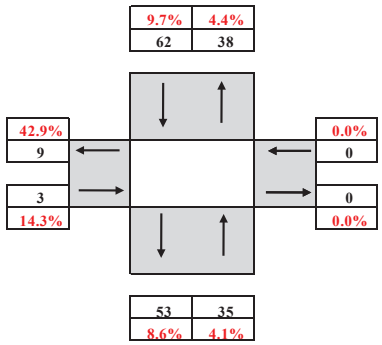
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	BYRON HOT SPRINGS ROAD	**JURISDICTION:**	BYRON	**FILE:**	3510124-2PM

PEAK HOUR 4:30 PM to 5:30 PM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		1	9				15	2		0		0					**27**
4:15 PM	to	4:30 PM		1	20				27	2		1		0					**51**
4:30 PM	to	4:45 PM		1	34				42	6		1		0					**84**
4:45 PM	to	5:00 PM		1	41				56	8		3		0					**109**
5:00 PM	to	5:15 PM		1	48				68	10		4		0					**131**
5:15 PM	to	5:30 PM		1	55				80	11		4		0					**151**
5:30 PM	to	5:45 PM		1	62				88	12		5		0					**168**
5:45 PM	to	6:00 PM		1	65				94	12		5		0					**177**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	1	9	0	0	0	15	2	0	0	0	0	0	0	0	0	**27**
4:15 PM	to	4:30 PM	0	0	11	0	0	0	12	0	0	1	0	0	0	0	0	0	**24**
4:30 PM	to	4:45 PM	0	0	14	0	0	0	15	4	0	0	0	0	0	0	0	0	**33**
4:45 PM	to	5:00 PM	0	0	7	0	0	0	14	2	0	2	0	0	0	0	0	0	**25**
5:00 PM	to	5:15 PM	0	0	7	0	0	0	12	2	0	1	0	0	0	0	0	0	**22**
5:15 PM	to	5:30 PM	0	0	7	0	0	0	12	1	0	0	0	0	0	0	0	0	**20**
5:30 PM	to	5:45 PM	0	0	7	0	0	0	8	1	0	1	0	0	0	0	0	0	**17**
5:45 PM	to	6:00 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	**9**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	1	41	0	0	0	56	8	0	3	0	0	0	0	0	0	**109**
4:15 PM	to	5:15 PM	0	0	39	0	0	0	53	8	0	4	0	0	0	0	0	0	**104**
4:30 PM	to	5:30 PM	0	0	35	0	0	0	53	9	0	3	0	0	0	0	0	0	**100**
4:45 PM	to	5:45 PM	0	0	28	0	0	0	46	6	0	4	0	0	0	0	0	0	**84**
5:00 PM	to	6:00 PM	0	0	24	0	0	0	38	4	0	2	0	0	0	0	0	0	**68**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

4:30 PM to 5:30 PM

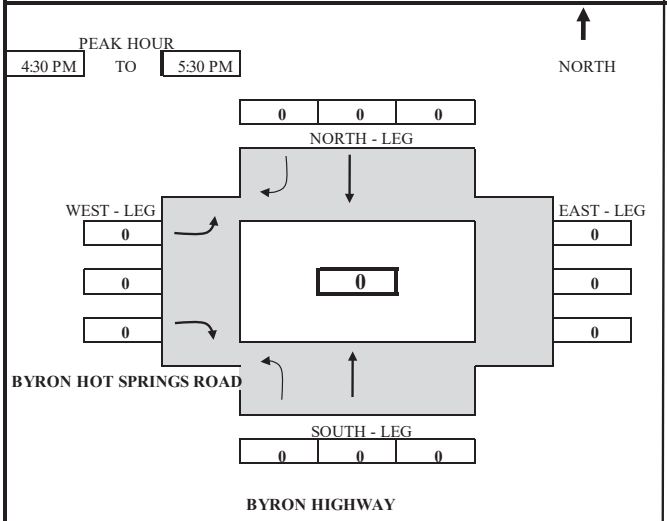
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	35	38	62	53	3	0	0	9	100
TRUCK PERCENTAGE	4.1%	4.4%	9.7%	8.6%	14.3%	0.0%	0.0%	42.9%	6.6%

B.A.Y.M.E.T.R.I.C.S.

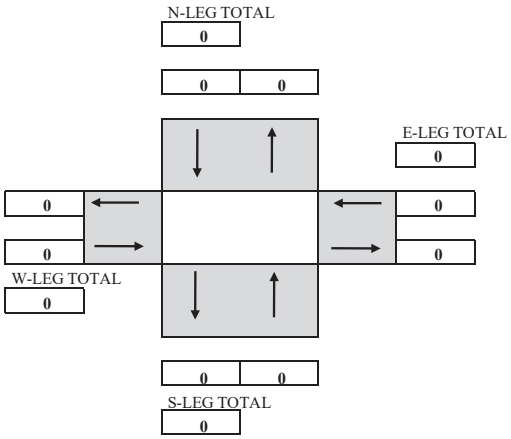
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**BYRON HOT SPRINGS ROAD**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-2PM**

PEAK HOUR
4:30 PM TO 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME	PERIOD		NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:30 PM to 5:30 PM

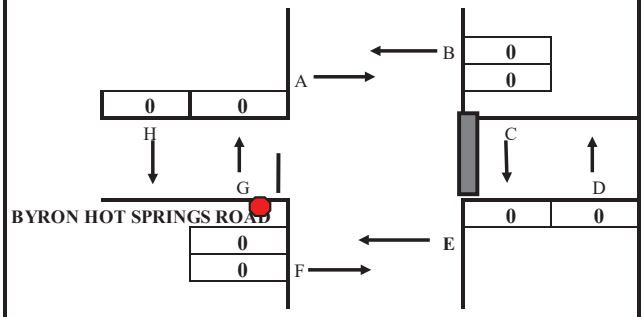
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**BYRON HOT SPRINGS ROAD**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-2PM**

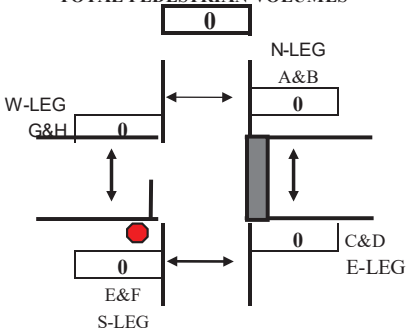
PEAK HOUR
04:30 PM TO 05:30 PM



LEGEND:

CROSSWALK	N-LEG	
SIDEWALK	S-LEG	
STOP CONTROL LINE	E-LEG	
STOP	W-LEG	

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*

Tel : (510) 232-1271 *ax: (510) 232-1272*

12:00 AM to 12:00 AM

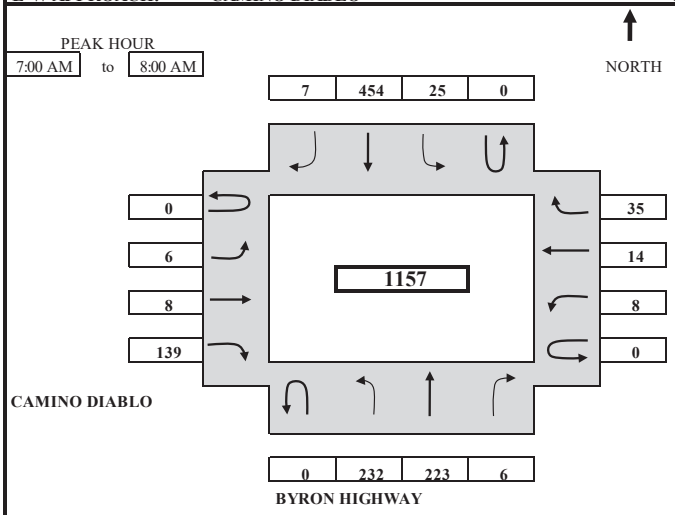
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

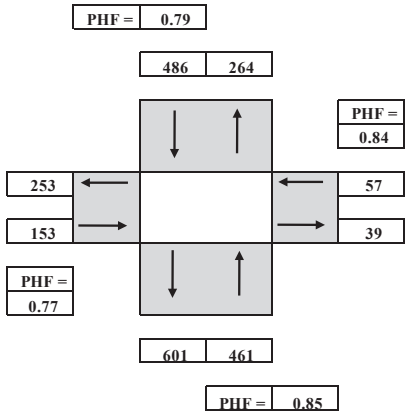
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-3AM

PEAK HOUR 7:00 AM to 8:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DA A																			
7:00 AM	to	7:15 AM		62	71	2		7	142	4		4	1	14		1	4	4	**316**
7:15 AM	to	7:30 AM		106	108	3		10	265	6		5	5	59		5	7	14	**593**
7:30 AM	to	7:45 AM		165	168	3		17	359	6		5	8	95		6	13	24	**869**
7:45 AM	to	8:00 AM		232	223	6		25	454	7		6	8	139		8	14	35	**1157**
8:00 AM	to	8:15 AM		314	269	10		31	546	10		8	10	176		10	16	41	**1441**
8:15 AM	to	8:30 AM		384	301	10		36	623	10		9	10	226		10	17	47	**1683**
8:30 AM	to	8:45 AM		437	344	10		48	675	11		11	15	275		11	18	49	**1904**
8:45 AM	to	9:00 AM		495	390	11		54	722	11		12	18	318		13	22	52	**2118**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	62	71	2	0	7	142	4	0	4	1	14	0	1	4	4	**316**
7:15 AM	to	7:30 AM	0	44	37	1	0	3	123	2	0	1	4	45	0	4	3	10	**277**
7:30 AM	to	7:45 AM	0	59	60	0	0	7	94	0	0	0	3	36	0	1	6	10	**276**
7:45 AM	to	8:00 AM	0	67	55	3	0	8	95	1	0	1	0	44	0	2	1	11	**288**
8:00 AM	to	8:15 AM	0	82	46	4	0	6	92	3	0	2	2	37	0	2	2	6	**284**
8:15 AM	to	8:30 AM	0	70	32	0	0	5	77	0	0	1	0	50	0	0	1	6	**242**
8:30 AM	to	8:45 AM	0	53	43	0	0	12	52	1	0	2	5	49	0	1	1	2	**221**
8:45 AM	to	9:00 AM	0	58	46	1	0	6	47	0	0	1	3	43	0	2	4	3	**214**
HOURLY OTALS																			
7:00 AM	to	8:00 AM	0	232	223	6	0	25	454	7	0	6	8	139	0	8	14	35	**1157**
7:15 AM	to	8:15 AM	0	252	198	8	0	24	404	6	0	4	9	162	0	9	12	37	**1125**
7:30 AM	to	8:30 AM	0	278	193	7	0	26	358	4	0	4	5	167	0	5	10	33	**1090**
7:45 AM	to	8:45 AM	0	272	176	7	0	31	316	5	0	6	7	180	0	5	5	25	**1035**
8:00 AM	to	9:00 AM	0	263	167	5	0	29	268	4	0	6	10	179	0	5	8	17	**961**

PEAK HOUR SUMMARY

7:00 AM to 8:00 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	232	223	6	0	25	454	7	0	6	8	139	0	8	14	35	**1157**
PHF BY MOVEMENT	0.00	0.87	0.79	0.50	0.00	0.78	0.80	0.44	0.00	0.38	0.50	0.77	0.00	0.50	0.58	0.80	OVERALL
PHF BY APPROACH	0.85				0.79				0.77				0.84				0.92
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	72		61		54		59		7		5		1		9		**134**
TRUCK PERCENTAGE	15.6%		23.1%		11.1%		9.8%		4.6%		12.8%		1.8%		3.6%		**11.6%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				2				1				1				**4**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	2				0				2				0				**4**

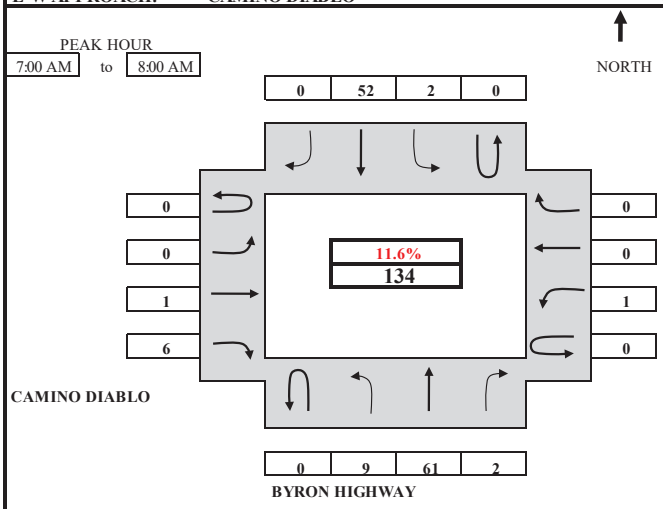
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

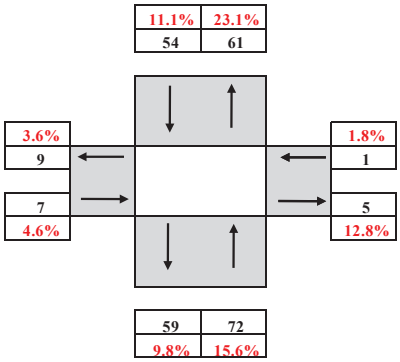
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-3AM

PEAK HOUR 7:00 AM to 8:00 AM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	13	0		1	11			0	0	1		0		0	**26**
7:15 AM	to	7:30 AM		4	26	1		1	24			0	0	4		0		0	**60**
7:30 AM	to	7:45 AM		7	45	1		1	41			0	0	4		0		0	**99**
7:45 AM	to	8:00 AM		9	61	2		2	52			0	1	6		1		0	**134**
8:00 AM	to	8:15 AM		13	78	2		2	75			0	2	13		1		1	**187**
8:15 AM	to	8:30 AM		15	89	2		2	88			0	2	14		1		1	**214**
8:30 AM	to	8:45 AM		18	99	3		2	95			0	4	22		1		2	**246**
8:45 AM	to	9:00 AM		21	115	3		2	105			0	5	29		1		2	**283**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	13	0	0	1	11	0	0	0	0	1	0	0	0	0	**26**
7:15 AM	to	7:30 AM	0	4	13	1	0	0	13	0	0	0	0	3	0	0	0	0	**34**
7:30 AM	to	7:45 AM	0	3	19	0	0	0	17	0	0	0	0	0	0	0	0	0	**39**
7:45 AM	to	8:00 AM	0	2	16	1	0	1	11	0	0	0	1	2	0	1	0	0	**35**
8:00 AM	to	8:15 AM	0	4	17	0	0	0	23	0	0	0	1	7	0	0	0	1	**53**
8:15 AM	to	8:30 AM	0	2	11	0	0	0	13	0	0	0	0	1	0	0	0	0	**27**
8:30 AM	to	8:45 AM	0	3	10	1	0	0	7	0	0	0	2	8	0	0	0	1	**32**
8:45 AM	to	9:00 AM	0	3	16	0	0	0	10	0	0	0	1	7	0	0	0	0	**37**
HOURLY TOTALS																			
1	7:00 AM	to 8:00 AM	0	9	61	2	0	2	52	0	0	0	1	6	0	1	0	0	**134**
0	7:15 AM	to 8:15 AM	0	13	65	2	0	1	64	0	0	0	2	12	0	1	0	1	**161**
0	7:30 AM	to 8:30 AM	0	11	63	1	0	1	64	0	0	0	2	10	0	1	0	1	**154**
0	7:45 AM	to 8:45 AM	0	11	54	2	0	1	54	0	0	0	4	18	0	1	0	2	**147**
0	8:00 AM	to 9:00 AM	0	12	54	1	0	0	53	0	0	0	4	23	0	0	0	2	**149**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

7:00 AM to 8:00 AM

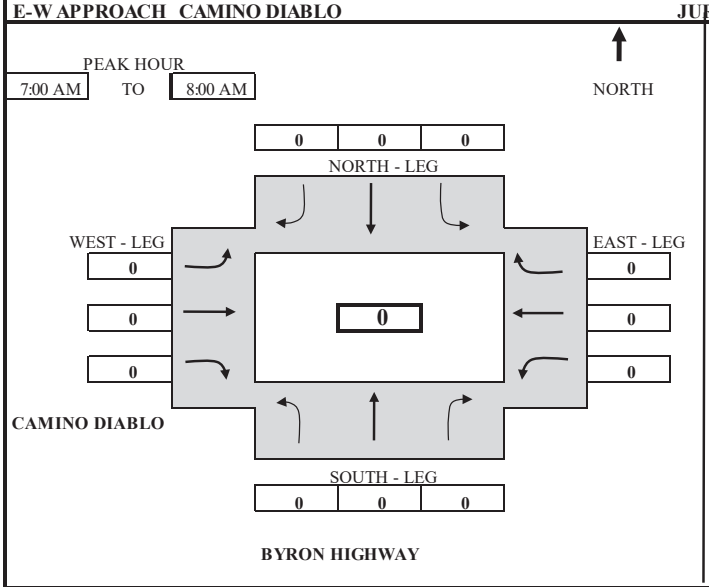
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	72	61	54	59	7	5	1	9	134
TRUCK PERCENTAGE	15.6%	23.1%	11.1%	9.8%	4.6%	12.8%	1.8%	3.6%	11.6%

B.A.Y.M.E.T.R.I.C.S.

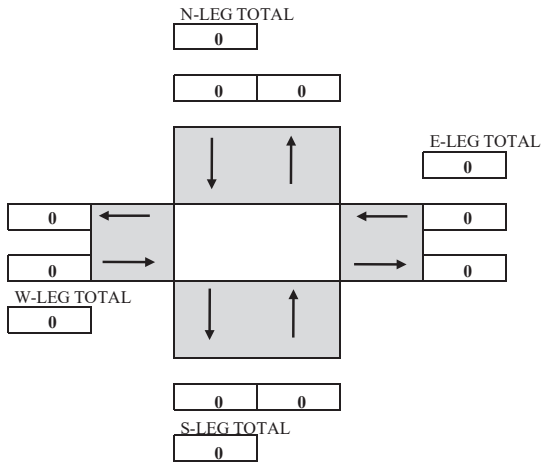
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-3AM**

PEAK HOUR 7:00 AM TO 8:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:00 AM to 8:00 AM

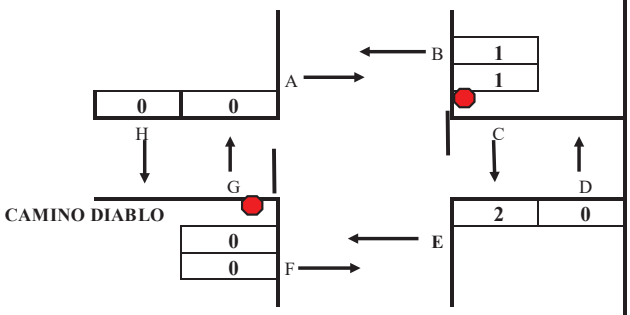
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

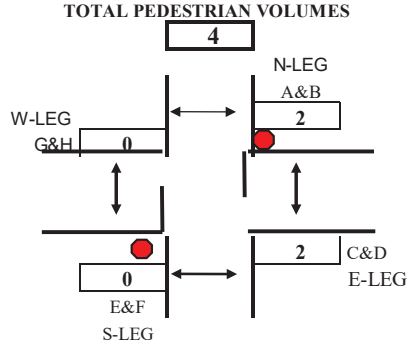
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3510124-3AM**

PEAK HOUR
07:00 AM TO 08:00 AM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:

CROSSWA **BYRON HIGHWAY**
SIDEWALK
STOP CONTROL LINE
STOP

N-LEG	
S-LEG	
E-LEG	
W-LEG	

BY LEG:	
(A&B)	2
(E&F)	0
(C&D)	2
(G&H)	0

BY DIRECTION:	
NB(D+G)	0
SB(C+H)	2
EB(A+F)	1
WB(B+E)	1

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	1	0	1	0	0	0	0	0	***2***
07:45 AM	---	08:00 AM	1	1	2	0	0	0	0	0	***4***
08:00 AM	---	08:15 AM	1	2	2	1	0	0	0	0	***6***
08:15 AM	---	08:30 AM	1	2	2	1	0	0	0	0	***6***
08:30 AM	---	08:45 AM	1	2	3	1	0	0	0	0	***7***
08:45 AM	---	09:00 AM	1	2	3	1	0	0	0	0	***7***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	1	0	1	0	0	0	0	0	***2***
07:45 AM	---	08:00 AM	0	1	1	0	0	0	0	0	***2***
08:00 AM	---	08:15 AM	0	1	0	1	0	0	0	0	***2***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	1	0	0	0	0	0	***1***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	1	1	2	0	0	0	0	0	***4***
07:15 AM	---	08:15 AM	1	2	2	1	0	0	0	0	***6***
07:30 AM	---	08:30 AM	1	2	2	1	0	0	0	0	***6***
07:45 AM	---	08:45 AM	0	2	2	1	0	0	0	0	***5***
08:00 AM	---	09:00 AM	0	1	1	1	0	0	0	0	***3***

Tel : (510) 232-1271 ax: (510) 232-1272

7:00 AM to 8:00 AM

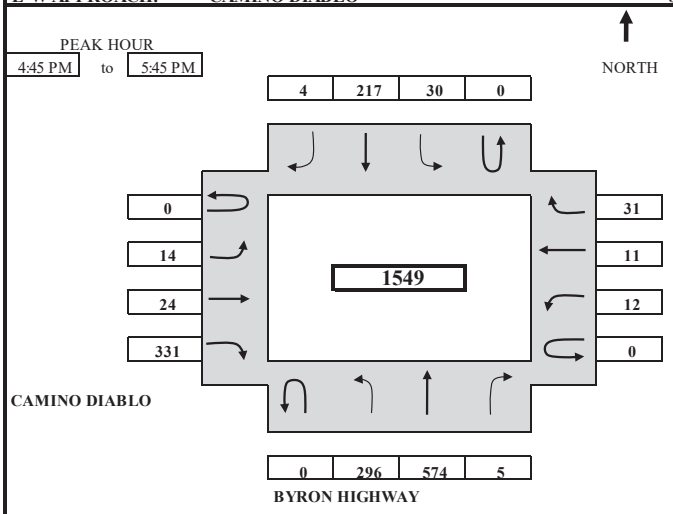
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	2	1	1	**4**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	2	0	2	0	**4**

B.A.Y.M.E.T.R.I.C.S.

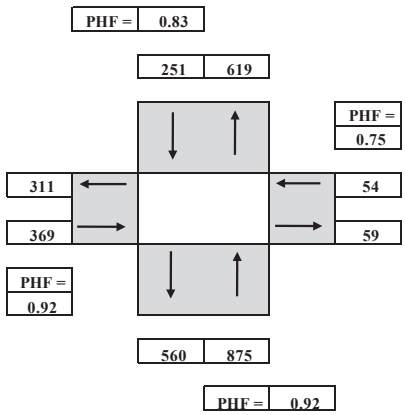
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-3PM

PEAK HOUR 4:45 PM to 5:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		63	90	3		5	56	1		3	13	65		7	4	4	**314**
4:15 PM	to	4:30 PM		140	192	7		10	123	4		8	19	159		8	6	18	**694**
4:30 PM	to	4:45 PM		205	322	11		21	174	4		9	23	225		9	12	23	**1038**
4:45 PM	to	5:00 PM		271	459	13		28	236	5		10	34	313		12	15	30	**1426**
5:00 PM	to	5:15 PM		349	588	14		35	283	5		16	39	396		15	17	42	**1799**
5:15 PM	to	5:30 PM		420	740	15		45	349	5		21	42	481		16	19	45	**2198**
5:30 PM	to	5:45 PM		501	896	16		51	391	8		23	47	556		21	23	54	**2587**
5:45 PM	to	6:00 PM		558	1018	16		61	437	8		25	51	633		22	26	66	**2921**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	63	90	3	0	5	56	1	0	3	13	65	0	7	4	4	**314**
4:15 PM	to	4:30 PM	0	77	102	4	0	5	67	3	0	5	6	94	0	1	2	14	**380**
4:30 PM	to	4:45 PM	0	65	130	4	0	11	51	0	0	1	4	66	0	1	6	5	**344**
4:45 PM	to	5:00 PM	0	66	137	2	0	7	62	1	0	1	11	88	0	3	3	7	**388**
5:00 PM	to	5:15 PM	0	78	129	1	0	7	47	0	0	6	5	83	0	3	2	12	**373**
5:15 PM	to	5:30 PM	0	71	152	1	0	10	66	0	0	5	3	85	0	1	2	3	**399**
5:30 PM	to	5:45 PM	0	81	156	1	0	6	42	3	0	2	5	75	0	5	4	9	**389**
5:45 PM	to	6:00 PM	0	57	122	0	0	10	46	0	0	2	4	77	0	1	3	12	**334**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	271	459	13	0	28	236	5	0	10	34	313	0	12	15	30	**1426**
4:15 PM	to	5:15 PM	0	286	498	11	0	30	227	4	0	13	26	331	0	8	13	38	**1485**
4:30 PM	to	5:30 PM	0	280	548	8	0	35	226	1	0	13	23	322	0	8	13	27	**1504**
4:45 PM	to	5:45 PM	0	296	574	5	0	30	217	4	0	14	24	331	0	12	11	31	**1549**
5:00 PM	to	6:00 PM	0	287	559	3	0	33	201	3	0	15	17	320	0	10	11	36	**1495**

PEAK HOUR SUMMARY

4:45 PM to 5:45 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	296	574	5	0	30	217	4	0	14	24	331	0	12	11	31	**1549**
PHF BY MOVEMENT	0.00	0.91	0.92	0.63	0.00	0.75	0.82	0.33	0.00	0.58	0.55	0.94	0.00	0.60	0.69	0.65	OVERALL
PHF BY APPROACH	0.92				0.83				0.92				0.75				0.97
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	37		29		24		55		33		4		2		8		**96**
TRUCK PERCENTAGE	4.2%		4.7%		9.6%		9.8%		8.9%		6.8%		3.7%		2.6%		**6.2%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY DIR	0				0				0				0				**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

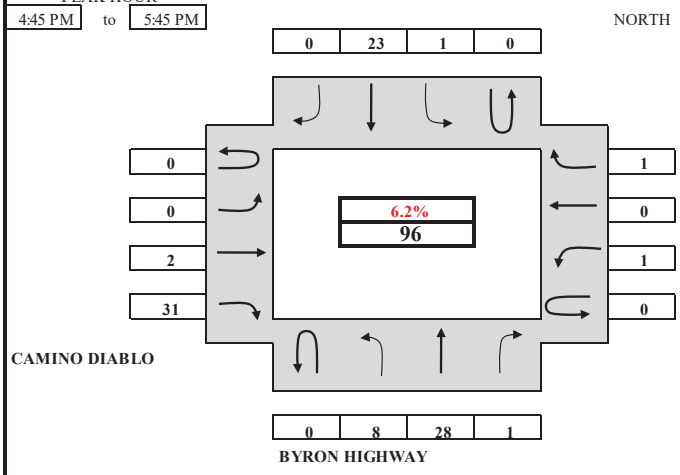
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

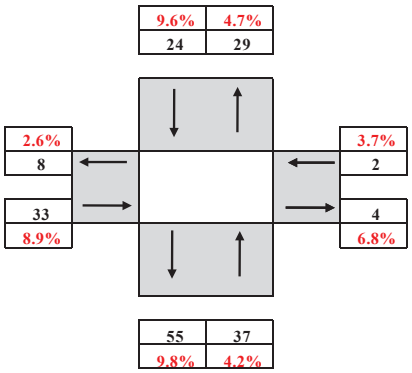
PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-3PM

PEAK HOUR
4:45 PM to 5:45 PM

NORTH



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		0	8	0		2	12			0	2	6		3		0	**33**
4:15 PM	to	4:30 PM		6	19	1		2	24			1	3	11		3		0	**70**
4:30 PM	to	4:45 PM		8	27	1		3	35			1	3	15		3		1	**97**
4:45 PM	to	5:00 PM		10	38	1		3	43			1	4	28		3		2	**133**
5:00 PM	to	5:15 PM		14	40	1		3	49			1	4	36		3		2	**153**
5:15 PM	to	5:30 PM		16	49	1		4	56			1	5	41		4		2	**179**
5:30 PM	to	5:45 PM		16	55	2		4	58			1	5	46		4		2	**193**
5:45 PM	to	6:00 PM		18	56	2		4	64			1	5	47		4		2	**203**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	8	0	0	2	12	0	0	0	2	6	0	3	0	0	**33**
4:15 PM	to	4:30 PM	0	6	11	1	0	0	12	0	0	1	1	5	0	0	0	0	**37**
4:30 PM	to	4:45 PM	0	2	8	0	0	1	11	0	0	0	0	4	0	0	0	1	**27**
4:45 PM	to	5:00 PM	0	2	11	0	0	0	8	0	0	0	1	13	0	0	0	1	**36**
5:00 PM	to	5:15 PM	0	4	2	0	0	0	6	0	0	0	0	8	0	0	0	0	**20**
5:15 PM	to	5:30 PM	0	2	9	0	0	1	7	0	0	0	1	5	0	1	0	0	**26**
5:30 PM	to	5:45 PM	0	0	6	1	0	0	2	0	0	0	0	5	0	0	0	0	**14**
5:45 PM	to	6:00 PM	0	2	1	0	0	0	6	0	0	0	0	1	0	0	0	0	**10**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	10	38	1	0	3	43	0	0	1	4	28	0	3	0	2	**133**
4:15 PM	to	5:15 PM	0	14	32	1	0	1	37	0	0	1	2	30	0	0	0	2	**120**
4:30 PM	to	5:30 PM	0	10	30	0	0	2	32	0	0	0	2	30	0	1	0	2	**109**
4:45 PM	to	5:45 PM	0	8	28	1	0	1	23	0	0	0	2	31	0	1	0	1	**96**
5:00 PM	to	6:00 PM	0	8	18	1	0	1	21	0	0	0	1	19	0	1	0	0	**70**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:45 PM to 5:45 PM

DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	37	29	24	55	33	4	2	8	96
TRUCK PERCENTAGE	4.2%	4.7%	9.6%	9.8%	8.9%	6.8%	3.7%	2.6%	6.2%

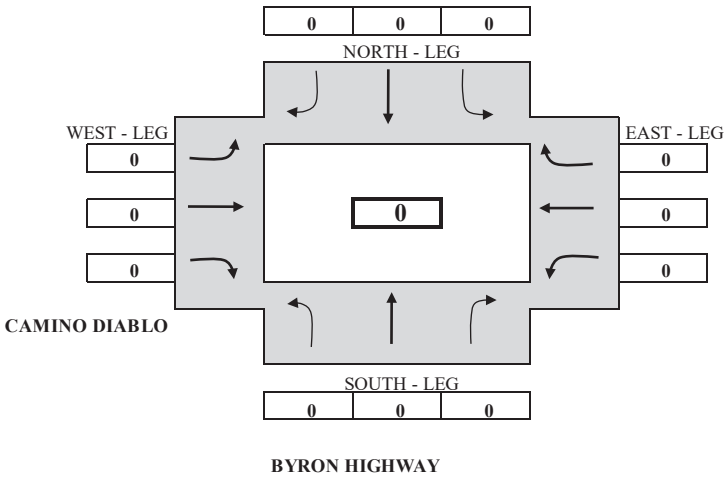
B.A.Y.M.E.T.R.I.C.S.

BICYCLE MOVEMENT SUMMARY

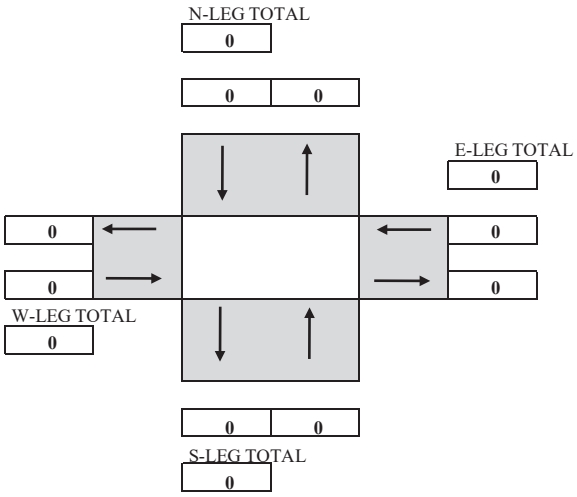
PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-3PM**

PEAK HOUR 4:45 PM TO 5:45 PM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
4:45 PM	to	5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
5:00 PM	to	5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
5:15 PM	to	5:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
5:30 PM	to	5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
5:45 PM	to	6:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
4:15 PM	to	5:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	**1**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:45 PM to 5:45 PM

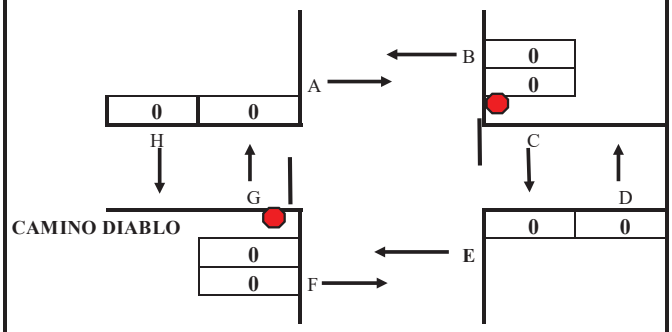
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-3PM**

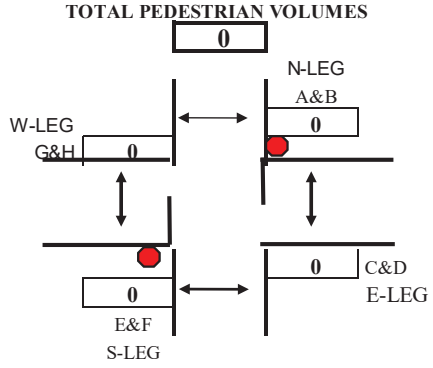
PEAK HOUR
04:45 PM TO 05:45 PM



LEGEND:

CROSSWA	**BYRON HIGHWAY**	N-LEG
SIDEWALK		S-LEG
STOP CONTROL LINE		E-LEG
STOP		W-LEG

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	1	1	1	1	0	0	0	0	***4***
04:30 PM	---	04:45 PM	1	1	1	1	0	0	0	0	***4***
04:45 PM	---	05:00 PM	1	1	1	1	0	0	0	0	***4***
05:00 PM	---	05:15 PM	1	1	1	1	0	0	0	0	***4***
05:15 PM	---	05:30 PM	1	1	1	1	0	0	0	0	***4***
05:30 PM	---	05:45 PM	1	1	1	1	0	0	0	0	***4***
05:45 PM	---	06:00 PM	1	1	1	1	0	0	0	0	***4***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	1	1	1	1	0	0	0	0	***4***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	1	1	1	1	0	0	0	0	***4***
04:15 PM	---	05:15 PM	1	1	1	1	0	0	0	0	***4***
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***Fax: (510) 232-1272***

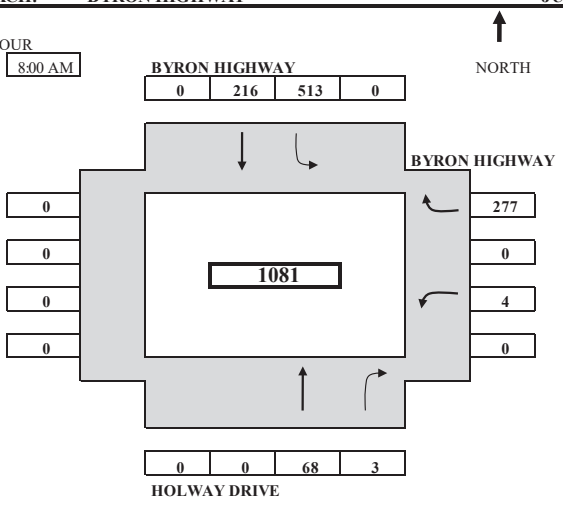
4:45 PM to 5:45 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	0	0	**0**

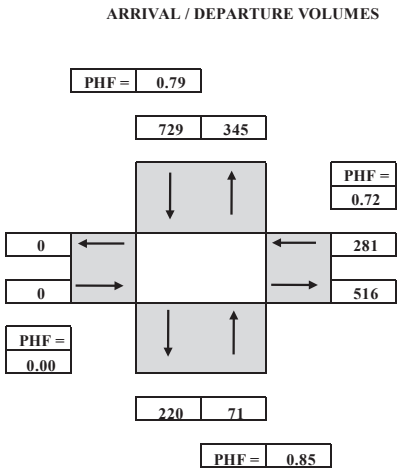
B.A.Y.M.E.T.R.I.C.S.

INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON			**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	-	HOLWAY DRIVE	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	BYRON HIGHWAY			**JURISDICTION:**	BYRON	**FILE:**	3510124-4AM

PEAK HOUR 7:00 AM to 8:00 AM





TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM			18	3		164	66							3		94	**348**
7:15 AM	to	7:30 AM			29	3		304	101							4		153	**594**
7:30 AM	to	7:45 AM			49	3		402	153							4		213	**824**
7:45 AM	to	8:00 AM			68	3		513	216							4		277	**1081**
8:00 AM	to	8:15 AM			80	3		621	279							4		326	**1313**
8:15 AM	to	8:30 AM			95	3		707	334							5		370	**1514**
8:30 AM	to	8:45 AM			105	4		770	391							6		411	**1687**
8:45 AM	to	9:00 AM			115	5		836	454							7		472	**1889**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	18	3	0	164	66	0	0	0	0	0	0	3	0	94	**348**
7:15 AM	to	7:30 AM	0	0	11	0	0	140	35	0	0	0	0	0	0	1	0	59	**246**
7:30 AM	to	7:45 AM	0	0	20	0	0	98	52	0	0	0	0	0	0	0	0	60	**230**
7:45 AM	to	8:00 AM	0	0	19	0	0	111	63	0	0	0	0	0	0	0	0	64	**257**
8:00 AM	to	8:15 AM	0	0	12	0	0	108	63	0	0	0	0	0	0	0	0	49	**232**
8:15 AM	to	8:30 AM	0	0	15	0	0	86	55	0	0	0	0	0	0	1	0	44	**201**
8:30 AM	to	8:45 AM	0	0	10	1	0	63	57	0	0	0	0	0	0	1	0	41	**173**
8:45 AM	to	9:00 AM	0	0	10	1	0	66	63	0	0	0	0	0	0	1	0	61	**202**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	68	3	0	513	216	0	0	0	0	0	0	4	0	277	**1081**
7:15 AM	to	8:15 AM	0	0	62	0	0	457	213	0	0	0	0	0	0	1	0	232	**965**
7:30 AM	to	8:30 AM	0	0	66	0	0	403	233	0	0	0	0	0	0	1	0	217	**920**
7:45 AM	to	8:45 AM	0	0	56	1	0	368	238	0	0	0	0	0	0	2	0	198	**863**
8:00 AM	to	9:00 AM	0	0	47	2	0	323	238	0	0	0	0	0	0	3	0	195	**808**

PEAK HOUR SUMMARY

7:00 AM to 8:00 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	68	3	0	513	216	0	0	0	0	0	0	4	0	277	**1081**
PHF BY MOVEMENT	0.00	0.00	0.85	0.25	0.00	0.78	0.82	0.00	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.74	OVERALL
PHF BY APPROACH	0.85				0.79				0.00				0.72				0.78
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	3		68		57		2		0		55		65		0		**125**
TRUCK PERCENTAGE	4.2%		19.7%		7.8%		0.9%		0.0%		10.7%		23.1%		0.0%		**11.6%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				2				**2**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY DIR	2				0				0				0				**2**

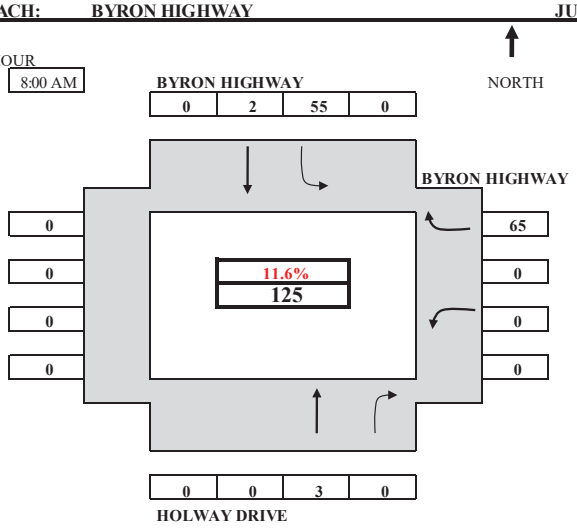
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

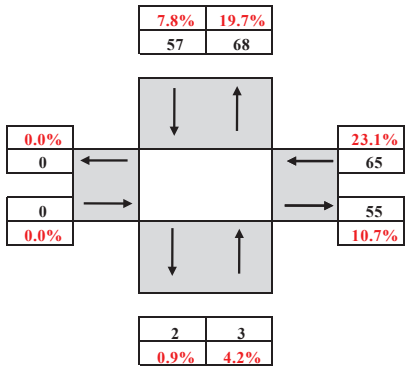
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON		**SURVEY DATE:**	10/22/2015	**DAY:** THURSDAY
N-S APPROACH:	BYRON HIGHWAY	- HOLWAY DRIVE	**SURVEY TIME:**	7:00 AM	**TO** 9:00 AM
E-W APPROACH:	BYRON HIGHWAY		**JURISDICTION:**	BYRON	**FILE:** 3510124-4AM

PEAK HOUR
7:00 AM to 8:00 AM



TRUCK ARRIVAL / DEPARTURE
VOLUMES & PERCENTAGE
(TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DA A																			
7:00 AM	to	7:15 AM			0	0		14	0						0		14		**28**
7:15 AM	to	7:30 AM			0	0		25	0						0		32		**57**
7:30 AM	to	7:45 AM			2	0		42	1						0		47		**92**
7:45 AM	to	8:00 AM			3	0		55	2						0		65		**125**
8:00 AM	to	8:15 AM			4	0		78	6						0		78		**166**
8:15 AM	to	8:30 AM			4	0		90	7						0		90		**191**
8:30 AM	to	8:45 AM			4	1		98	10						0		100		**213**
8:45 AM	to	9:00 AM			5	2		107	12						0		113		**239**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	14	**28**
7:15 AM	to	7:30 AM	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	18	**29**
7:30 AM	to	7:45 AM	0	0	2	0	0	17	1	0	0	0	0	0	0	0	0	15	**35**
7:45 AM	to	8:00 AM	0	0	1	0	0	13	1	0	0	0	0	0	0	0	0	18	**33**
8:00 AM	to	8:15 AM	0	0	1	0	0	23	4	0	0	0	0	0	0	0	0	13	**41**
8:15 AM	to	8:30 AM	0	0	0	0	0	12	1	0	0	0	0	0	0	0	0	12	**25**
8:30 AM	to	8:45 AM	0	0	0	1	0	8	3	0	0	0	0	0	0	0	0	10	**22**
8:45 AM	to	9:00 AM	0	0	1	1	0	9	2	0	0	0	0	0	0	0	0	13	**26**
HOURLY OTALS																			
7:00 AM	to	8:00 AM	0	0	3	0	0	55	2	0	0	0	0	0	0	0	0	65	**125**
7:15 AM	to	8:15 AM	0	0	4	0	0	64	6	0	0	0	0	0	0	0	0	64	**138**
7:30 AM	to	8:30 AM	0	0	4	0	0	65	7	0	0	0	0	0	0	0	0	58	**134**
7:45 AM	to	8:45 AM	0	0	2	1	0	56	9	0	0	0	0	0	0	0	0	53	**121**
8:00 AM	to	9:00 AM	0	0	2	2	0	52	10	0	0	0	0	0	0	0	0	48	**114**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

7:00 AM to 8:00 AM

DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	3	68	57	2	0	55	65	0	125
TRUCK PERCENTAGE	4.2%	19.7%	7.8%	0.9%	0.0%	10.7%	23.1%	0.0%	11.6%

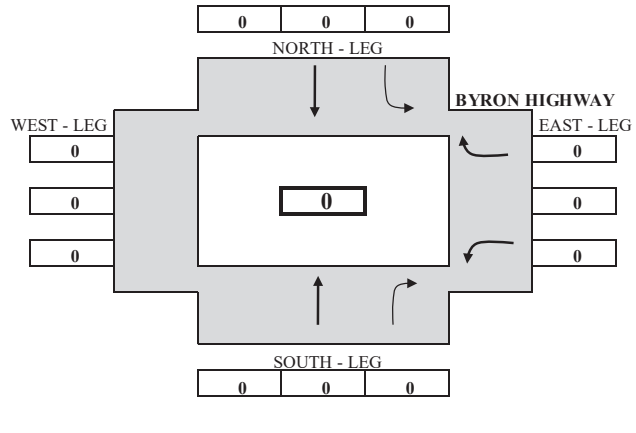
B.A.Y.M.E.T.R.I.C.S.

BICYCLE MOVEMENT SUMMARY

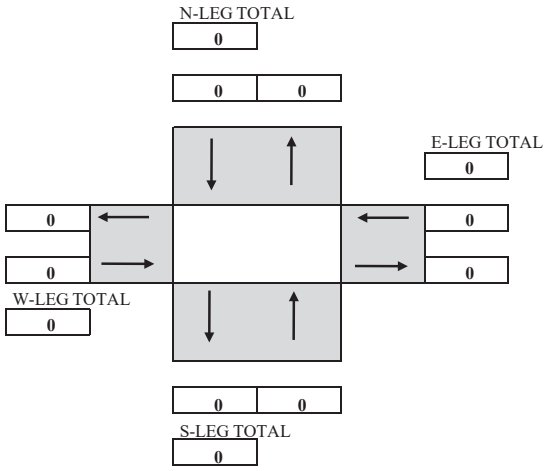
PROJECT:	**TRAFFIC COUNTS IN BYRON**		**SURVEY DATE:**	**10/22/2015**	**DAY:** **THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**-** **HOLWAY DRIVE**	**SURVEY TIME:**	**7:00 AM**	**TO** **9:00 AM**
E-W APPROACH	**BYRON HIGHWAY**		**JURISDICTION:**	**BYRON**	**FILE:** **3510124-4AM**

PEAK HOUR 7:00 AM TO 8:00 AM **BYRON HIGHWAY**

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:00 AM to 8:00 AM

VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

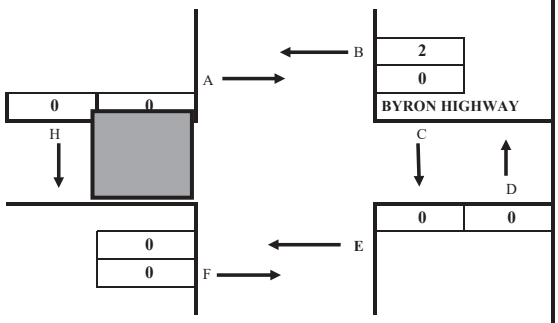
B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015
N-S APPROACH:	BYRON HIGHWAY -	**HOLWAY DRIVE DAY:**	THURSDAY
E-W APPROACH:	BYRON HIGHWAY	**JURISDICTION:**	BYRON
SURVEY PERIOD:	7:00 AM TO 9:00 AM	**FILE:**	3510124-4AM

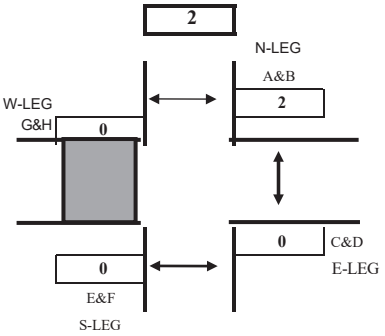
PEAK HOUR

07:00 AM TO 08:00 AM BYRON HIGHWAY



PEAK HOUR

TOTAL PEDESTRIAN VOLUMES



BY LEG:		BY DIRECTION:	
(A&B)	2	NB(D+G)	0
(E&F)	0	SB(C+H)	0
(C&D)	0	EB(A+F)	0
(G&H)	0	WB(B+E)	2

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
07:00 AM	---	07:15 AM	0	2	0	0	0	0	0	0	*2*
07:15 AM	---	07:30 AM	0	2	0	0	0	0	0	0	*2*
07:30 AM	---	07:45 AM	0	2	0	0	0	0	0	0	*2*
07:45 AM	---	08:00 AM	0	2	0	0	0	0	0	0	*2*
08:00 AM	---	08:15 AM	0	2	0	0	0	0	0	0	*2*
08:15 AM	---	08:30 AM	0	2	0	0	0	0	0	0	*2*
08:30 AM	---	08:45 AM	0	2	0	0	0	0	0	0	*2*
08:45 AM	---	09:00 AM	0	2	0	0	0	0	0	0	*2*
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	2	0	0	0	0	0	0	*2*
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	*0*
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	*0*
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	*0*
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	*0*
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	*0*
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	*0*
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	*0*
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	2	0	0	0	0	0	0	*2*
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	*0*
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	*0*
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	*0*
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	*0*

Tel : (510) 232-1271 *ax: (510) 232-1272*

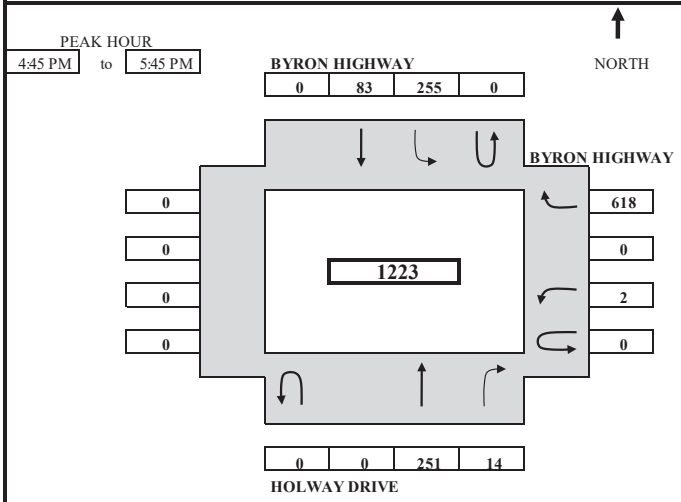
7:00 AM to 8:00 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	2	**2**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	2	0	0	0	**2**

B.A.Y.M.E.T.R.I.C.S.

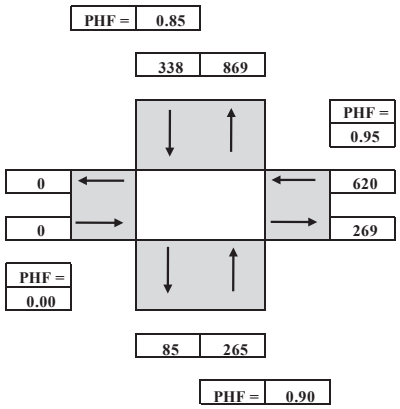
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON			**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	-	HOLWAY DRIVE	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	BYRON HIGHWAY			**JURISDICTION:**	BYRON	**FILE:**	3510124-4PM

PEAK HOUR 4:45 PM to 5:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM			59	3		60	18							0		109	**249**
4:15 PM	to	4:30 PM			120	8		133	37							0		238	**536**
4:30 PM	to	4:45 PM			182	12		193	57							1		369	**814**
4:45 PM	to	5:00 PM			253	15		264	86							2		515	**1135**
5:00 PM	to	5:15 PM			323	18		315	108							2		664	**1430**
5:15 PM	to	5:30 PM			377	21		393	125							2		827	**1745**
5:30 PM	to	5:45 PM			433	26		448	140							3		987	**2037**
5:45 PM	to	6:00 PM			479	27		505	159							3		1139	**2312**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	59	3	0	60	18	0	0	0	0	0	0	0	0	109	**249**
4:15 PM	to	4:30 PM	0	0	61	5	0	73	19	0	0	0	0	0	0	0	0	129	**287**
4:30 PM	to	4:45 PM	0	0	62	4	0	60	20	0	0	0	0	0	0	1	0	131	**278**
4:45 PM	to	5:00 PM	0	0	71	3	0	71	29	0	0	0	0	0	0	1	0	146	**321**
5:00 PM	to	5:15 PM	0	0	70	3	0	51	22	0	0	0	0	0	0	0	0	149	**295**
5:15 PM	to	5:30 PM	0	0	54	3	0	78	17	0	0	0	0	0	0	0	0	163	**315**
5:30 PM	to	5:45 PM	0	0	56	5	0	55	15	0	0	0	0	0	0	1	0	160	**292**
5:45 PM	to	6:00 PM	0	0	46	1	0	57	19	0	0	0	0	0	0	0	0	152	**275**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	253	15	0	264	86	0	0	0	0	0	0	2	0	515	**1135**
4:15 PM	to	5:15 PM	0	0	264	15	0	255	90	0	0	0	0	0	0	2	0	555	**1181**
4:30 PM	to	5:30 PM	0	0	257	13	0	260	88	0	0	0	0	0	0	2	0	589	**1209**
4:45 PM	to	5:45 PM	0	0	251	14	0	255	83	0	0	0	0	0	0	2	0	618	**1223**
5:00 PM	to	6:00 PM	0	0	226	12	0	241	73	0	0	0	0	0	0	1	0	624	**1177**

PEAK HOUR SUMMARY

4:45 PM to 5:45 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	251	14	0	255	83	0	0	0	0	0	0	2	0	618	**1223**
PHF BY MOVEMENT	0.00	0.00	0.88	0.70	0.00	0.82	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.95	OVERALL
PHF BY APPROACH	0.90				0.85				0.00				0.95				0.95
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	0		33		28		4		0		24		33		0		**61**
TRUCK PERCENTAGE	0.0%		3.8%		8.3%		4.7%		0.0%		8.9%		5.3%		0.0%		**5.0%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

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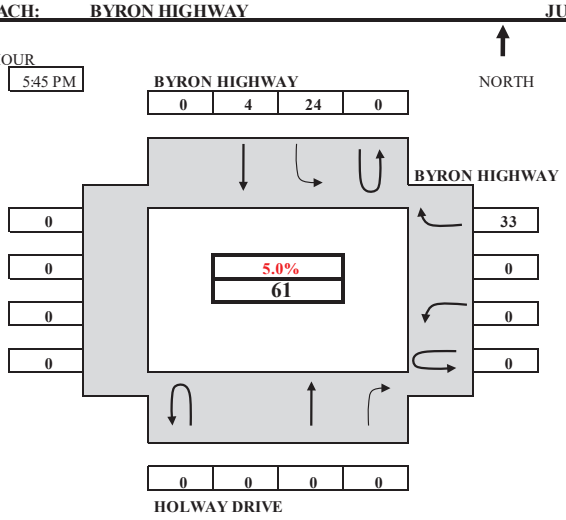
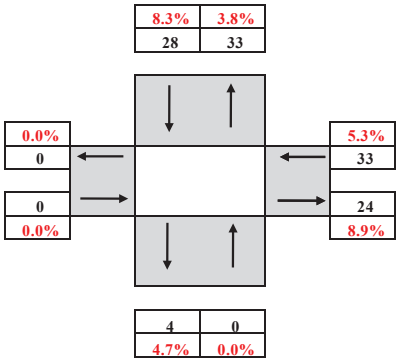
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON		**SURVEY DATE:**	10/22/2015	**DAY:** THURSDAY
N-S APPROACH:	BYRON HIGHWAY - HOLWAY DRIVE		**SURVEY TIME:**	4:00 PM	**TO** 6:00 PM
E-W APPROACH:	BYRON HIGHWAY		**JURISDICTION:**	BYRON	**FILE:** 3510124-3PM

PEAK HOUR 4:45 PM to 5:45 PM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM			2	0		12	2							0		11	**27**
4:15 PM	to	4:30 PM			3	0		25	5							0		23	**56**
4:30 PM	to	4:45 PM			4	0		38	8							0		32	**82**
4:45 PM	to	5:00 PM			4	0		47	12							0		47	**110**
5:00 PM	to	5:15 PM			4	0		53	12							0		50	**119**
5:15 PM	to	5:30 PM			4	0		60	12							0		60	**136**
5:30 PM	to	5:45 PM			4	0		62	12							0		65	**143**
5:45 PM	to	6:00 PM			4	0		67	12							0		71	**154**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	2	0	0	12	2	0	0	0	0	0	0	0	0	11	**27**
4:15 PM	to	4:30 PM	0	0	1	0	0	13	3	0	0	0	0	0	0	0	0	12	**29**
4:30 PM	to	4:45 PM	0	0	1	0	0	13	3	0	0	0	0	0	0	0	0	9	**26**
4:45 PM	to	5:00 PM	0	0	0	0	0	9	4	0	0	0	0	0	0	0	0	15	**28**
5:00 PM	to	5:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	3	**9**
5:15 PM	to	5:30 PM	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	10	**17**
5:30 PM	to	5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	5	**7**
5:45 PM	to	6:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	6	**11**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	4	0	0	47	12	0	0	0	0	0	0	0	0	47	**110**
4:15 PM	to	5:15 PM	0	0	2	0	0	41	10	0	0	0	0	0	0	0	0	39	**92**
4:30 PM	to	5:30 PM	0	0	1	0	0	35	7	0	0	0	0	0	0	0	0	37	**80**
4:45 PM	to	5:45 PM	0	0	0	0	0	24	4	0	0	0	0	0	0	0	0	33	**61**
5:00 PM	to	6:00 PM	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	24	**44**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:45 PM to 5:45 PM

DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	0	33	28	4	0	24	33	0	61
TRUCK PERCENTAGE	0.0%	3.8%	8.3%	4.7%	0.0%	8.9%	5.3%	0.0%	5.0%

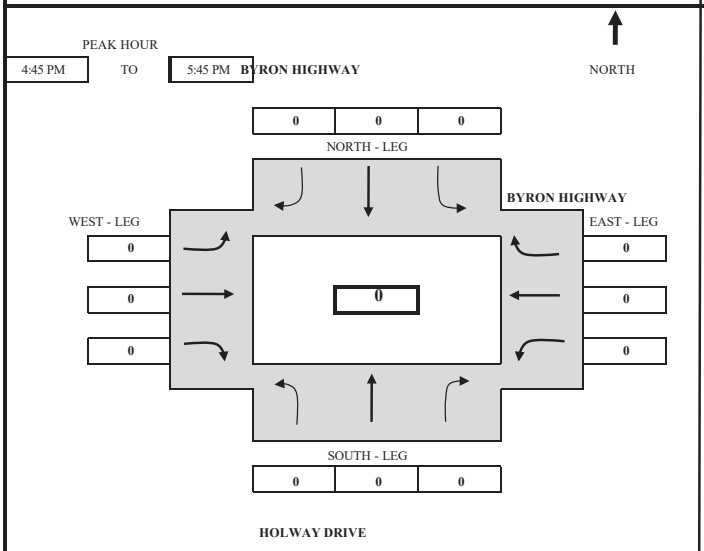
B.A.Y.M.E.T.R.I.C.S.

BICYCLE MOVEMENT SUMMARY

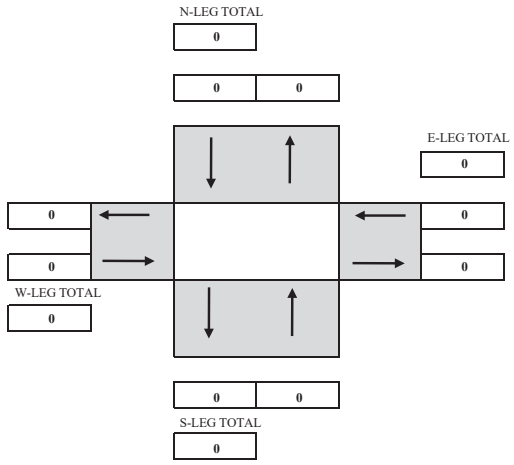
N-S APPROACH: BYRON HIGHWAY

PROJECT:	TRAFFIC COUNTS IN BYRON		SURVEY DATE:	10/22/2015	DAY: THURSDAY
	-	HOLWAY DRIVE	SURVEY TIME:	4:00 PM	TO 6:00 PM
E-W APPROACH	BYRON HIGHWAY		JURISDICTION:	BYRON	FILE: 3510124-4PM

PEAK HOUR
4:45 PM TO 5:45 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:45 PM	to	5:45 PM					
VOLUME BY APPROACH			NBT	SBT	EBT	WBT	TOTAL
BICYCLE			0	0	0	0	0

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

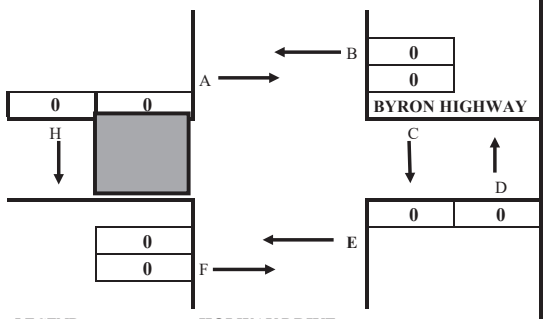
PROJECT: TRAFFIC COUNTS IN BYRON **SURVEY DATE:** 10/22/2015

N-S APPROACH: BYRON HIGHWAY - HOLWAY DRIVE **DAY:** THURSDAY

E-W APPROACH: BYRON HIGHWAY **JURISDICTION:** BYRON

SURVEY PERIOD: 4:00 PM TO 6:00 PM **FILE:** 3510124-4PM

PEAK HOUR 04:45 PM TO 05:45 PM



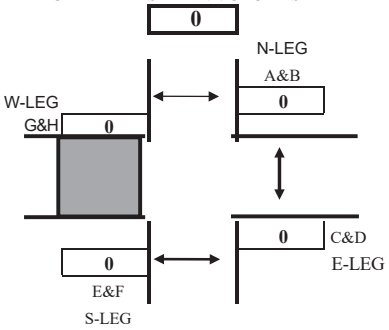
LEGEND:



CROSSWALK
SIDEWALK
STOP CONTROL LINE
STOP

HOLWAY DRIVE
N-LEG
S-LEG
E-LEG
W-LEG

PEAK HOUR TOTAL PEDESTRIAN VOLUMES



BY LEG:		BY DIRECTION:	
(A&B)	0	NB(D+G)	0
(E&F)	0	SB(C+H)	0
(C&D)	0	EB(A+F)	0
(G&H)	0	WB(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*

Tel : (510) 232-1271 *Fax: (510) 232-1272*

4:45 PM to 5:45 PM

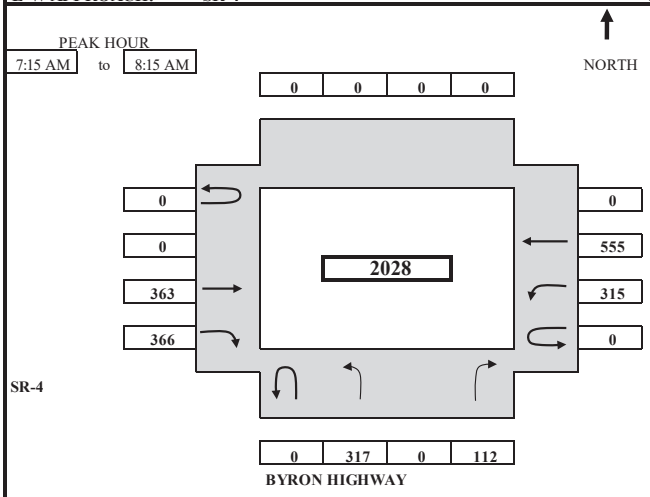
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

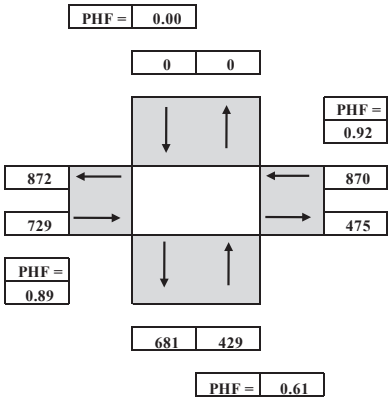
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	SR-4	**JURISDICTION:**	BYRON	**FILE:**	3510124-5AM

PEAK HOUR 7:15 AM to 8:15 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		14		6							38	49		20	46		**173**
7:15 AM	to	7:30 AM		73		18							117	145		84	172		**609**
7:30 AM	to	7:45 AM		151		37							202	247		176	310		**1123**
7:45 AM	to	8:00 AM		268		95							280	331		242	480		**1696**
8:00 AM	to	8:15 AM		331		118							401	415		335	601		**2201**
8:15 AM	to	8:30 AM		384		130							474	467		406	691		**2552**
8:30 AM	to	8:45 AM		419		144							569	420		476	847		**2875**
8:45 AM	to	9:00 AM		497		159							647	562		545	978		**3388**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	14	0	6	0	0	0	0	0	0	38	49	0	20	46	0	**173**
7:15 AM	to	7:30 AM	0	59	0	12	0	0	0	0	0	0	79	96	0	64	126	0	**436**
7:30 AM	to	7:45 AM	0	78	0	19	0	0	0	0	0	0	85	102	0	92	138	0	**514**
7:45 AM	to	8:00 AM	0	117	0	58	0	0	0	0	0	0	78	84	0	66	170	0	**573**
8:00 AM	to	8:15 AM	0	63	0	23	0	0	0	0	0	0	121	84	0	93	121	0	**505**
8:15 AM	to	8:30 AM	0	53	0	12	0	0	0	0	0	0	73	52	0	71	90	0	**351**
8:30 AM	to	8:45 AM	0	35	0	14	0	0	0	0	0	0	95	-47	0	70	156	0	**323**
8:45 AM	to	9:00 AM	0	78	0	15	0	0	0	0	0	0	78	142	0	69	131	0	**513**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	268	0	95	0	0	0	0	0	0	280	331	0	242	480	0	**1696**
7:15 AM	to	8:15 AM	0	317	0	112	0	0	0	0	0	0	363	366	0	315	555	0	**2028**
7:30 AM	to	8:30 AM	0	311	0	112	0	0	0	0	0	0	357	322	0	322	519	0	**1943**
7:45 AM	to	8:45 AM	0	268	0	107	0	0	0	0	0	0	367	173	0	300	537	0	**1752**
8:00 AM	to	9:00 AM	0	229	0	64	0	0	0	0	0	0	367	231	0	303	498	0	**1692**

PEAK HOUR SUMMARY

7:15 AM to 8:15 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	317	0	112	0	0	0	0	0	0	363	366	0	315	555	0	**2028**
PHF BY MOVEMENT	0.00	0.68	0.00	0.48	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.90	0.00	0.85	0.82	0.00	OVERALL
PHF BY APPROACH	0.61				0.00				0.89				0.92				0.88
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	51		0		0		73		77		28		25		52		**153**
TRUCK PERCENTAGE	11.9%		0.0%		0.0%		10.7%		10.6%		5.9%		2.9%		6.0%		**7.5%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

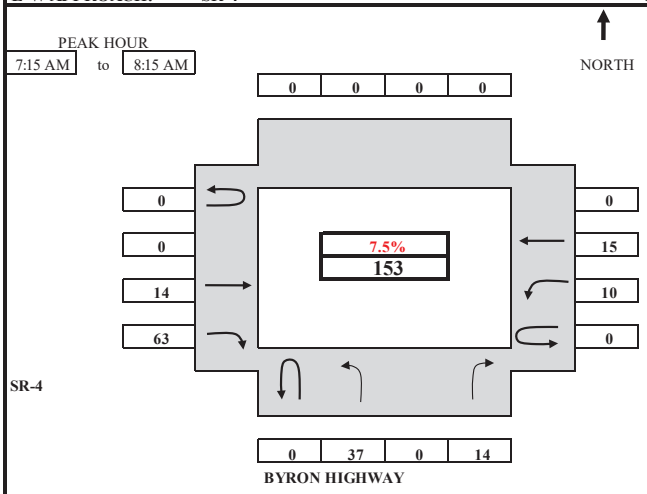
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

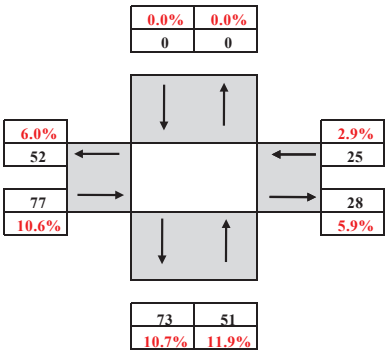
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	SR-4	**JURISDICTION:**	BYRON	**FILE:**	3510124-5AM

PEAK HOUR 7:15 AM to 8:15 AM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		4		3							1	9		3	1		**21**
7:15 AM	to	7:30 AM		12		7							4	19		5	3		**50**
7:30 AM	to	7:45 AM		23		10							6	36		7	6		**88**
7:45 AM	to	8:00 AM		31		12							10	56		11	10		**130**
8:00 AM	to	8:15 AM		41		17							15	72		13	16		**174**
8:15 AM	to	8:30 AM		50		17							23	79		16	19		**204**
8:30 AM	to	8:45 AM		53		18							34	85		18	25		**233**
8:45 AM	to	9:00 AM		66		21							42	95		22	30		**276**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	4	0	3	0	0	0	0	0	0	1	9	0	3	1	0	**21**
7:15 AM	to	7:30 AM	0	8	0	4	0	0	0	0	0	0	3	10	0	2	2	0	**29**
7:30 AM	to	7:45 AM	0	11	0	3	0	0	0	0	0	0	2	17	0	2	3	0	**38**
7:45 AM	to	8:00 AM	0	8	0	2	0	0	0	0	0	0	4	20	0	4	4	0	**42**
8:00 AM	to	8:15 AM	0	10	0	5	0	0	0	0	0	0	5	16	0	2	6	0	**44**
8:15 AM	to	8:30 AM	0	9	0	0	0	0	0	0	0	0	8	7	0	3	3	0	**30**
8:30 AM	to	8:45 AM	0	3	0	1	0	0	0	0	0	0	11	6	0	2	6	0	**29**
8:45 AM	to	9:00 AM	0	13	0	3	0	0	0	0	0	0	8	10	0	4	5	0	**43**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	31	0	12	0	0	0	0	0	0	10	56	0	11	10	0	**130**
7:15 AM	to	8:15 AM	0	37	0	14	0	0	0	0	0	0	14	63	0	10	15	0	**153**
7:30 AM	to	8:30 AM	0	38	0	10	0	0	0	0	0	0	19	60	0	11	16	0	**154**
7:45 AM	to	8:45 AM	0	30	0	8	0	0	0	0	0	0	28	49	0	11	19	0	**145**
8:00 AM	to	9:00 AM	0	35	0	9	0	0	0	0	0	0	32	39	0	11	20	0	**146**

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7:15 AM to 8:15 AM

DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	51	0	0	73	77	28	25	52	153
TRUCK PERCENTAGE	11.9%	0.0%	0.0%	10.7%	10.6%	5.9%	2.9%	6.0%	7.5%

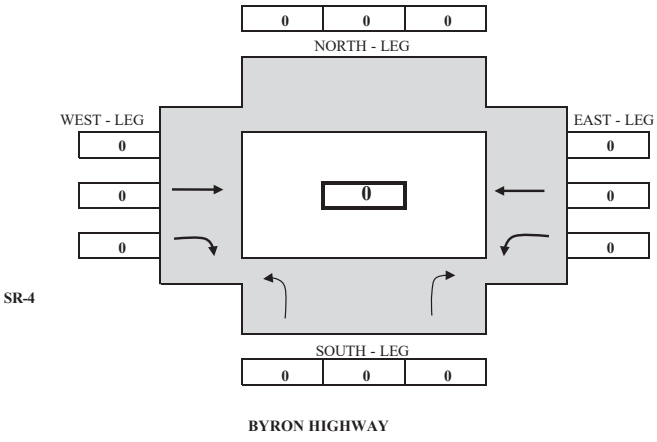
B.A.Y.M.E.T.R.I.C.S.

BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**SR-4**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-5AM**

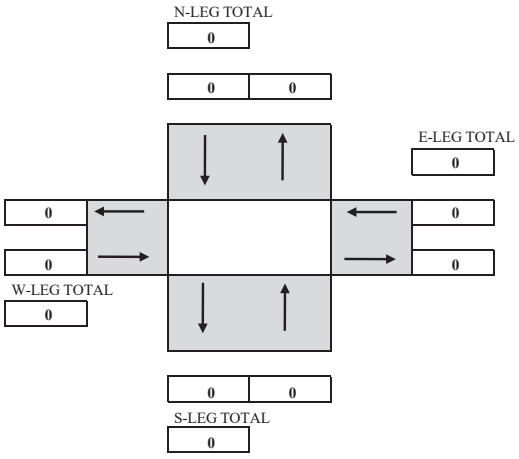
PEAK HOUR
7:15 AM TO 8:15 AM

NORTH



BYRON HIGHWAY

ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

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7:15 AM to 8:15 AM

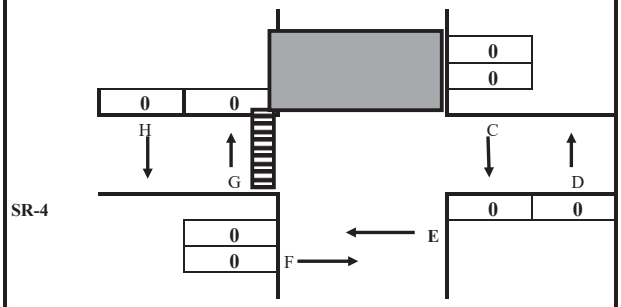
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015
N-S APPROACH:	BYRON HIGHWAY	**DAY:**	THURSDAY
E-W APPROACH:	SR-4	**JURISDICTION:**	BYRON
SURVEY PERIOD:	7:00 AM TO 9:00 AM	**FILE:**	3510124-5AM

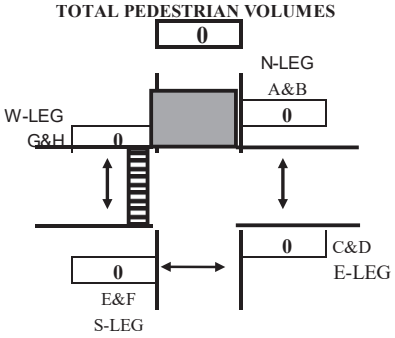
PEAK HOUR
07:15 AM TO 08:15 AM



LEGEND:

CROSSWA **BYRON HIGHWAY** N-LEG
SIDEWALK S-LEG
STOP CONTROL LINE E-LEG
STOP W-LEG

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***Fax: (510) 232-1272***

7:15 AM to 8:15 AM

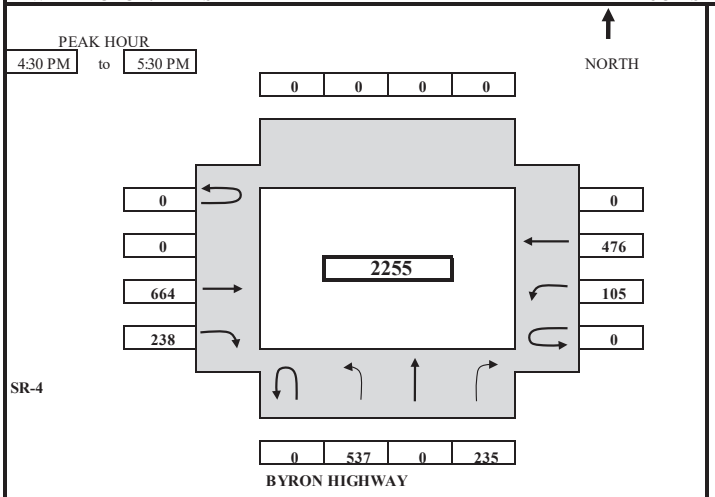
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

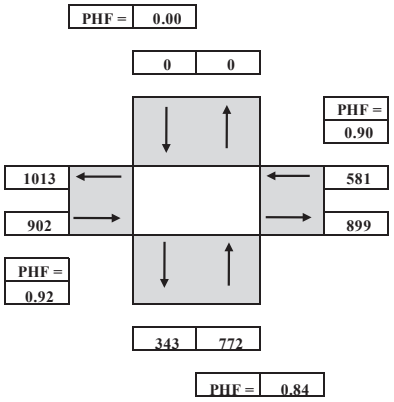
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	SR-4	**JURISDICTION:**	BYRON	**FILE:**	3510124-5PM

PEAK HOUR 4:30 PM to 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		77		49							179	62		21	100		**488**
4:15 PM	to	4:30 PM		188		96							367	132		58	208		**1049**
4:30 PM	to	4:45 PM		316		166							554	190		92	315		**1633**
4:45 PM	to	5:00 PM		423		210							695	254		115	427		**2124**
5:00 PM	to	5:15 PM		594		269							850	310		138	566		**2727**
5:15 PM	to	5:30 PM		725		331							1031	370		163	684		**3304**
5:30 PM	to	5:45 PM		849		384							1204	425		185	813		**3860**
5:45 PM	to	6:00 PM		946		437							1372	469		216	932		**4372**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	77	0	49	0	0	0	0	0	0	179	62	0	21	100	0	**488**
4:15 PM	to	4:30 PM	0	111	0	47	0	0	0	0	0	0	188	70	0	37	108	0	**561**
4:30 PM	to	4:45 PM	0	128	0	70	0	0	0	0	0	0	187	58	0	34	107	0	**584**
4:45 PM	to	5:00 PM	0	107	0	44	0	0	0	0	0	0	141	64	0	23	112	0	**491**
5:00 PM	to	5:15 PM	0	171	0	59	0	0	0	0	0	0	155	56	0	23	139	0	**603**
5:15 PM	to	5:30 PM	0	131	0	62	0	0	0	0	0	0	181	60	0	25	118	0	**577**
5:30 PM	to	5:45 PM	0	124	0	53	0	0	0	0	0	0	173	55	0	22	129	0	**556**
5:45 PM	to	6:00 PM	0	97	0	53	0	0	0	0	0	0	168	44	0	31	119	0	**512**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	423	0	210	0	0	0	0	0	0	695	254	0	115	427	0	**2124**
4:15 PM	to	5:15 PM	0	517	0	220	0	0	0	0	0	0	671	248	0	117	466	0	**2239**
4:30 PM	to	5:30 PM	0	537	0	235	0	0	0	0	0	0	664	238	0	105	476	0	**2255**
4:45 PM	to	5:45 PM	0	533	0	218	0	0	0	0	0	0	650	235	0	93	498	0	**2227**
5:00 PM	to	6:00 PM	0	523	0	227	0	0	0	0	0	0	677	215	0	101	505	0	**2248**

PEAK HOUR SUMMARY

4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	537	0	235	0	0	0	0	0	0	664	238	0	105	476	0	**2255**
PHF BY MOVEMENT	0.00	0.79	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.89	0.93	0.00	0.77	0.86	0.00	OVERALL
PHF BY APPROACH	0.84				0.00				0.92				0.90				0.93
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	27		0		0		42		60		29		27		43		**114**
TRUCK PERCENTAGE	3.5%		0.0%		0.0%		12.2%		6.7%		3.2%		4.6%		4.2%		**5.1%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

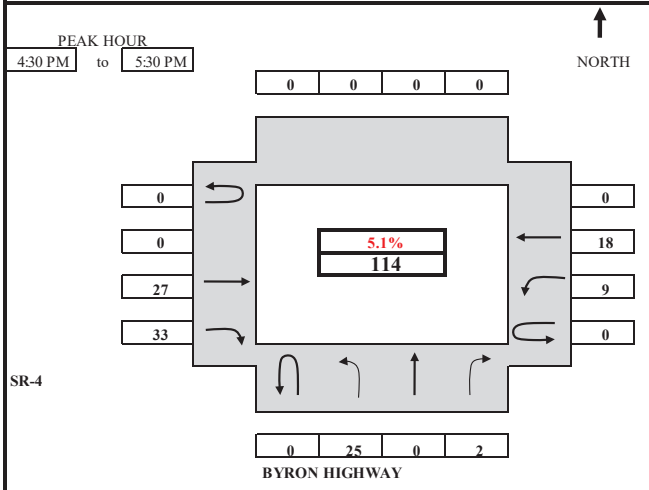
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

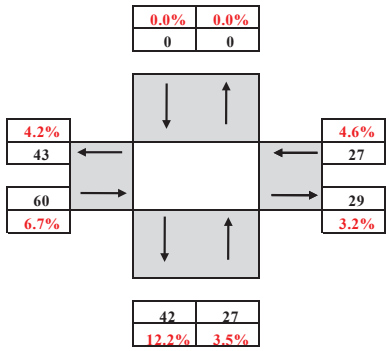
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	BYRON HIGHWAY	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	SR-4	**JURISDICTION:**	BYRON	**FILE:**	3510124-5PM

PEAK HOUR
4:30 PM to 5:30 PM



TRUCK ARRIVAL / DEPARTURE
VOLUMES & PERCENTAGE
(TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		13		1							18	12		1	7		**52**
4:15 PM	to	4:30 PM		19		3							34	21		3	17		**97**
4:30 PM	to	4:45 PM		27		3							45	33		10	25		**143**
4:45 PM	to	5:00 PM		35		5							51	42		11	30		**174**
5:00 PM	to	5:15 PM		38		5							58	49		12	33		**195**
5:15 PM	to	5:30 PM		44		5							61	54		12	35		**211**
5:30 PM	to	5:45 PM		47		5							69	57		12	38		**228**
5:45 PM	to	6:00 PM		51		6							73	62		12	44		**248**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	13	0	1	0	0	0	0	0	0	18	12	0	1	7	0	**52**
4:15 PM	to	4:30 PM	0	6	0	2	0	0	0	0	0	0	16	9	0	2	10	0	**45**
4:30 PM	to	4:45 PM	0	8	0	0	0	0	0	0	0	0	11	12	0	7	8	0	**46**
4:45 PM	to	5:00 PM	0	8	0	2	0	0	0	0	0	0	6	9	0	1	5	0	**31**
5:00 PM	to	5:15 PM	0	3	0	0	0	0	0	0	0	0	7	7	0	1	3	0	**21**
5:15 PM	to	5:30 PM	0	6	0	0	0	0	0	0	0	0	3	5	0	0	2	0	**16**
5:30 PM	to	5:45 PM	0	3	0	0	0	0	0	0	0	0	8	3	0	0	3	0	**17**
5:45 PM	to	6:00 PM	0	4	0	1	0	0	0	0	0	0	4	5	0	0	6	0	**20**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	35	0	5	0	0	0	0	0	0	51	42	0	11	30	0	**174**
4:15 PM	to	5:15 PM	0	25	0	4	0	0	0	0	0	0	40	37	0	11	26	0	**143**
4:30 PM	to	5:30 PM	0	25	0	2	0	0	0	0	0	0	27	33	0	9	18	0	**114**
4:45 PM	to	5:45 PM	0	20	0	2	0	0	0	0	0	0	24	24	0	2	13	0	**85**
5:00 PM	to	6:00 PM	0	16	0	1	0	0	0	0	0	0	22	20	0	1	14	0	**74**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

4:30 PM to 5:30 PM

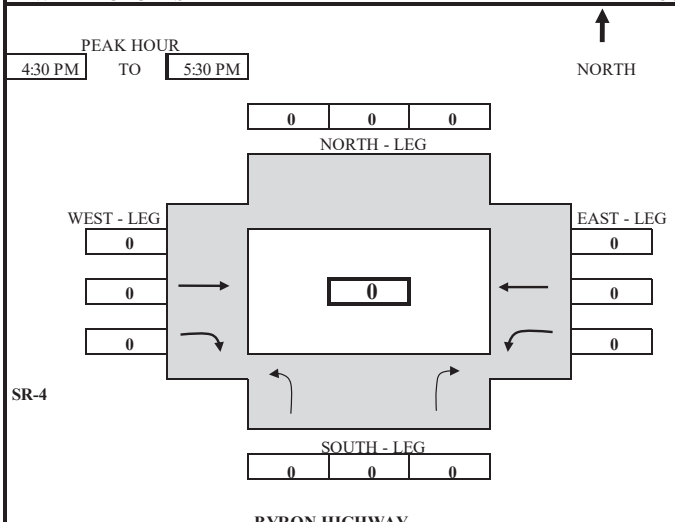
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	27	0	0	42	60	29	27	43	114
TRUCK PERCENTAGE	3.5%	0.0%	0.0%	12.2%	6.7%	3.2%	4.6%	4.2%	5.1%

B.A.Y.M.E.T.R.I.C.S.

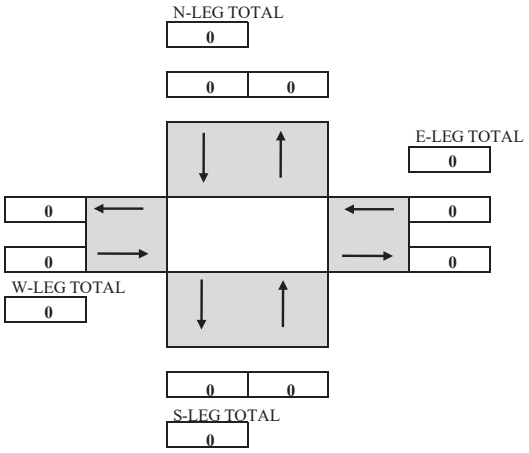
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**BYRON HIGHWAY**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**SR-4**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-5PM**

PEAK HOUR 4:30 PM TO 5:30 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:30 PM to 5:30 PM

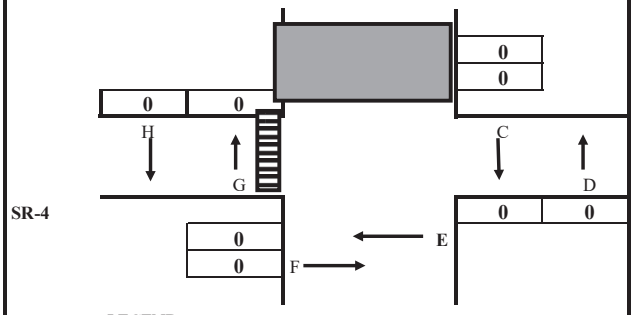
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**BYRON HIGHWAY**	**DAY:**	**THURSDAY**
E-W APPROACH:	**SR-4**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-5PM**

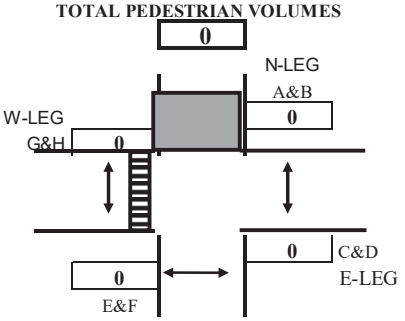
PEAK HOUR
04:30 PM TO 05:30 PM



LEGEND:

CROSSWA	**BYRON HIGHWAY**	N-LEG	
SIDEWALK		S-LEG	
STOP CONTROL LINE		E-LEG	
STOP		W-LEG	

PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ax: (510) 232-1272

4:30 PM to 5:30 PM

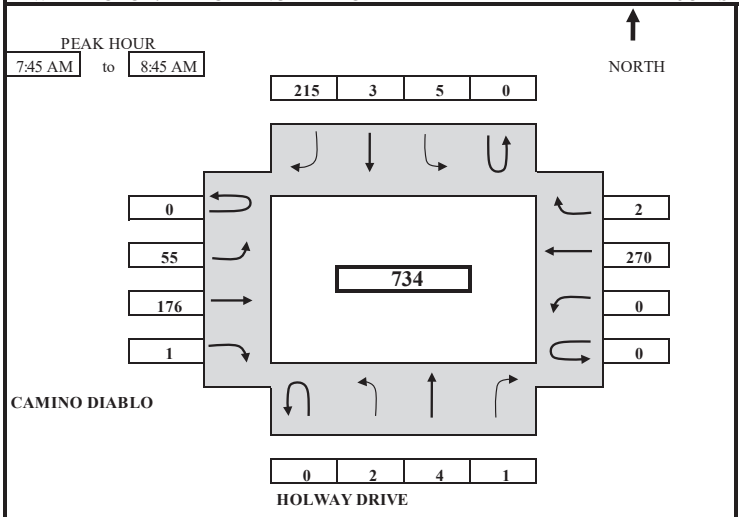
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

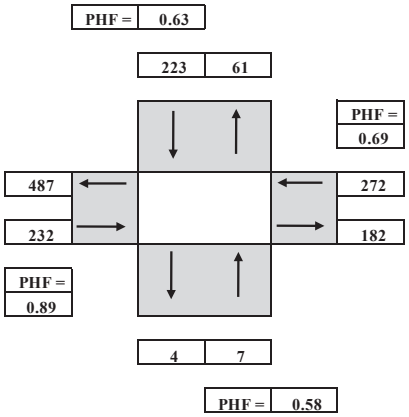
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**HOLWAY DRIVE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-6AM**

PEAK HOUR 7:45 AM to 8:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	0	0		2	0	56		11	28	1		0	74	1	**173**
7:15 AM	to	7:30 AM		0	0	0		2	0	96		21	67	1		0	124	2	**313**
7:30 AM	to	7:45 AM		0	0	0		2	0	134		35	103	1		0	183	5	**463**
7:45 AM	to	8:00 AM		1	0	0		3	2	190		54	149	1		0	243	5	**648**
8:00 AM	to	8:15 AM		1	2	1		7	2	274		68	193	2		0	341	6	**897**
8:15 AM	to	8:30 AM		2	3	1		7	2	295		83	229	2		0	403	6	**1033**
8:30 AM	to	8:45 AM		2	4	1		7	3	349		90	279	2		0	453	7	**1197**
8:45 AM	to	9:00 AM		3	4	1		8	5	408		96	320	2		0	509	7	**1363**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	2	0	56	0	11	28	1	0	0	74	1	**173**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	40	0	10	39	0	0	0	50	1	**140**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	38	0	14	36	0	0	0	59	3	**150**
7:45 AM	to	8:00 AM	0	1	0	0	0	1	2	56	0	19	46	0	0	0	60	0	**185**
8:00 AM	to	8:15 AM	0	0	2	1	0	4	0	84	0	14	44	1	0	0	98	1	**249**
8:15 AM	to	8:30 AM	0	1	1	0	0	0	0	21	0	15	36	0	0	0	62	0	**136**
8:30 AM	to	8:45 AM	0	0	1	0	0	0	1	54	0	7	50	0	0	0	50	1	**164**
8:45 AM	to	9:00 AM	0	1	0	0	0	1	2	59	0	6	41	0	0	0	56	0	**166**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	1	0	0	0	3	2	190	0	54	149	1	0	0	243	5	**648**
7:15 AM	to	8:15 AM	0	1	2	1	0	5	2	218	0	57	165	1	0	0	267	5	**724**
7:30 AM	to	8:30 AM	0	2	3	1	0	5	2	199	0	62	162	1	0	0	279	4	**720**
7:45 AM	to	8:45 AM	0	2	4	1	0	5	3	215	0	55	176	1	0	0	270	2	**734**
8:00 AM	to	9:00 AM	0	2	4	1	0	5	3	218	0	42	171	1	0	0	266	2	**715**

PEAK HOUR SUMMARY

7:45 AM to 8:45 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	2	4	1	0	5	3	215	0	55	176	1	0	0	270	2	**734**
PHF BY MOVEMENT	0.00	0.50	0.50	0.25	0.00	0.31	0.38	0.64	0.00	0.72	0.88	0.25	0.00	0.00	0.69	0.50	OVERALL
PHF BY APPROACH	0.58				0.63				0.89				0.69				0.74
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	0		1		8		0		21		20		16		24		**45**
TRUCK PERCENTAGE	0.0%		1.6%		3.6%		0.0%		9.1%		11.0%		5.9%		4.9%		**6.1%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

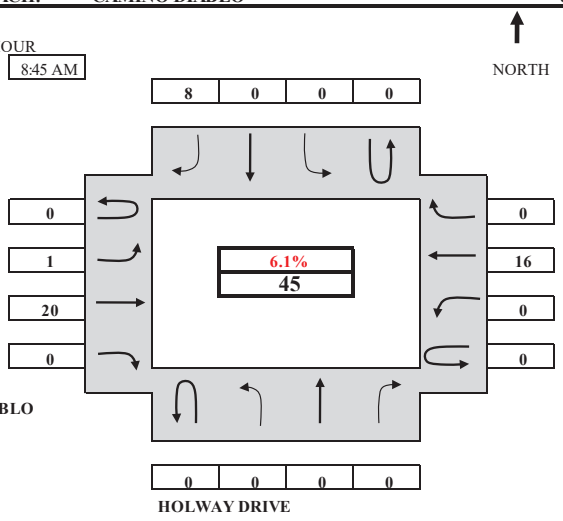
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

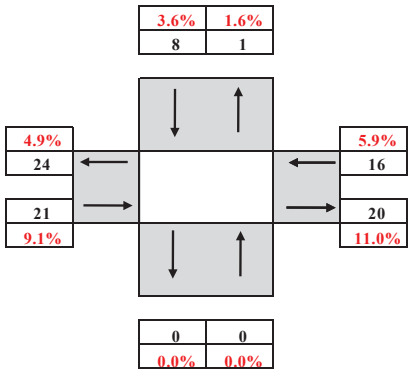
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	HOLWAY DRIVE	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-6AM

PEAK HOUR
7:45 AM to 8:45 AM



TRUCK ARRIVAL / DEPARTURE
VOLUMES & PERCENTAGE
(TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	0	0		0	0	1		0	1	0		0	0	0	**2**
7:15 AM	to	7:30 AM		0	0	0		0	0	1		0	4	0		0	1	0	**6**
7:30 AM	to	7:45 AM		0	0	0		0	0	2		1	4	0		0	2	0	**9**
7:45 AM	to	8:00 AM		0	0	0		0	0	4		1	6	0		0	3	0	**14**
8:00 AM	to	8:15 AM		0	0	0		0	0	4		2	13	0		0	7	0	**26**
8:15 AM	to	8:30 AM		0	0	0		0	0	5		2	14	0		0	12	0	**33**
8:30 AM	to	8:45 AM		0	0	0		0	0	10		2	24	0		0	18	0	**54**
8:45 AM	to	9:00 AM		0	0	0		0	0	12		3	32	0		0	24	0	**71**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	**2**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	**4**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	**3**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	2	0	0	2	0	0	0	1	0	**5**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	1	7	0	0	0	4	0	**12**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	1	0	0	1	0	0	0	5	0	**7**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	5	0	0	10	0	0	0	6	0	**21**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	2	0	1	8	0	0	0	6	0	**17**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	4	0	1	6	0	0	0	3	0	**14**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	3	0	2	12	0	0	0	7	0	**24**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	4	0	2	10	0	0	0	11	0	**27**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	8	0	1	20	0	0	0	16	0	**45**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	8	0	2	26	0	0	0	21	0	**57**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

7:45 AM to 8:45 AM

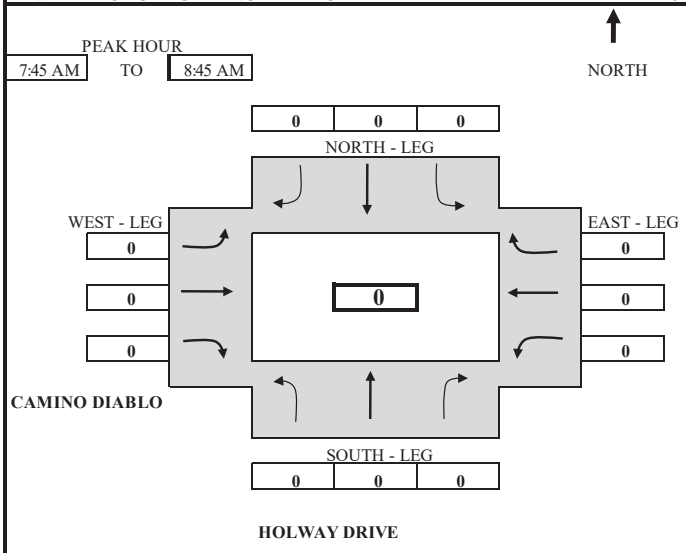
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	0	1	8	0	21	20	16	24	45
TRUCK PERCENTAGE	0.0%	1.6%	3.6%	0.0%	9.1%	11.0%	5.9%	4.9%	6.1%

B.A.Y.M.E.T.R.I.C.S.

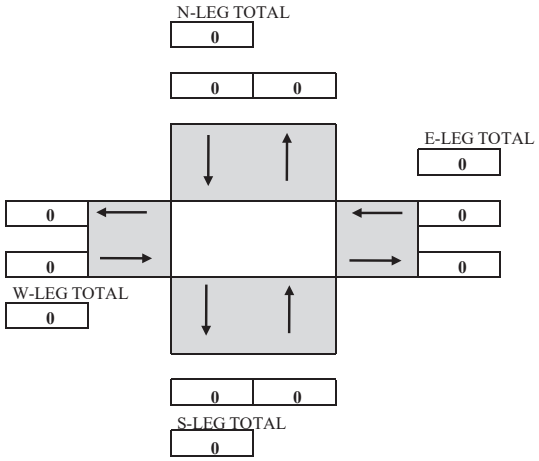
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**HOLWAY DRIVE**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-6AM**

PEAK HOUR
7:45 AM TO 8:45 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:45 AM to 8:45 AM

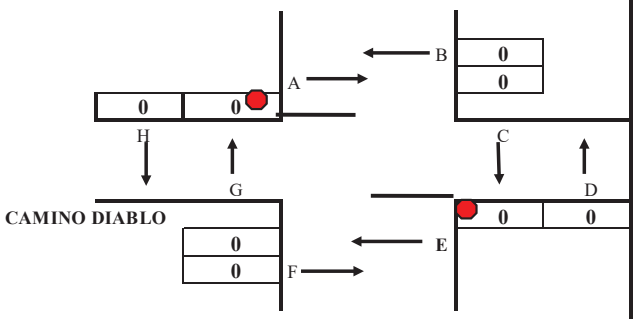
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

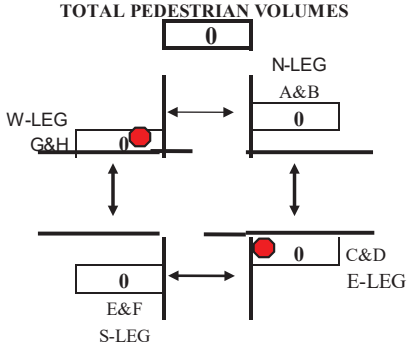
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**HOLWAY DRIVE**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3510124-6AM**

PEAK HOUR
07:45 AM TO 08:45 AM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:

CROSSWA	**HOLWAY DRIVE**
SIDEWALK	
STOP CONTROL LINE	
STOP	

BY LEG:		**BY DIRECTION:**	
N-LEG	(A&B)	0	**NB**(D+G)	0
S-LEG	(E&F)	0	**SB**(C+H)	0
E-LEG	(C&D)	0	**EB**(A+F)	0
W-LEG	(G&H)	0	**WB**(B+E)	0

TIME PERIOD			**NORTH X-WALK**		**EAST X-WALK**		**SOUTH X-WALK**		**WEST X-WALK**		
From		**To**	***A***	***B***	***C***	***D***	***E***	***F***	***G***	***H***	***TOTAL***
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	***0***
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	***0***
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	***0***
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	***0***
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ***ax: (510) 232-1272***

7:45 AM to 8:45 AM

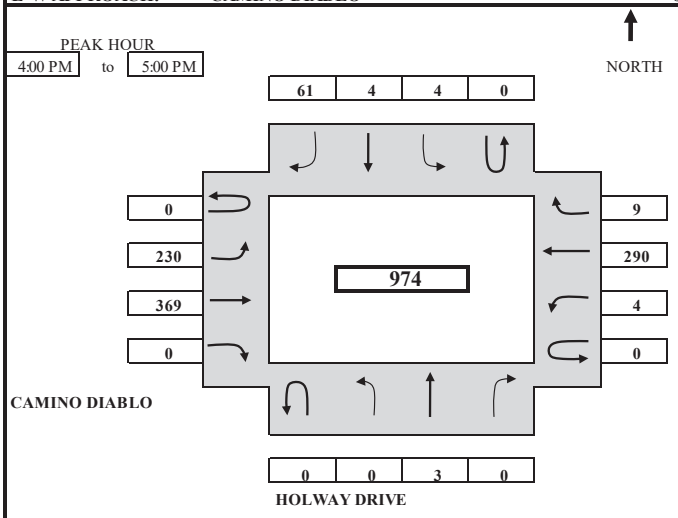
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

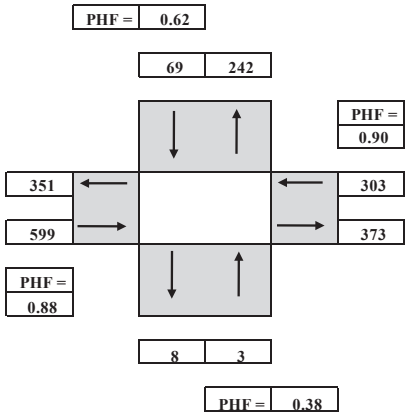
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	HOLWAY DRIVE	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-6PM

PEAK HOUR 4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		0	1	0		2	2	9		60	110	0		2	80	1	**267**
4:15 PM	to	4:30 PM		0	1	0		3	2	22		109	198	0		2	149	1	**487**
4:30 PM	to	4:45 PM		0	1	0		3	2	36		179	272	0		3	228	5	**729**
4:45 PM	to	5:00 PM		0	3	0		4	4	61		230	369	0		4	290	9	**974**
5:00 PM	to	5:15 PM		0	3	1		4	4	75		284	457	0		4	371	9	**1212**
5:15 PM	to	5:30 PM		0	5	1		4	4	88		337	553	1		4	446	12	**1455**
5:30 PM	to	5:45 PM		0	6	1		5	5	109		382	629	1		4	527	15	**1684**
5:45 PM	to	6:00 PM		0	8	1		5	5	124		435	721	1		5	592	15	**1912**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	1	0	0	2	2	9	0	60	110	0	0	2	80	1	**267**
4:15 PM	to	4:30 PM	0	0	0	0	0	1	0	13	0	49	88	0	0	0	69	0	**220**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	14	0	70	74	0	0	1	79	4	**242**
4:45 PM	to	5:00 PM	0	0	2	0	0	1	2	25	0	51	97	0	0	1	62	4	**245**
5:00 PM	to	5:15 PM	0	0	0	1	0	0	0	14	0	54	88	0	0	0	81	0	**238**
5:15 PM	to	5:30 PM	0	0	2	0	0	0	0	13	0	53	96	1	0	0	75	3	**243**
5:30 PM	to	5:45 PM	0	0	1	0	0	1	1	21	0	45	76	0	0	0	81	3	**229**
5:45 PM	to	6:00 PM	0	0	2	0	0	0	0	15	0	53	92	0	0	1	65	0	**228**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	3	0	0	4	4	61	0	230	369	0	0	4	290	9	**974**
4:15 PM	to	5:15 PM	0	0	2	1	0	2	2	66	0	224	347	0	0	2	291	8	**945**
4:30 PM	to	5:30 PM	0	0	4	1	0	1	2	66	0	228	355	1	0	2	297	11	**968**
4:45 PM	to	5:45 PM	0	0	5	1	0	2	3	73	0	203	357	1	0	1	299	10	**955**
5:00 PM	to	6:00 PM	0	0	5	1	0	1	1	63	0	205	352	1	0	1	302	6	**938**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	3	0	0	4	4	61	0	230	369	0	0	4	290	9	**974**
PHF BY MOVEMENT	0.00	0.00	0.38	0.00	0.00	0.50	0.50	0.61	0.00	0.82	0.84	0.00	0.00	0.50	0.91	0.56	OVERALL
PHF BY APPROACH	0.38				0.62				0.88				0.90				0.91
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	0		8		14		1		38		36		24		31		**76**
TRUCK PERCENTAGE	0.0%		3.3%		20.3%		12.5%		6.3%		9.7%		7.9%		8.8%		**7.8%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

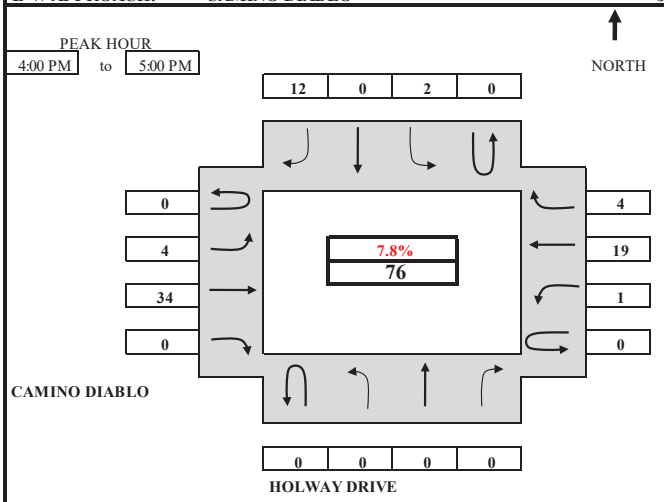
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

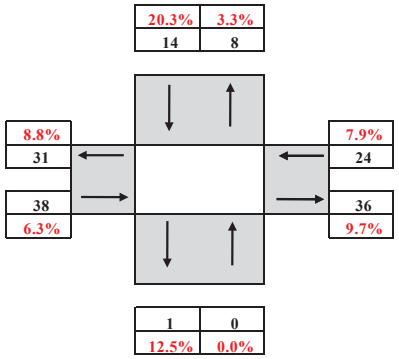
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**HOLWAY DRIVE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-3PM**

PEAK HOUR 4:00 PM to 5:00 PM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		0	0	0		1	0	3		1	11	0		1	5	1	**23**
4:15 PM	to	4:30 PM		0	0	0		1	0	6		3	15	0		1	9	2	**37**
4:30 PM	to	4:45 PM		0	0	0		1	0	10		3	21	0		1	14	3	**53**
4:45 PM	to	5:00 PM		0	0	0		2	0	12		4	34	0		1	19	4	**76**
5:00 PM	to	5:15 PM		0	0	0		2	0	13		6	36	0		1	22	4	**84**
5:15 PM	to	5:30 PM		0	0	0		2	0	14		7	42	0		1	23	4	**93**
5:30 PM	to	5:45 PM		0	0	0		3	0	14		8	46	0		1	26	4	**102**
5:45 PM	to	6:00 PM		0	0	0		3	0	14		9	48	0		1	28	4	**107**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	0	0	0	0	1	0	3	0	1	11	0	0	1	5	1	**23**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	3	0	2	4	0	0	0	4	1	**14**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	4	0	0	6	0	0	0	5	1	**16**
4:45 PM	to	5:00 PM	0	0	0	0	0	1	0	2	0	1	13	0	0	0	5	1	**23**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	1	0	2	2	0	0	0	3	0	**8**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	1	0	1	6	0	0	0	1	0	**9**
5:30 PM	to	5:45 PM	0	0	0	0	0	1	0	0	0	1	4	0	0	0	3	0	**9**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	0	**5**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	0	0	0	0	2	0	12	0	4	34	0	0	1	19	4	**76**
4:15 PM	to	5:15 PM	0	0	0	0	0	1	0	10	0	5	25	0	0	0	17	3	**61**
4:30 PM	to	5:30 PM	0	0	0	0	0	1	0	8	0	4	27	0	0	0	14	2	**56**
4:45 PM	to	5:45 PM	0	0	0	0	0	2	0	4	0	5	25	0	0	0	12	1	**49**
5:00 PM	to	6:00 PM	0	0	0	0	0	1	0	2	0	5	14	0	0	0	9	0	**31**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

4:00 PM to 5:00 PM

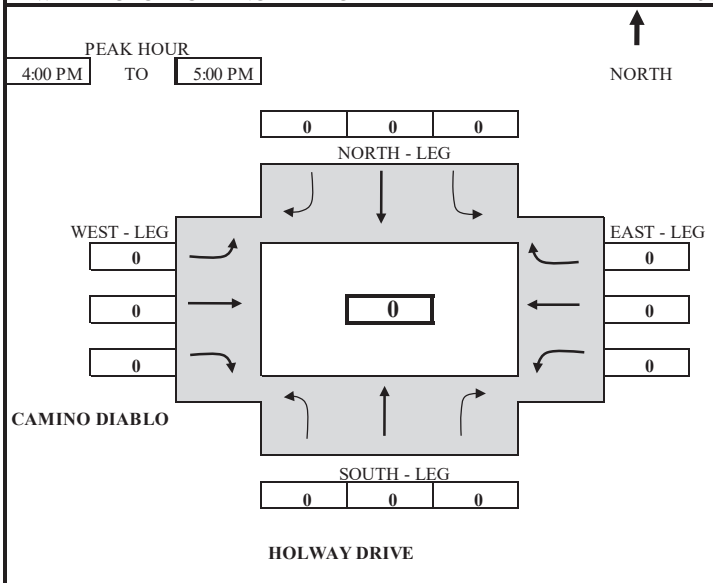
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	0	8	14	1	38	36	24	31	76
TRUCK PERCENTAGE	0.0%	3.3%	20.3%	12.5%	6.3%	9.7%	7.9%	8.8%	7.8%

B.A.Y.M.E.T.R.I.C.S.

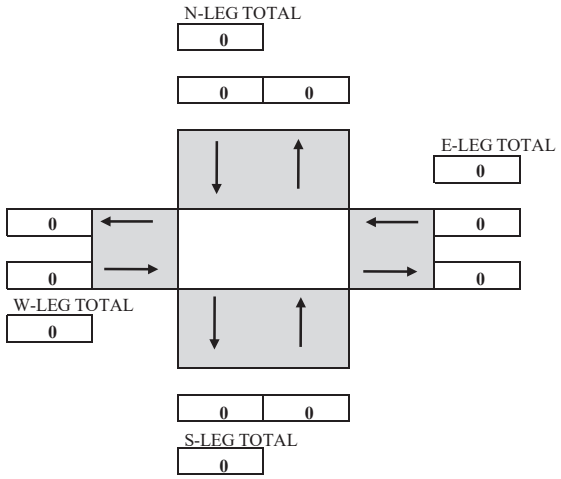
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**HOLWAY DRIVE**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-6PM**

PEAK HOUR 4:00 PM TO 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:00 PM to 5:00 PM

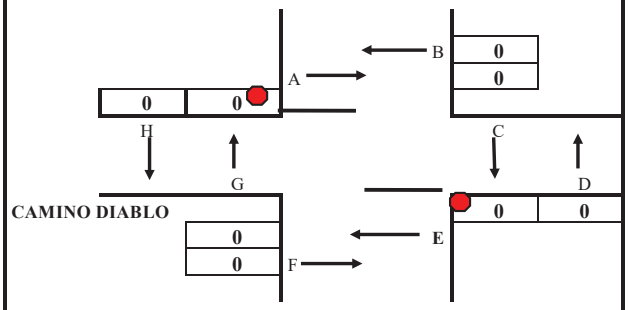
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

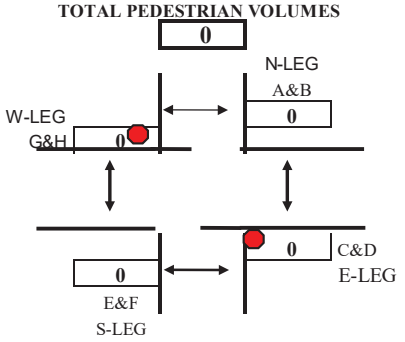
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**HOLWAY DRIVE**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-6PM**

PEAK HOUR
04:00 PM TO 05:00 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:

CROSSWA	**HOLWAY DRIVE**
SIDEWALK	
STOP CONTROL LINE	
STOP	

N-LEG	**BY LEG:**		**BY DIRECTION:**
S-LEG	(A&B)	0	**NB**(D+G) 0
E-LEG	(E&F)	0	**SB**(C+H) 0
W-LEG	(C&D)	0	**EB**(A+F) 0
	(G&H)	0	**WB**(B+E) 0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	*0*
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	*0*
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	*0*
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	*0*
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	*0*

Tel : (510) 232-1271 *ax: (510) 232-1272*

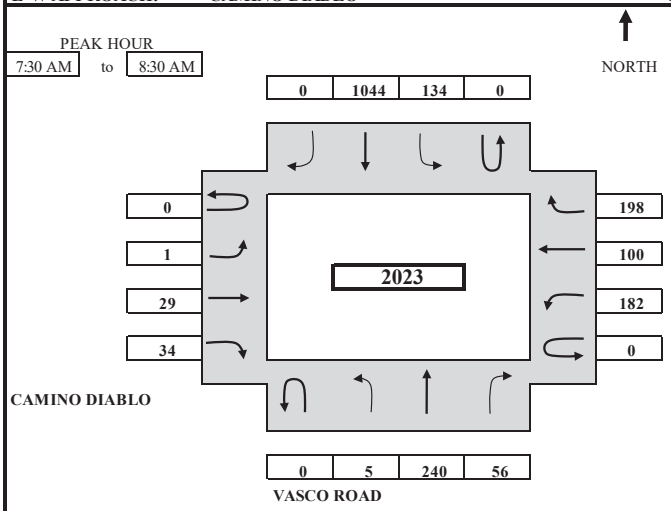
4:00 PM to 5:00 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

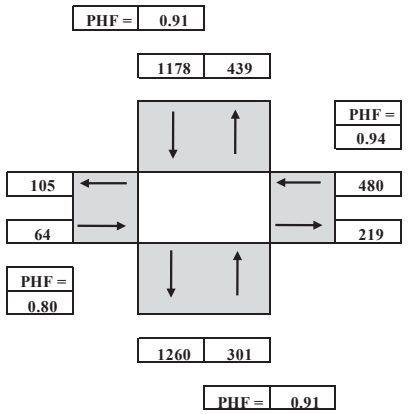
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	VASCO ROAD	**SURVEY TIME:**	7:00 AM	**TO**	9:00 AM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-7AM

PEAK HOUR 7:30 AM to 8:30 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM		0	45	10		16	147	2		0	3	15		37	15	28	**318**
7:15 AM	to	7:30 AM		1	106	19		45	430	3		0	11	37		87	34	62	**835**
7:30 AM	to	7:45 AM		2	170	34		74	668	3		1	18	49		124	57	101	**1301**
7:45 AM	to	8:00 AM		3	234	52		112	907	3		1	24	59		180	82	145	**1802**
8:00 AM	to	8:15 AM		6	295	64		146	1185	3		1	34	61		228	105	202	**2330**
8:15 AM	to	8:30 AM		6	346	75		179	1474	3		1	40	71		269	134	260	**2858**
8:30 AM	to	8:45 AM		7	397	81		227	1691	3		1	49	76		323	147	294	**3296**
8:45 AM	to	9:00 AM		10	452	87		266	1890	3		1	58	77		378	162	361	**3745**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	45	10	0	16	147	2	0	0	3	15	0	37	15	28	**318**
7:15 AM	to	7:30 AM	0	1	61	9	0	29	283	1	0	0	8	22	0	50	19	34	**517**
7:30 AM	to	7:45 AM	0	1	64	15	0	29	238	0	0	1	7	12	0	37	23	39	**466**
7:45 AM	to	8:00 AM	0	1	64	18	0	38	239	0	0	0	6	10	0	56	25	44	**501**
8:00 AM	to	8:15 AM	0	3	61	12	0	34	278	0	0	0	10	2	0	48	23	57	**528**
8:15 AM	to	8:30 AM	0	0	51	11	0	33	289	0	0	0	6	10	0	41	29	58	**528**
8:30 AM	to	8:45 AM	0	1	51	6	0	48	217	0	0	0	9	5	0	54	13	34	**438**
8:45 AM	to	9:00 AM	0	3	55	6	0	39	199	0	0	0	9	1	0	55	15	67	**449**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	3	234	52	0	112	907	3	0	1	24	59	0	180	82	145	**1802**
7:15 AM	to	8:15 AM	0	6	250	54	0	130	1038	1	0	1	31	46	0	191	90	174	**2012**
7:30 AM	to	8:30 AM	0	5	240	56	0	134	1044	0	0	1	29	34	0	182	100	198	**2023**
7:45 AM	to	8:45 AM	0	5	227	47	0	153	1023	0	0	0	31	27	0	199	90	193	**1995**
8:00 AM	to	9:00 AM	0	7	218	35	0	154	983	0	0	0	34	18	0	198	80	216	**1943**

PEAK HOUR SUMMARY

7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	5	240	56	0	134	1044	0	0	1	29	34	0	182	100	198	**2023**
PHF BY MOVEMENT	0.00	0.42	0.94	0.78	0.00	0.88	0.90	0.00	0.00	0.25	0.73	0.71	0.00	0.81	0.86	0.85	OVERALL
PHF BY APPROACH	0.91				0.91				0.80				0.94				0.96
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	34		41		22		18		2		12		24		11		**82**
TRUCK PERCENTAGE	11.3%		9.3%		1.9%		1.4%		3.1%		5.5%		5.0%		10.5%		**4.1%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY DIR	0				0				0				0				**0**

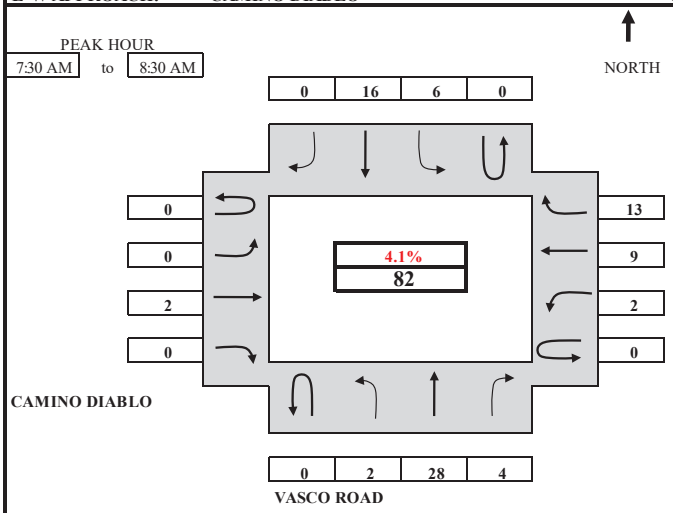
TEL: (510) 232 - 1271 AX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

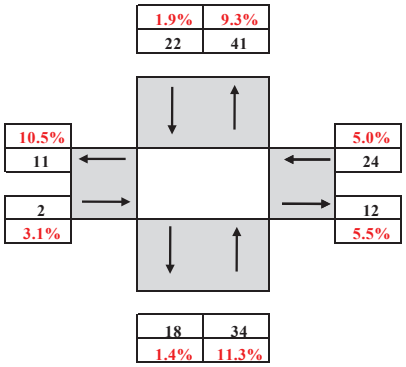
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**VASCO ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-7AM**

PEAK HOUR
7:30 AM to 8:30 AM



TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)



TIME		PERIOD		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To		U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																				
7:00 AM	to	7:15 AM			0	2	0		0	1	0		0	1	0		0	1	2	**7**
7:15 AM	to	7:30 AM			1	5	1		2	4	0		0	1	0		1	3	7	**25**
7:30 AM	to	7:45 AM			1	7	1		2	5	0		0	1	0		1	3	12	**33**
7:45 AM	to	8:00 AM			1	12	2		3	10	0		0	2	0		1	6	14	**51**
8:00 AM	to	8:15 AM			3	20	5		7	14	0		0	3	0		2	8	17	**79**
8:15 AM	to	8:30 AM			3	33	5		8	20	0		0	3	0		3	12	20	**107**
8:30 AM	to	8:45 AM			4	38	7		16	27	0		0	3	0		4	14	26	**139**
8:45 AM	to	9:00 AM			5	43	7		20	32	0		0	7	0		7	16	33	**170**
TOTAL BY PERIOD																				
7:00 AM	to	7:15 AM		0	0	2	0	0	0	1	0	0	0	1	0	0	0	1	2	**7**
7:15 AM	to	7:30 AM		0	1	3	1	0	2	3	0	0	0	0	0	0	1	2	5	**18**
7:30 AM	to	7:45 AM		0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	5	**8**
7:45 AM	to	8:00 AM		0	0	5	1	0	1	5	0	0	0	1	0	0	0	3	2	**18**
8:00 AM	to	8:15 AM		0	2	8	3	0	4	4	0	0	0	1	0	0	1	2	3	**28**
8:15 AM	to	8:30 AM		0	0	13	0	0	1	6	0	0	0	0	0	0	1	4	3	**28**
8:30 AM	to	8:45 AM		0	1	5	2	0	8	7	0	0	0	0	0	0	1	2	6	**32**
8:45 AM	to	9:00 AM		0	1	5	0	0	4	5	0	0	0	4	0	0	3	2	7	**31**
HOURLY TOTALS																				
7:00 AM	to	8:00 AM		0	1	12	2	0	3	10	0	0	0	2	0	0	1	6	14	**51**
7:15 AM	to	8:15 AM		0	3	18	5	0	7	13	0	0	0	2	0	0	2	7	15	**72**
7:30 AM	to	8:30 AM		0	2	28	4	0	6	16	0	0	0	2	0	0	2	9	13	**82**
7:45 AM	to	8:45 AM		0	3	31	6	0	14	22	0	0	0	2	0	0	3	11	14	**106**
8:00 AM	to	9:00 AM		0	4	31	5	0	17	22	0	0	0	5	0	0	6	10	19	**119**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:30 AM to 8:30 AM

DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	34	41	22	18	2	12	24	11	82
TRUCK PERCENTAGE	11.3%	9.3%	1.9%	1.4%	3.1%	5.5%	5.0%	10.5%	4.1%

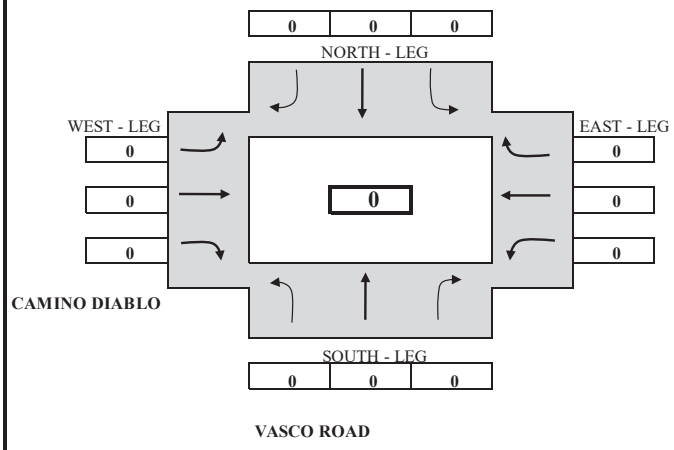
B.A.Y.M.E.T.R.I.C.S.

BICYCLE MOVEMENT SUMMARY

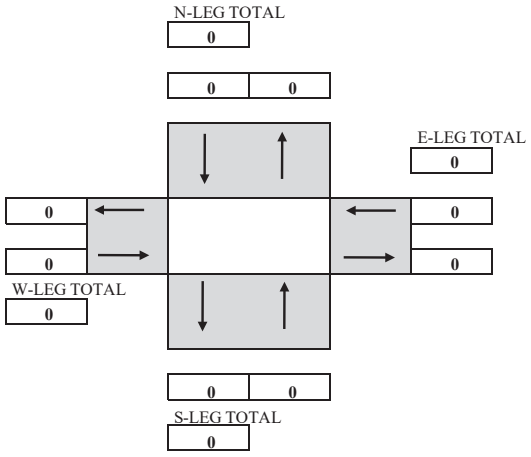
PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**VASCO ROAD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-7AM**

PEAK HOUR
7:30 AM TO 8:30 AM

NORTH



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DA A															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
7:00 AM	to	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:45 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY OTALS															
7:00 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:15 AM	to	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:30 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
7:45 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
8:00 AM	to	9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

7:30 AM to 8:30 AM

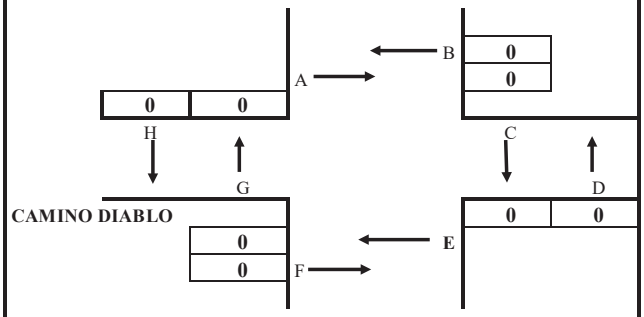
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

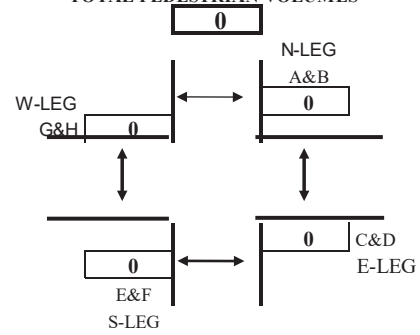
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**VASCO ROAD**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**7:00 AM TO 9:00 AM**	**FILE:**	**3510124-7AM**

PEAK HOUR
07:30 AM TO 08:30 AM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:

CROSSWA	**VASCO ROAD**
SIDEWALK	
STOP CONTROL LINE	
STOP	

N-LEG	(A&B)	0
S-LEG	(E&F)	0
E-LEG	(C&D)	0
W-LEG	(G&H)	0

NB(D+G)	0
SB(C+H)	0
EB(A+F)	0
WB(B+E)	0

TIME PERIOD From		To	NORTH X-WALK *A*	*B*	EAST X-WALK *C*	*D*	SOUTH X-WALK *E*	*F*	WEST X-WALK *G*	*H*	*TOTAL*
SURVEY DATA											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	*0*
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	*0*
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	*0*
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	*0*
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	*0*
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	*0*
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	*0*
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	*0*
TOTAL BY PERIOD											
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	*0*
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	*0*
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	*0*
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	*0*
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	*0*
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	*0*
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	*0*
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	*0*
HOURLY TOTALS											
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	*0*
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	*0*
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	*0*
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	*0*
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	*0*

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7:30 AM to 8:30 AM

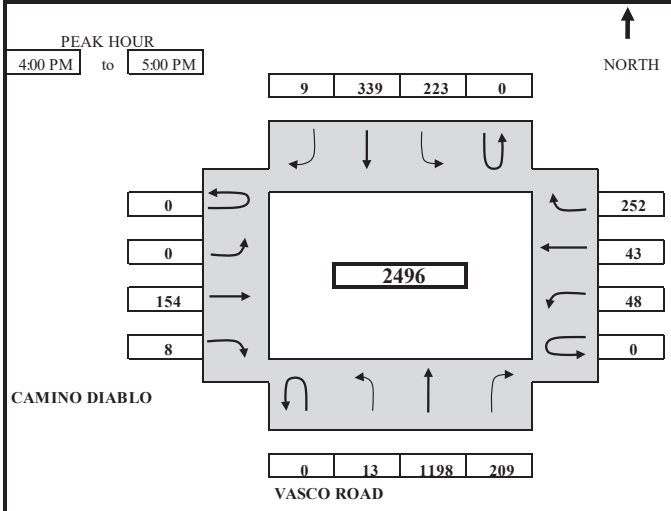
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	**N-LEG**	**S-LEG**	**E-LEG**	**W-LEG**	**TOTAL**
PEDESTRIAN	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

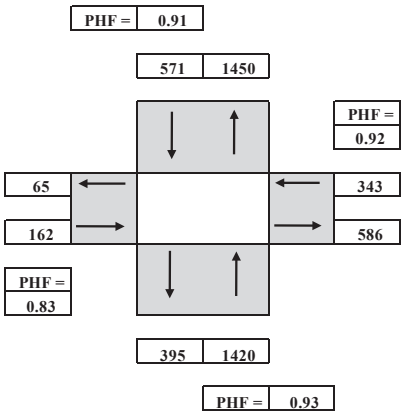
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	VASCO ROAD	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-7PM

PEAK HOUR 4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		1	324	57		61	93	3		0	31	2		4	7	64	**647**
4:15 PM	to	4:30 PM		4	628	99		119	186	8		0	76	6		13	16	128	**1283**
4:30 PM	to	4:45 PM		9	910	152		160	258	8		0	106	7		32	33	185	**1860**
4:45 PM	to	5:00 PM		13	1198	209		223	339	9		0	154	8		48	43	252	**2496**
5:00 PM	to	5:15 PM		18	1497	264		265	421	10		1	192	9		63	57	316	**3113**
5:15 PM	to	5:30 PM		21	1788	306		322	495	10		1	237	11		77	64	390	**3722**
5:30 PM	to	5:45 PM		30	2092	350		363	566	10		1	274	14		88	68	451	**4307**
5:45 PM	to	6:00 PM		35	2378	398		412	637	11		2	309	15		101	83	515	**4896**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	1	324	57	0	61	93	3	0	0	31	2	0	4	7	64	**647**
4:15 PM	to	4:30 PM	0	3	304	42	0	58	93	5	0	0	45	4	0	9	9	64	**636**
4:30 PM	to	4:45 PM	0	5	282	53	0	41	72	0	0	0	30	1	0	19	17	57	**577**
4:45 PM	to	5:00 PM	0	4	288	57	0	63	81	1	0	0	48	1	0	16	10	67	**636**
5:00 PM	to	5:15 PM	0	5	299	55	0	42	82	1	0	1	38	1	0	15	14	64	**617**
5:15 PM	to	5:30 PM	0	3	291	42	0	57	74	0	0	0	45	2	0	14	7	74	**609**
5:30 PM	to	5:45 PM	0	9	304	44	0	41	71	0	0	0	37	3	0	11	4	61	**585**
5:45 PM	to	6:00 PM	0	5	286	48	0	49	71	1	0	1	35	1	0	13	15	64	**589**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	13	1198	209	0	223	339	9	0	0	154	8	0	48	43	252	**2496**
4:15 PM	to	5:15 PM	0	17	1173	207	0	204	328	7	0	1	161	7	0	59	50	252	**2466**
4:30 PM	to	5:30 PM	0	17	1160	207	0	203	309	2	0	1	161	5	0	64	48	262	**2439**
4:45 PM	to	5:45 PM	0	21	1182	198	0	203	308	2	0	1	168	7	0	56	35	266	**2447**
5:00 PM	to	6:00 PM	0	22	1180	189	0	189	298	2	0	2	155	7	0	53	40	263	**2400**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	13	1198	209	0	223	339	9	0	0	154	8	0	48	43	252	**2496**
PHF BY MOVEMENT	0.00	0.65	0.92	0.92	0.00	0.88	0.91	0.45	0.00	0.00	0.80	0.50	0.00	0.63	0.63	0.94	OVERALL
PHF BY APPROACH	0.93				0.91				0.83				0.92				0.96
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	27		25		41		29		7		31		14		4		**89**
TRUCK PERCENTAGE	1.9%		1.7%		7.2%		7.3%		4.3%		5.3%		4.1%		6.2%		**3.6%**
BICYCLE	0				0				0				0				**0**
PEDESTRIAN BY DIR	0				0				0				0				**0**
	N-LEG				**S-LEG**				**E-LEG**				**W-LEG**				
PEDESTRIAN BY DIR	0				0				0				0				**0**

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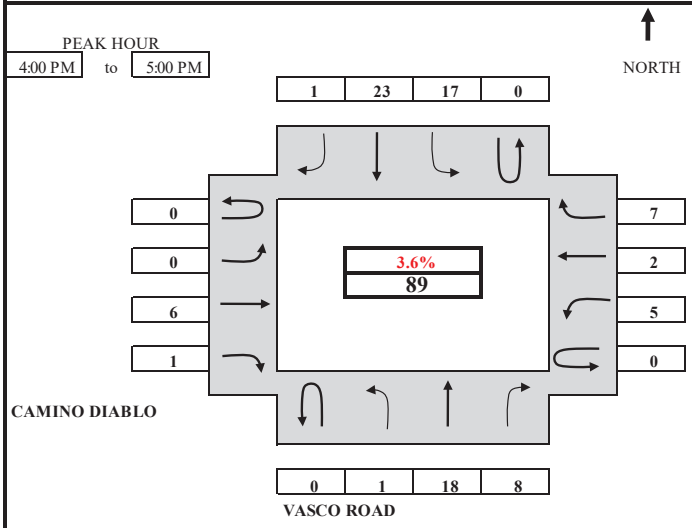
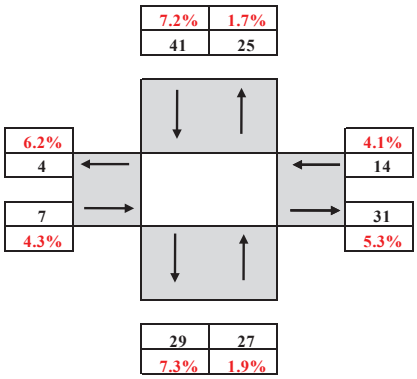
INTERSECTION TRUCK TURNING MOVEMENT SUMMARY

PROJECT:	TRAFFIC COUNTS IN BYRON	**SURVEY DATE:**	10/22/2015	**DAY:**	THURSDAY
N-S APPROACH:	VASCO ROAD	**SURVEY TIME:**	4:00 PM	**TO**	6:00 PM
E-W APPROACH:	CAMINO DIABLO	**JURISDICTION:**	BYRON	**FILE:**	3510124-7PM

PEAK HOUR
4:00 PM to 5:00 PM



TRUCK ARRIVAL / DEPARTURE
VOLUMES & PERCENTAGE
(TOTAL TRUCK PERCENTAGE IN RED)



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DA A																			
4:00 PM	to	4:15 PM		1	8	3		4	6	0		0	2	0		0	0	1	**25**
4:15 PM	to	4:30 PM		1	9	5		5	15	1		0	5	1		0	0	3	**45**
4:30 PM	to	4:45 PM		1	11	5		9	18	1		0	5	1		4	2	6	**63**
4:45 PM	to	5:00 PM		1	18	8		17	23	1		0	6	1		5	2	7	**89**
5:00 PM	to	5:15 PM		1	26	10		21	27	1		0	10	1		5	4	9	**115**
5:15 PM	to	5:30 PM		1	26	12		23	30	1		0	12	1		5	4	11	**126**
5:30 PM	to	5:45 PM		1	29	12		25	31	1		0	14	2		5	4	12	**136**
5:45 PM	to	6:00 PM		2	31	13		26	34	1		1	14	2		5	4	14	**147**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	1	8	3	0	4	6	0	0	0	2	0	0	0	0	1	**25**
4:15 PM	to	4:30 PM	0	0	1	2	0	1	9	1	0	0	3	1	0	0	0	2	**20**
4:30 PM	to	4:45 PM	0	0	2	0	0	4	3	0	0	0	0	0	0	4	2	3	**18**
4:45 PM	to	5:00 PM	0	0	7	3	0	8	5	0	0	0	1	0	0	1	0	1	**26**
5:00 PM	to	5:15 PM	0	0	8	2	0	4	4	0	0	0	4	0	0	0	2	2	**26**
5:15 PM	to	5:30 PM	0	0	0	2	0	2	3	0	0	0	2	0	0	0	0	2	**11**
5:30 PM	to	5:45 PM	0	0	3	0	0	2	1	0	0	0	2	1	0	0	0	1	**10**
5:45 PM	to	6:00 PM	0	1	2	1	0	1	3	0	0	1	0	0	0	0	0	2	**11**
HOURLY OTALS																			
4:00 PM	to	5:00 PM	0	1	18	8	0	17	23	1	0	0	6	1	0	5	2	7	**89**
4:15 PM	to	5:15 PM	0	0	18	7	0	17	21	1	0	0	8	1	0	5	4	8	**90**
4:30 PM	to	5:30 PM	0	0	17	7	0	18	15	0	0	0	7	0	0	5	4	8	**81**
4:45 PM	to	5:45 PM	0	0	18	7	0	16	13	0	0	0	9	1	0	1	2	6	**73**
5:00 PM	to	6:00 PM	0	1	13	5	0	9	11	0	0	1	8	1	0	0	2	7	**58**

TEL: (510) 232 - 1271 AX: (510) 232 - 1272

4:00 PM to 5:00 PM

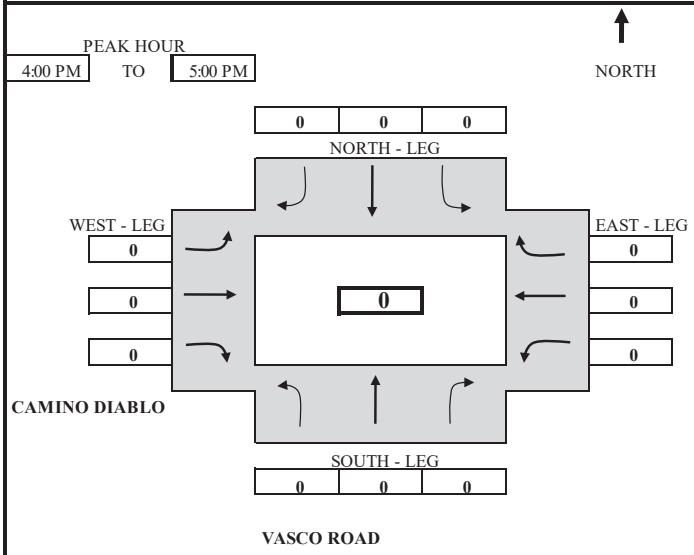
DIRECTION	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	27	25	41	29	7	31	14	4	89
TRUCK PERCENTAGE	1.9%	1.7%	7.2%	7.3%	4.3%	5.3%	4.1%	6.2%	3.6%

B.A.Y.M.E.T.R.I.C.S.

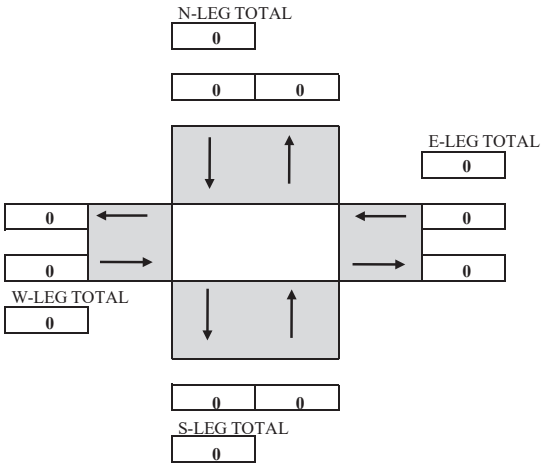
BICYCLE MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**	**DAY:**	**THURSDAY**
N-S APPROACH:	**VASCO ROAD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**	**FILE:**	**3510124-7PM**

PEAK HOUR 4:00 PM TO 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
From		To	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	
SURVEY DATA															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
TOTAL BY PERIOD															
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
HOURLY TOTALS															
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	**0**

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

4:00 PM to 5:00 PM

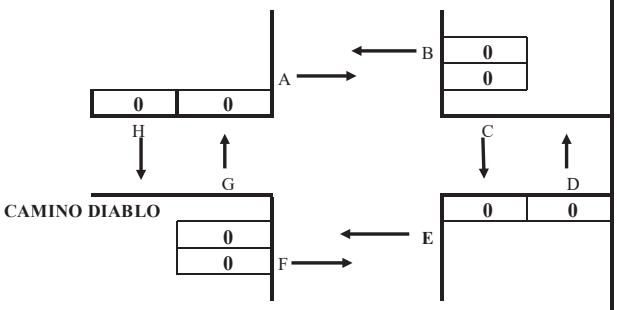
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	**0**

B.A.Y.M.E.T.R.I.C.S.

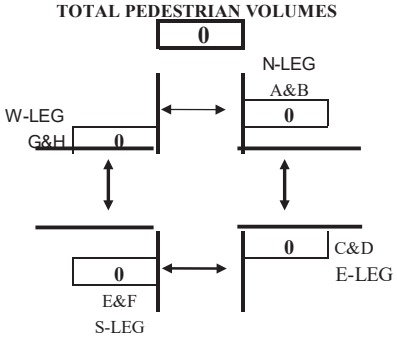
PEDESTRIAN MOVEMENT SUMMARY

PROJECT:	**TRAFFIC COUNTS IN BYRON**	**SURVEY DATE:**	**10/22/2015**
N-S APPROACH:	**VASCO ROAD**	**DAY:**	**THURSDAY**
E-W APPROACH:	**CAMINO DIABLO**	**JURISDICTION:**	**BYRON**
SURVEY PERIOD:	**4:00 PM TO 6:00 PM**	**FILE:**	**3510124-7PM**

PEAK HOUR
04:00 PM TO 05:00 PM



PEAK HOUR
TOTAL PEDESTRIAN VOLUMES



LEGEND:

CROSSWA **VASCO ROAD**	N-LEG		
SIDEWALK	S-LEG		
STOP CONTROL LINE	E-LEG		
STOP	W-LEG		

BY LEG:		**BY DIRECTION:**	
(A&B)	0	**NB**(D+G)	0
(E&F)	0	**SB**(C+H)	0
(C&D)	0	**EB**(A+F)	0
(G&H)	0	**WB**(B+E)	0

TIME PERIOD			NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		
From		To	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*	*TOTAL*
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	***0***
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	***0***
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	***0***
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	***0***
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	***0***

Tel : (510) 232-1271 ax: (510) 232-1272

4:00 PM to 5:00 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	0	0	**0**
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	0	0	**0**

National Data and Surveying Services

City of Brentwood
All Vehicles & Uturns On Unshifted
Heavy Trucks On Bank 1
Bikes & Peds On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Walnut Blvd & Vasco Rd
Date : 12/6/2016

Unshifted Count = All Vehicles & Uturns

	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
6:00	79	39	0	0	118	2	34	15	0	51	0	0	0	0	0	0	131	27	0	158	327	0
6:15	87	7	0	0	94	2	34	15	0	51	0	0	0	0	0	1	129	10	0	140	285	0
6:30	90	13	1	0	104	1	63	19	0	83	1	2	0	0	3	0	160	5	0	165	355	0
6:45	81	6	1	0	88	2	63	19	0	84	0	1	0	0	1	0	156	8	0	164	337	0
Total	337	65	2	0	404	7	194	68	0	269	1	3	0	0	4	1	576	50	0	627	1304	0
7:00	75	1	0	0	76	2	75	38	0	115	0	0	1	0	1	1	149	2	0	152	344	0
7:15	79	1	0	0	80	1	82	36	0	119	0	0	0	0	0	0	163	1	0	164	363	0
7:30	87	2	0	0	89	0	100	31	0	131	0	0	0	0	0	0	179	1	0	180	400	0
7:45	78	2	0	0	80	1	103	41	0	145	1	4	0	0	5	0	150	0	0	150	380	0
Total	319	6	0	0	325	4	360	146	0	510	1	4	1	0	6	1	641	4	0	646	1487	0
8:00	92	2	1	0	95	0	87	41	0	128	2	0	0	0	2	0	166	5	0	171	396	0
8:15	98	5	0	0	103	1	101	21	0	123	1	0	0	0	1	0	188	3	0	191	418	0
8:30	73	4	1	0	78	0	97	23	0	120	3	2	0	0	5	2	168	0	0	170	373	0
8:45	87	4	0	0	91	0	107	37	0	144	1	0	0	0	1	1	128	2	0	131	367	0
Total	350	15	2	0	367	1	392	122	0	515	7	2	0	0	9	3	650	10	0	663	1554	0
15:00	34	4	2	0	40	0	168	132	0	300	3	1	0	0	4	0	90	1	0	91	435	0
15:15	43	7	1	0	51	0	180	125	0	305	2	0	0	0	2	0	92	1	0	93	451	0
15:30	41	0	0	0	41	0	181	142	0	323	3	4	0	0	7	1	91	0	0	92	463	0
15:45	37	1	1	0	39	0	209	139	0	348	2	0	0	0	2	0	98	2	0	100	489	0
Total	155	12	4	0	171	0	738	538	0	1276	10	5	0	0	15	1	371	4	0	376	1838	0
16:00	30	1	0	0	31	0	209	159	0	368	1	5	0	0	6	0	90	0	0	90	495	0
16:15	41	1	1	0	43	1	205	132	0	338	1	2	0	0	3	2	81	0	0	83	467	0
16:30	46	0	0	0	46	0	188	129	0	317	3	3	0	0	6	0	98	2	0	100	469	0
16:45	32	2	1	0	35	1	199	135	0	335	2	8	0	0	10	2	91	1	0	94	474	0
Total	149	4	2	0	155	2	801	555	0	1358	7	18	0	0	25	4	360	3	0	367	1905	0
17:00	42	2	0	0	44	0	202	136	0	338	4	0	2	0	6	0	90	0	0	90	478	0
17:15	47	1	0	0	48	0	205	138	0	343	0	6	0	0	6	0	105	0	0	105	502	0
17:30	18	0	0	0	18	0	233	137	0	370	1	5	1	0	7	0	97	0	0	97	492	0
17:45	41	0	0	0	41	1	224	128	0	353	0	1	0	0	1	1	92	0	0	93	488	0
Total	148	3	0	0	151	1	864	539	0	1404	5	12	3	0	20	1	384	0	0	385	1960	0
Grand Total	1458	105	10	0	1573	15	3349	1968	0	5332	31	44	4	0	79	11	2982	71	0	3064	10048	0
Apprch %	92.7%	6.7%	0.6%	0.0%		0.3%	62.8%	36.9%	0.0%		39.2%	55.7%	5.1%	0.0%		0.4%	97.3%	2.3%	0.0%			
Total %	14.5%	1.0%	0.1%	0.0%	15.7%	0.1%	33.3%	19.6%	0.0%	53.1%	0.3%	0.4%	0.0%	0.0%	0.8%	0.1%	29.7%	0.7%	0.0%	30.5%	100.0%	

AM PEAK HOUR	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	87	2	0	0	89	0	100	31	0	131	0	0	0	0	0	0	179	1	0	180	400
7:45	78	2	0	0	80	1	103	41	0	145	1	4	0	0	5	0	150	0	0	150	380
8:00	92	2	1	0	95	0	87	41	0	128	2	0	0	0	2	0	166	5	0	171	396
8:15	98	5	0	0	103	1	101	21	0	123	1	0	0	0	1	0	188	3	0	191	418
Total Volume	355	11	1	0	367	2	391	134	0	527	4	4	0	0	8	0	683	9	0	692	1594
% App Total	96.7%	3.0%	0.3%	0.0%		0.4%	74.2%	25.4%	0.0%		50.0%	50.0%	0.0%	0.0%		0.0%	98.7%	1.3%	0.0%		
PHF	.906	.550	.250	.000	.891	.500	.949	.817	.000	.909	.500	.250	.000	.000	.400	.000	.908	.450	.000	.906	.953

PM PEAK HOUR	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	42	2	0	0	44	0	202	136	0	338	4	0	2	0	6	0	90	0	0	90	478
17:15	47	1	0	0	48	0	205	138	0	343	0	6	0	0	6	0	105	0	0	105	502
17:30	18	0	0	0	18	0	233	137	0	370	1	5	1	0	7	0	97	0	0	97	492
17:45	41	0	0	0	41	1	224	128	0	353	0	1	0	0	1	1	92	0	0	93	488
Total Volume	148	3	0	0	151	1	864	539	0	1404	5	12	3	0	20	1	384	0	0	385	1960
% App Total	98.0%	2.0%	0.0%	0.0%		0.1%	61.5%	38.4%	0.0%		25.0%	60.0%	15.0%	0.0%		0.3%	99.7%	0.0%	0.0%		
PHF	.787	.375	.000	.000	.786	.250	.927	.976	.000	.949	.313	.500	.375	.000	.714	.250	.914	.000	.000	.917	.976

National Data and Surveying Services

City of Brentwood
All Vehicles & Uturns On Unshifted
Heavy Trucks On Bank 1
Bikes & Peds On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Walnut Blvd & Vasco Rd
Date : 12/6/2016

Bank 1 Count = Heavy Trucks

	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
6:00	6	0	0	0	6	0	3	1	0	4	0	0	0	0	0	0	4	0	0	4	14	0
6:15	3	1	0	0	4	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	9	0
6:30	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	2	0	0	2	5	0
6:45	5	0	0	0	5	0	6	2	0	8	0	0	0	0	0	0	3	0	0	3	16	0
Total	14	1	0	0	15	0	12	7	0	19	1	0	0	0	1	0	9	0	0	9	44	0
7:00	3	0	0	0	3	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	8	0
7:15	5	0	0	0	5	0	1	3	0	4	0	0	0	0	0	0	3	0	0	3	12	0
7:30	0	1	0	0	1	0	1	4	0	5	0	0	0	0	0	0	7	0	0	7	13	0
7:45	2	0	0	0	2	0	6	8	0	14	0	0	0	0	0	0	3	0	0	3	19	0
Total	10	1	0	0	11	0	10	18	0	28	0	0	0	0	0	0	13	0	0	13	52	0
8:00	4	0	0	0	4	0	7	7	0	14	0	0	0	0	0	0	5	0	0	5	23	0
8:15	5	0	0	0	5	0	6	2	0	8	0	0	0	0	0	0	4	0	0	4	17	0
8:30	4	1	0	0	5	0	5	4	0	9	0	0	0	0	0	0	4	0	0	4	18	0
8:45	5	0	0	0	5	0	6	2	0	8	0	0	0	0	0	1	7	0	0	8	21	0
Total	18	1	0	0	19	0	24	15	0	39	0	0	0	0	0	1	20	0	0	21	79	0
15:00	2	0	0	0	2	0	3	2	0	5	0	0	0	0	0	0	6	0	0	6	13	0
15:15	5	0	0	0	5	0	5	5	0	10	0	0	0	0	0	0	5	0	0	5	20	0
15:30	3	0	0	0	3	0	2	2	0	4	0	0	0	0	0	0	1	0	0	1	8	0
15:45	6	0	0	0	6	0	5	5	0	10	1	0	0	0	1	0	4	0	0	4	21	0
Total	16	0	0	0	16	0	15	14	0	29	1	0	0	0	1	0	16	0	0	16	62	0
16:00	2	0	0	0	2	0	2	2	0	4	0	0	0	0	0	0	2	0	0	2	8	0
16:15	1	0	0	0	1	0	4	4	0	8	0	0	0	0	0	0	2	0	0	2	11	0
16:30	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	0	2	1	0	3	8	0
16:45	1	0	0	0	1	0	2	1	0	3	0	1	0	0	1	0	4	0	0	4	9	0
Total	6	0	0	0	6	0	10	8	0	18	0	1	0	0	1	0	10	1	0	11	36	0
17:00	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	5	0
17:15	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	0	4	0	0	4	10	0
17:30	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	4	0
17:45	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	6	0	0	6	9	0
Total	1	0	0	0	1	0	8	3	0	11	0	1	0	0	1	0	15	0	0	15	28	0
Grand Total	65	3	0	0	68	0	79	65	0	144	2	2	0	0	4	1	83	1	0	85	301	0
Apprch %	95.6%	4.4%	0.0%			0.0%	54.9%	45.1%			50.0%	50.0%	0.0%			1.2%	97.6%	1.2%				
Total %	21.6%	1.0%	0.0%		22.6%	0.0%	26.2%	21.6%		47.8%	0.7%	0.7%	0.0%		1.3%	0.3%	27.6%	0.3%		28.2%	100.0%	

AM PEAK HOUR	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	1	0	0	1	0	1	4	0	5	0	0	0	0	0	0	7	0	0	7	13
7:45	2	0	0	0	2	0	6	8	0	14	0	0	0	0	0	0	3	0	0	3	19
8:00	4	0	0	0	4	0	7	7	0	14	0	0	0	0	0	0	5	0	0	5	23
8:15	5	0	0	0	5	0	6	2	0	8	0	0	0	0	0	0	4	0	0	4	17
Total Volume	11	1	0	0	12	0	20	21	0	41	0	0	0	0	0	0	19	0	0	19	72
% App Total	91.7%	8.3%	0.0%			0.0%	48.8%	51.2%			0.0%	0.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.550	.250	.000		.600	.000	.714	.656		.732	.000	.000	.000		.000	.000	.679	.000		.679	.783

PM PEAK HOUR	Walnut Blvd Southbound					Vasco Rd Westbound					Walnut Blvd Northbound					Vasco Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	5
17:15	0	0	0	0	0	0	4	2	0	6	0	0	0	0	0	0	4	0	0	4	10
17:30	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	4
17:45	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	0	6	0	0	6	9
Total Volume	1	0	0	0	1	0	8	3	0	11	0	1	0	0	1	0	15	0	0	15	28
% App Total	100.0%	0.0%	0.0%			0.0%	72.7%	27.3%			0.0%	100.0%	0.0%			0.0%	100.0%	0.0%			
PHF	.250	.000	.000		.250	.000	.500	.375		.458	.000	.250	.000		.250	.000	.625	.000		.625	.700

ALL TRAFFIC DATA

City of Brentwood
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Golf Carts on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : Historical Vasco Road (SR 4)-Marsh Creek Road.ppd
Date : 2/19/2015

Unshifted Count = All Vehicles

	Vasco Road (SR 4) Southbound					Marsh Creek Road Westbound					Vasco Road (SR 4) Northbound					Marsh Creek Road Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturn Total
07:00	59	152	21	0	232	0	82	81	0	163	4	77	1	0	82	2	2	0	0	4	481	0
07:15	59	136	12	0	207	1	64	81	0	146	9	64	0	0	73	0	5	3	0	8	434	0
07:30	51	172	13	0	236	0	58	76	0	134	1	86	1	0	88	3	8	4	0	15	473	0
07:45	64	157	11	0	232	0	42	70	0	112	7	73	2	0	82	2	12	4	0	18	444	0
Total	233	617	57	0	907	1	246	308	0	555	21	300	4	0	325	7	27	11	0	45	1832	0
08:00	64	185	8	0	257	0	50	81	0	131	4	89	0	0	93	3	10	4	0	17	498	0
08:15	63	209	6	0	278	0	39	66	0	105	2	65	1	0	68	3	5	8	0	16	467	0
08:30	53	152	7	0	212	0	28	84	0	112	6	66	2	0	74	4	5	3	0	12	410	0
08:45	58	145	7	0	210	0	17	78	0	95	5	69	0	0	74	1	4	4	0	9	388	0
Total	238	691	28	0	957	0	134	309	0	443	17	289	3	0	309	11	24	19	0	54	1763	0
16:00	76	88	1	0	165	0	10	58	0	68	1	209	2	0	212	12	49	2	0	63	508	0
16:15	80	75	2	0	157	0	9	71	0	80	5	202	0	0	207	14	61	1	0	76	520	0
16:30	99	95	3	0	197	0	9	65	0	74	10	184	6	0	200	21	61	4	0	86	557	0
16:45	89	91	0	0	180	0	2	60	0	62	5	197	5	0	207	10	68	2	0	80	529	0
Total	344	349	6	0	699	0	30	254	0	284	21	792	13	0	826	57	239	9	0	305	2114	0
17:00	90	94	2	0	186	0	8	71	0	79	2	198	0	0	200	19	84	4	0	107	572	0
17:15	86	101	3	0	190	1	5	74	0	80	8	209	1	0	218	10	58	3	0	71	559	0
17:30	102	99	2	0	203	1	11	82	0	94	3	182	0	0	185	23	96	3	0	122	604	0
17:45	68	89	3	0	160	2	9	66	0	77	2	209	2	0	213	20	59	0	0	79	529	0
Total	346	383	10	0	739	4	33	293	0	330	15	798	3	0	816	72	297	10	0	379	2264	0
Grand Total	1161	2040	101	0	3302	5	443	1164	0	1612	74	2179	23	0	2276	147	587	49	0	783	7973	0
Apprch %	35.2%	61.8%	3.1%	0.0%		0.3%	27.5%	72.2%	0.0%		3.3%	95.7%	1.0%	0.0%		18.8%	75.0%	6.3%	0.0%			
Total %	14.6%	25.6%	1.3%	0.0%	41.4%	0.1%	5.6%	14.6%	0.0%	20.2%	0.9%	27.3%	0.3%	0.0%	28.5%	1.8%	7.4%	0.6%	0.0%	9.8%	100.0%	

ALL TRAFFIC DATA

City of Brentwood
All Vehicles on Unshifted
Peds & Bikes on Bank 1
Golf Carts on Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : Historical Vasco Road (SR 4)-Marsh Creek Road.ppd
Date : 2/19/2015

Unshifted Count = All Vehicles

AM PEAK HOUR	Vasco Road (SR 4) Southbound					Marsh Creek Road Westbound					Vasco Road (SR 4) Northbound					Marsh Creek Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
07:30	51	172	13	0	236	0	58	76	0	134	1	86	1	0	88	3	8	4	0	15	473
07:45	64	157	11	0	232	0	42	70	0	112	7	73	2	0	82	2	12	4	0	18	444
08:00	64	185	8	0	257	0	50	81	0	131	4	89	0	0	93	3	10	4	0	17	498
08:15	63	209	6	0	278	0	39	66	0	105	2	65	1	0	68	3	5	8	0	16	467
Total Volume	242	723	38	0	1003	0	189	293	0	482	14	313	4	0	331	11	35	20	0	66	1882
% App Total	24.1%	72.1%	3.8%	0.0%		0.0%	39.2%	60.8%	0.0%		4.2%	94.6%	1.2%	0.0%		16.7%	53.0%	30.3%	0.0%		
PHF	.945	.865	.731	.000	.902	.000	.815	.904	.000	.899	.500	.879	.500	.000	.890	.917	.729	.625	.000	.917	.945

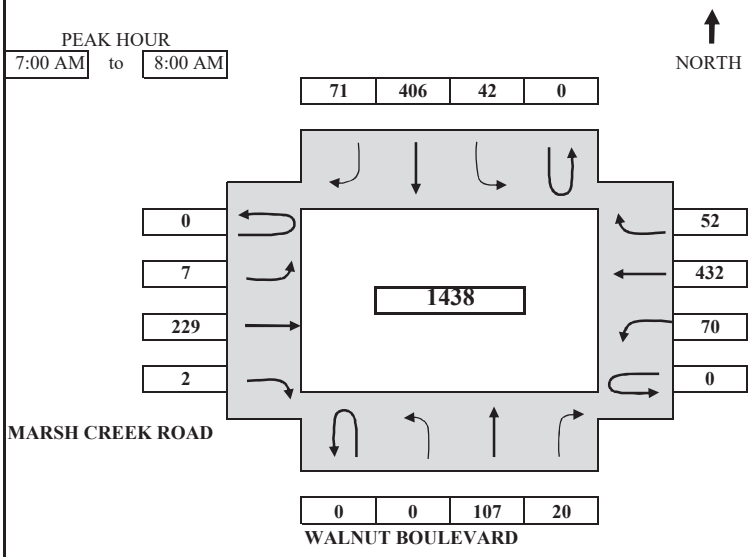
PM PEAK HOUR	Vasco Road (SR 4) Southbound					Marsh Creek Road Westbound					Vasco Road (SR 4) Northbound					Marsh Creek Road Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	89	91	0	0	180	0	2	60	0	62	5	197	5	0	207	10	68	2	0	80	529
17:00	90	94	2	0	186	0	8	71	0	79	2	198	0	0	200	19	84	4	0	107	572
17:15	86	101	3	0	190	1	5	74	0	80	8	209	1	0	218	10	58	3	0	71	559
17:30	102	99	2	0	203	1	11	82	0	94	3	182	0	0	185	23	96	3	0	122	604
Total Volume	367	385	7	0	759	2	26	287	0	315	18	786	6	0	810	62	306	12	0	380	2264
% App Total	48.4%	50.7%	0.9%	0.0%		0.6%	8.3%	91.1%	0.0%		2.2%	97.0%	0.7%	0.0%		16.3%	80.5%	3.2%	0.0%		
PHF	.900	.953	.583	.000	.935	.500	.591	.875	.000	.838	.563	.940	.300	.000	.929	.674	.797	.750	.000	.779	.937

B.A.Y.M.E.T.R.I.C.S.

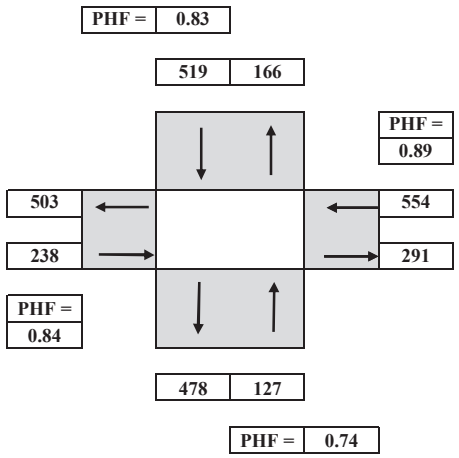
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**CMP-MTSO CONTRA COSTA COUNTY**	**SURVEY DATE:**	**4/10/13**	**DAY:**	**WEDNESDAY**
N-S APPROACH:	**WALNUT BOULEVARD**	**SURVEY TIME:**	**7:00 AM**	**TO**	**9:00 AM**
E-W APPROACH:	**MARSH CREEK ROAD**	**JURISDICTION:**	**BRENTWOOD**	**FILE:**	**3304037-E64AM**

PEAK HOUR 7:00 AM to 8:00 AM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
7:00 AM	to	7:15 AM	0	0	18	3	0	10	124	23	0	0	46	0	0	22	116	17	**379**
7:15 AM	to	7:30 AM	0	0	38	6	0	18	225	42	0	1	107	0	0	37	230	25	**729**
7:30 AM	to	7:45 AM	0	0	74	13	0	36	307	55	0	2	163	2	0	51	322	38	**1063**
7:45 AM	to	8:00 AM	0	0	107	20	0	42	406	71	0	7	229	2	0	70	432	52	**1438**
8:00 AM	to	8:15 AM	0	1	127	21	0	50	494	90	0	11	286	4	0	82	535	64	**1765**
8:15 AM	to	8:30 AM	0	2	150	24	0	67	587	108	0	14	350	4	0	96	621	77	**2100**
8:30 AM	to	8:45 AM	0	2	168	29	0	73	672	114	0	15	402	4	0	105	694	88	**2366**
8:45 AM	to	9:00 AM	0	3	190	31	0	78	719	119	0	18	450	4	0	114	778	101	**2605**
TOTAL BY PERIOD																			
7:00 AM	to	7:15 AM	0	0	18	3	0	10	124	23	0	0	46	0	0	22	116	17	**379**
7:15 AM	to	7:30 AM	0	0	20	3	0	8	101	19	0	1	61	0	0	15	114	8	**350**
7:30 AM	to	7:45 AM	0	0	36	7	0	18	82	13	0	1	56	2	0	14	92	13	**334**
7:45 AM	to	8:00 AM	0	0	33	7	0	6	99	16	0	5	66	0	0	19	110	14	**375**
8:00 AM	to	8:15 AM	0	1	20	1	0	8	88	19	0	4	57	2	0	12	103	12	**327**
8:15 AM	to	8:30 AM	0	1	23	3	0	17	93	18	0	3	64	0	0	14	86	13	**335**
8:30 AM	to	8:45 AM	0	0	18	5	0	6	85	6	0	1	52	0	0	9	73	11	**266**
8:45 AM	to	9:00 AM	0	1	22	2	0	5	47	5	0	3	48	0	0	9	84	13	**239**
HOURLY TOTALS																			
7:00 AM	to	8:00 AM	0	0	107	20	0	42	406	71	0	7	229	2	0	70	432	52	**1438**
7:15 AM	to	8:15 AM	0	1	109	18	0	40	370	67	0	11	240	4	0	60	419	47	**1386**
7:30 AM	to	8:30 AM	0	2	112	18	0	49	362	66	0	13	243	4	0	59	391	52	**1371**
7:45 AM	to	8:45 AM	0	2	94	16	0	37	365	59	0	13	239	2	0	54	372	50	**1303**
8:00 AM	to	9:00 AM	0	3	83	11	0	36	313	48	0	11	221	2	0	44	346	49	**1167**

PEAK HOUR SUMMARY

7:00 AM to 8:00 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	107	20	0	42	406	71	0	7	229	2	0	70	432	52	**1438**
PEDESTRIAN																	**0**
BICYCLE																	**0**
PHF BY MOVEMENT	0.00	0.00	0.74	0.71	0.00	0.58	0.82	0.77	0.00	0.35	0.87	0.25	0.00	0.80	0.93	0.76	OVERALL
PHF BY APPROACH	0.74				0.83				0.84				0.89				0.95

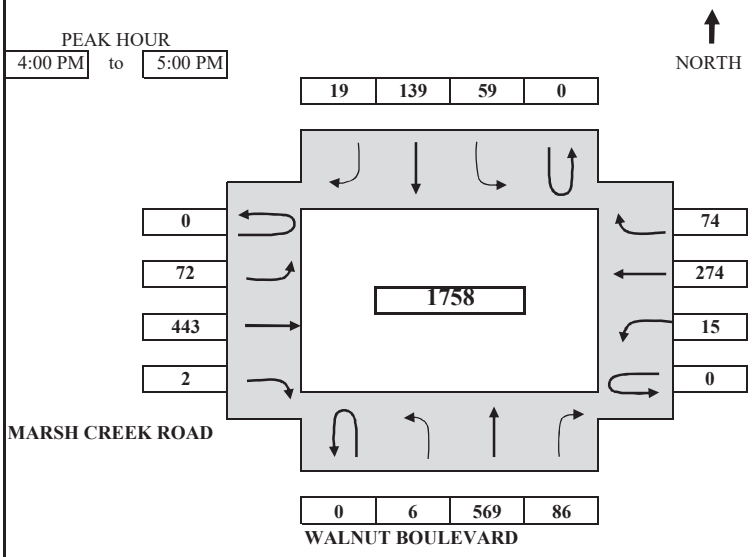
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

B.A.Y.M.E.T.R.I.C.S.

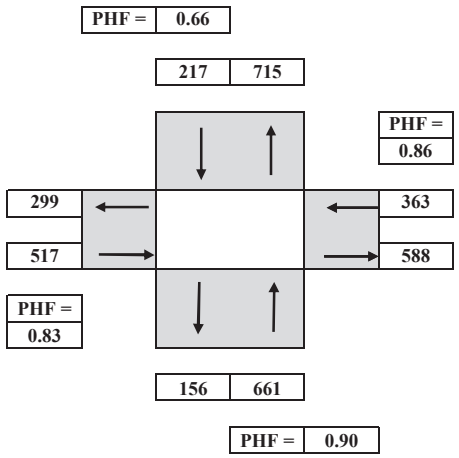
INTERSECTION TURNING MOVEMENT SUMMARY

PROJECT:	**CMP-MTSO CONTRA COSTA COUNTY**	**SURVEY DATE:**	**4/10/13**	**DAY:**	**WEDNESDAY**
N-S APPROACH:	**WALNUT BOULEVARD**	**SURVEY TIME:**	**4:00 PM**	**TO**	**6:00 PM**
E-W APPROACH:	**MARSH CREEK ROAD**	**JURISDICTION:**	**BRENTWOOD**	**FILE:**	**3304037-E64PM**

PEAK HOUR
4:00 PM to 5:00 PM



ARRIVAL / DEPARTURE VOLUMES



TIME PERIOD			NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
From		To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																			
4:00 PM	to	4:15 PM		1	121	24		10	37	2		11	102	1		2	72	14	**397**
4:15 PM	to	4:30 PM		1	266	43		26	67	5		38	231	1		7	151	33	**869**
4:30 PM	to	4:45 PM		5	420	68		47	117	16		55	358	2		12	230	55	**1385**
4:45 PM	to	5:00 PM		6	569	86		59	139	19		72	443	2		15	274	74	**1758**
5:00 PM	to	5:15 PM		6	654	102		79	165	20		86	546	2		20	339	85	**2104**
5:15 PM	to	5:30 PM		6	778	119		103	194	28		119	692	3		23	404	109	**2578**
5:30 PM	to	5:45 PM		6	918	142		118	214	32		152	806	4		28	460	123	**3003**
5:45 PM	to	6:00 PM		7	1019	155		124	227	34		176	920	5		32	521	136	**3356**
TOTAL BY PERIOD																			
4:00 PM	to	4:15 PM	0	1	121	24	0	10	37	2	0	11	102	1	0	2	72	14	**397**
4:15 PM	to	4:30 PM	0	0	145	19	0	16	30	3	0	27	129	0	0	5	79	19	**472**
4:30 PM	to	4:45 PM	0	4	154	25	0	21	50	11	0	17	127	1	0	5	79	22	**516**
4:45 PM	to	5:00 PM	0	1	149	18	0	12	22	3	0	17	85	0	0	3	44	19	**373**
5:00 PM	to	5:15 PM	0	0	85	16	0	20	26	1	0	14	103	0	0	5	65	11	**346**
5:15 PM	to	5:30 PM	0	0	124	17	0	24	29	8	0	33	146	1	0	3	65	24	**474**
5:30 PM	to	5:45 PM	0	0	140	23	0	15	20	4	0	33	114	1	0	5	56	14	**425**
5:45 PM	to	6:00 PM	0	1	101	13	0	6	13	2	0	24	114	1	0	4	61	13	**353**
HOURLY TOTALS																			
4:00 PM	to	5:00 PM	0	6	569	86	0	59	139	19	0	72	443	2	0	15	274	74	**1758**
4:15 PM	to	5:15 PM	0	5	533	78	0	69	128	18	0	75	444	1	0	18	267	71	**1707**
4:30 PM	to	5:30 PM	0	5	512	76	0	77	127	23	0	81	461	2	0	16	253	76	**1709**
4:45 PM	to	5:45 PM	0	1	498	74	0	71	97	16	0	97	448	2	0	16	230	68	**1618**
5:00 PM	to	6:00 PM	0	1	450	69	0	65	88	15	0	104	477	3	0	17	247	62	**1598**

PEAK HOUR SUMMARY

4:00 PM to 5:00 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	6	569	86	0	59	139	19	0	72	443	2	0	15	274	74	**1758**
PEDESTRIAN																	**0**
BICYCLE																	**0**
PHF BY MOVEMENT	0.00	0.38	0.92	0.86	0.00	0.70	0.70	0.43	0.00	0.67	0.86	0.50	0.00	0.75	0.87	0.84	OVERALL
PHF BY APPROACH	0.90				0.66				0.83				0.86				0.85

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272



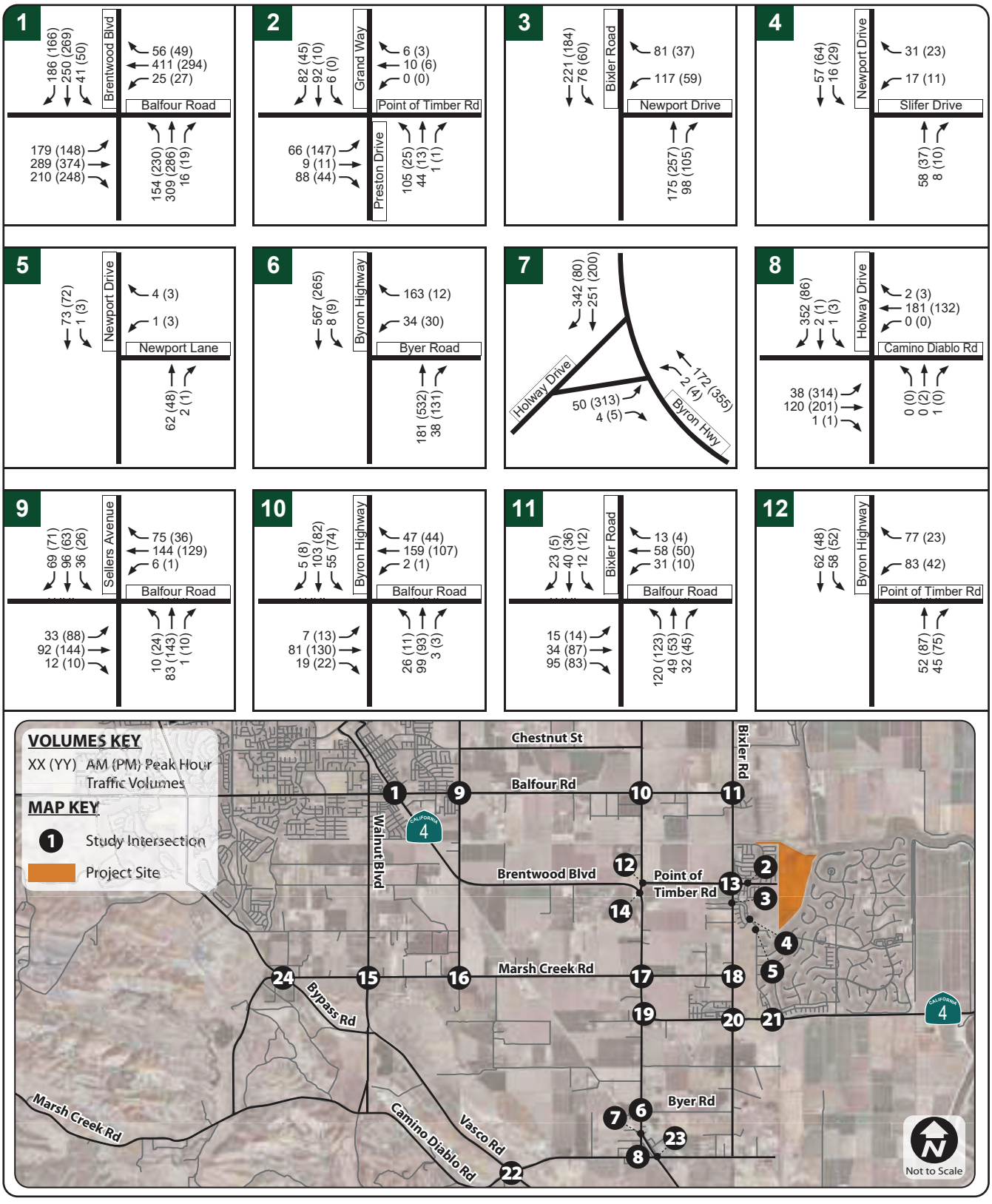
PANTAGES BAYS EIR TRANSPORTATION ANALYSIS

Prepared for:

Contra Costa County
Circle Point

August 2011

FEHR & PEERS
TRANSPORTATION CONSULTANTS
WC09-2692



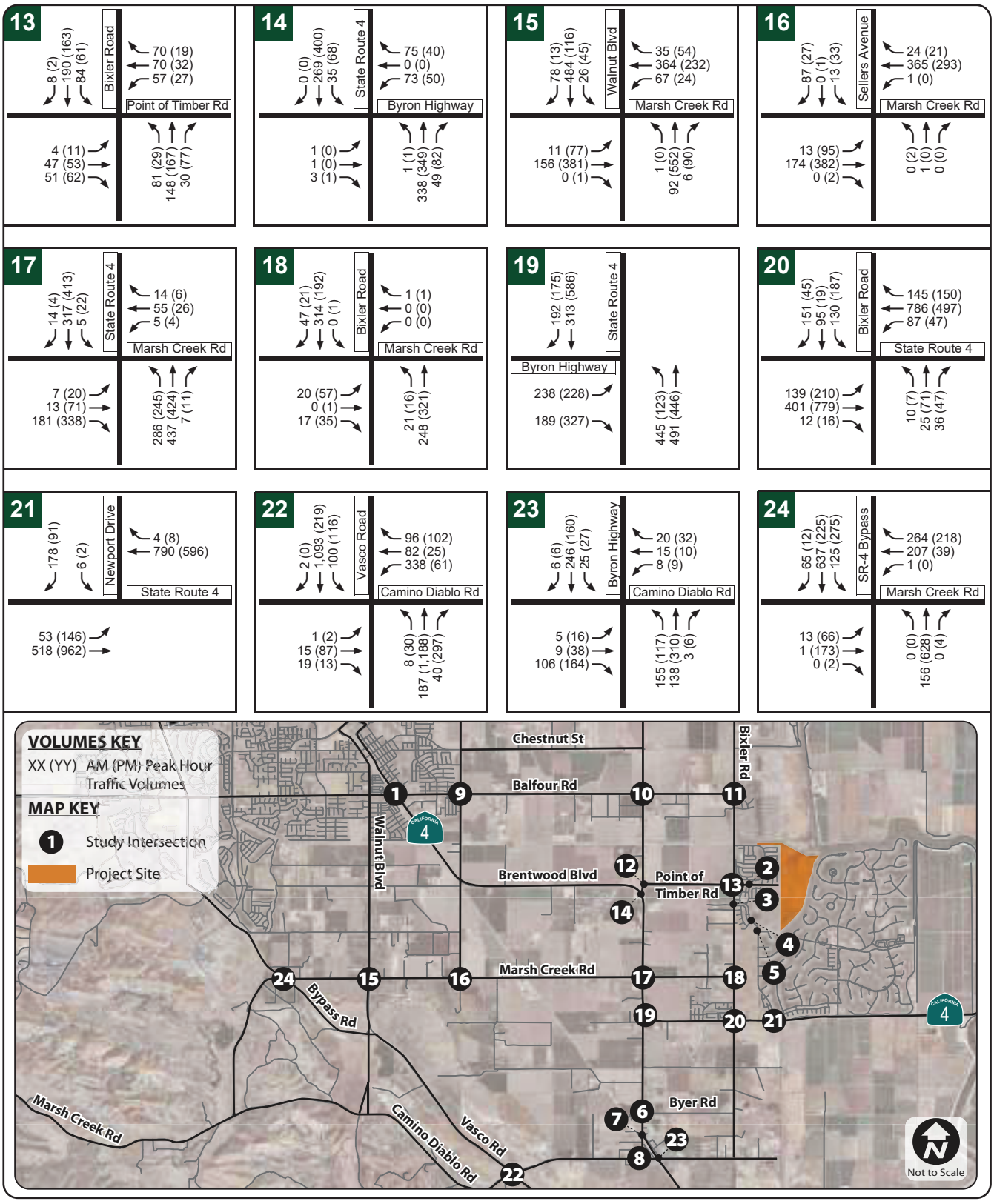
Pantages Bays EIR

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 2011
WC09-2692_4A_ExVol

EXISTING CONDITIONS
PEAK HOUR INTERSECTION TRAFFIC VOLUMES

FIGURE 4A



Pantages Bays EIR

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 2011
WC09-2692_4B_ExVol

EXISTING CONDITIONS
PEAK HOUR INTERSECTION TRAFFIC VOLUMES

FIGURE 4B

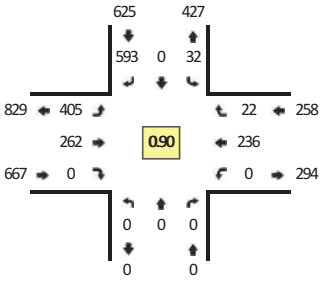
Type of peak hour being reported: Intersection Peak

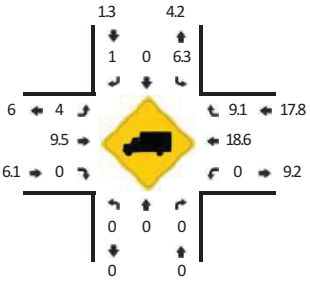
Method for determining peak hour: Total Entering Volume

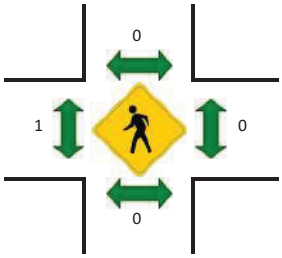
LOCATION: Discovery Bay Blvd -- State Rte 4
CITY/STATE: Discovery Bay, CA

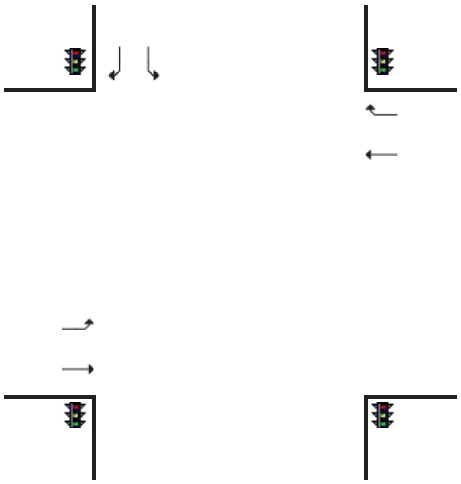
QC JOB #: 15280201
DATE: Wed, May 1 2013

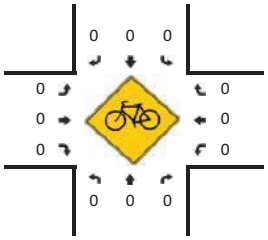
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:20 AM -- 8:35 AM

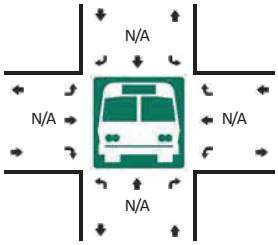


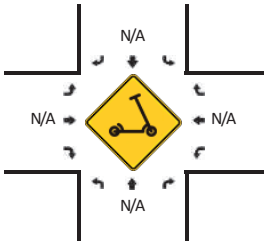












5-Min Count Period Beginning At	Discovery Bay Blvd (Northbound)				Discovery Bay Blvd (Southbound)				State Rte 4 (Eastbound)				State Rte 4 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	4	0	33	0	12	19	0	0	0	19	1	0	88	
7:05 AM	0	0	0	0	2	0	31	0	6	32	0	0	0	11	2	0	84	
7:10 AM	0	0	0	0	7	0	34	0	8	17	0	0	0	34	0	0	100	
7:15 AM	0	0	0	0	7	0	36	0	7	23	0	0	0	15	0	0	88	
7:20 AM	0	0	0	0	4	0	32	0	8	32	0	0	0	17	4	0	97	
7:25 AM	0	0	0	0	7	0	41	0	6	29	0	0	0	21	2	0	106	
7:30 AM	0	0	0	0	8	0	53	0	10	20	0	0	0	27	2	0	120	
7:35 AM	0	0	0	0	7	0	48	0	12	29	0	0	0	19	2	0	117	
7:40 AM	0	0	0	0	3	0	58	0	14	17	0	0	0	8	0	0	100	
7:45 AM	0	0	0	0	4	0	60	0	19	17	0	0	0	19	0	0	119	
7:50 AM	0	0	0	0	1	0	58	0	29	24	0	0	0	21	2	0	135	
7:55 AM	0	0	0	0	5	0	33	0	40	21	0	0	0	22	3	0	124	1278
8:00 AM	0	0	0	0	1	0	45	0	40	24	0	0	0	12	0	0	122	1312
8:05 AM	0	0	0	0	5	0	38	0	39	20	0	0	0	23	4	0	129	1357
8:10 AM	0	0	0	0	2	0	35	0	30	14	0	0	0	25	0	0	106	1363
8:15 AM	0	0	0	0	2	0	35	0	37	16	0	0	0	12	0	0	102	1377
8:20 AM	0	0	0	0	2	0	55	0	41	34	0	0	0	24	2	0	158	1438
8:25 AM	0	0	0	0	2	0	51	0	42	24	0	0	0	12	2	0	133	1465
8:30 AM	0	0	0	0	3	0	64	0	31	24	0	0	0	15	3	0	140	1485
8:35 AM	0	0	0	0	4	0	58	0	26	18	0	0	0	27	3	0	136	1504
8:40 AM	0	0	0	0	1	0	61	0	28	23	0	0	0	9	0	0	122	1526
8:45 AM	0	0	0	0	4	0	60	0	22	20	0	0	0	34	3	0	143	1550
8:50 AM	0	0	0	0	3	0	59	0	16	19	0	0	0	17	2	0	116	1531
8:55 AM	0	0	0	0	5	0	38	0	23	20	0	0	0	9	2	0	97	1504

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	680	0	456	328	0	0	0	204	28	0	1724
Heavy Trucks	0	0	0		0	0	8		20	28	0		0	68	8		132
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/4/2020 12:34 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

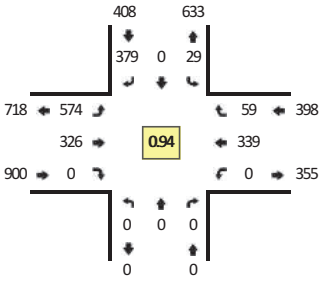
Type of peak hour being reported: Intersection Peak

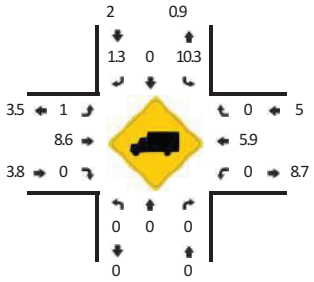
Method for determining peak hour: Total Entering Volume

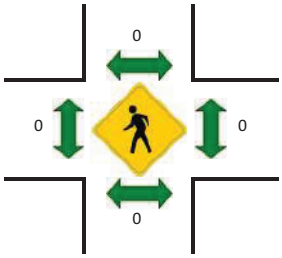
LOCATION: Discovery Bay Blvd -- State Rte 4
CITY/STATE: Discovery Bay, CA

QC JOB #: 15280202
DATE: Wed, May 1 2013

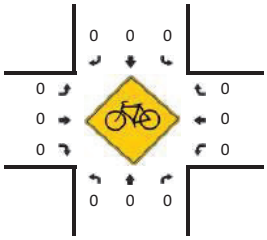
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:35 PM -- 5:50 PM

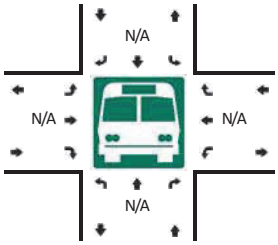




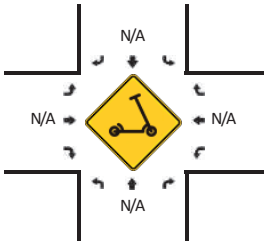












5-Min Count Period Beginning At	Discovery Bay Blvd (Northbound)				Discovery Bay Blvd (Southbound)				State Rte 4 (Eastbound)				State Rte 4 (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	1	0	24	0	42	30	0	0	0	16	1	0	114	
4:05 PM	0	0	0	0	1	0	25	0	35	46	0	0	0	41	9	0	157	
4:10 PM	0	0	0	0	0	0	24	0	57	41	0	0	0	28	4	0	154	
4:15 PM	0	0	0	0	2	0	34	0	37	26	0	0	0	18	3	0	120	
4:20 PM	0	0	0	0	3	0	30	0	45	34	0	0	0	21	5	0	138	
4:25 PM	0	0	0	0	1	0	30	0	48	25	0	0	0	18	4	0	126	
4:30 PM	0	0	0	0	3	0	34	0	32	24	0	0	0	23	7	0	123	
4:35 PM	0	0	0	0	6	0	37	0	37	31	0	0	0	34	4	0	149	
4:40 PM	0	0	0	0	2	0	28	0	53	34	0	0	0	28	6	0	151	
4:45 PM	0	0	0	0	3	0	42	0	58	36	0	0	0	16	4	0	159	
4:50 PM	0	0	0	0	2	0	30	0	40	31	0	0	0	29	3	0	135	
4:55 PM	0	0	0	0	3	0	27	0	32	36	0	0	0	2	0	0	100	1626
5:00 PM	0	0	0	0	4	0	37	0	45	26	0	0	0	46	4	0	162	1674
5:05 PM	0	0	0	0	4	0	32	0	45	21	0	0	0	31	6	0	139	1656
5:10 PM	0	0	0	0	1	0	33	0	41	27	0	0	0	22	7	0	131	1633
5:15 PM	0	0	0	0	1	0	30	0	41	32	0	0	0	19	2	0	125	1638
5:20 PM	0	0	0	0	1	0	32	0	52	30	0	0	0	23	7	0	145	1645
5:25 PM	0	0	0	0	1	0	28	0	62	28	0	0	0	39	8	0	166	1685
5:30 PM	0	0	0	0	1	0	31	0	42	23	0	0	0	24	3	0	124	1686
5:35 PM	0	0	0	0	3	0	34	0	42	30	0	0	0	29	6	0	144	1681
5:40 PM	0	0	0	0	3	0	32	0	58	36	0	0	0	23	3	0	155	1685
5:45 PM	0	0	0	0	1	0	32	0	52	24	0	0	0	38	7	0	154	1680
5:50 PM	0	0	0	0	2	0	31	0	46	30	0	0	0	27	2	0	138	1683
5:55 PM	0	0	0	0	7	0	27	0	48	19	0	0	0	18	4	0	123	1706

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	392	0	608	360	0	0	0	360	64	0	1812
Heavy Trucks	0	0	0		4	0	12		4	28	0		0	4	0		52
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 9/4/2020 12:34 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

National Data and Surveying Services

City of Mountain House
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Mountain House Pkwy & Byron Rd
Date : 12/13/2016

Unshifted Count = All Vehicles & Uturns

	Mountain House Pkwy Southbound					Byron Rd Westbound					Mountain House Pkwy Northbound					Byron Rd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	0	0	0	38	111	0	0	149	14	0	11	0	25	0	70	15	0	85	259	0
7:15	0	0	0	0	0	35	110	0	0	145	18	0	17	0	35	0	111	24	0	135	315	0
7:30	0	0	0	0	0	66	136	0	0	202	19	0	14	0	33	0	131	19	0	150	385	0
7:45	0	0	0	0	0	53	102	0	0	155	19	0	27	0	46	0	119	32	0	151	352	0
Total	0	0	0	0	0	192	459	0	0	651	70	0	69	0	139	0	431	90	0	521	1311	0
8:00	0	0	0	0	0	25	120	0	0	145	13	0	50	0	63	0	106	22	0	128	336	0
8:15	0	0	0	0	0	17	99	0	0	116	18	0	28	0	46	0	103	15	0	118	280	0
8:30	0	0	0	0	0	20	112	0	0	132	22	0	14	0	36	0	113	22	0	135	303	0
8:45	0	0	0	0	0	29	92	0	0	121	20	0	23	0	43	0	96	24	0	120	284	0
Total	0	0	0	0	0	91	423	0	0	514	73	0	115	0	188	0	418	83	0	501	1203	0
16:00	0	0	0	0	0	23	100	0	0	123	23	0	76	0	99	0	132	20	0	152	374	0
16:15	0	0	0	0	0	36	135	0	0	171	16	0	68	0	84	0	120	15	0	135	390	0
16:30	0	0	0	0	0	41	106	0	0	147	24	0	56	0	80	0	126	22	0	148	375	0
16:45	0	0	0	0	0	39	105	0	0	144	17	0	58	0	75	0	111	20	0	131	350	0
Total	0	0	0	0	0	139	446	0	0	585	80	0	258	0	338	0	489	77	0	566	1489	0
17:00	0	0	0	0	0	39	122	0	0	161	19	0	53	0	72	0	118	16	0	134	367	0
17:15	0	0	0	0	0	28	110	0	0	138	27	0	42	0	69	0	128	20	0	148	355	0
17:30	0	0	0	0	0	49	126	0	0	175	26	0	46	0	72	0	119	15	0	134	381	0
17:45	0	0	0	0	0	31	110	0	0	141	15	0	47	0	62	0	103	17	0	120	323	0
Total	0	0	0	0	0	147	468	0	0	615	87	0	188	0	275	0	468	68	0	536	1426	0
Grand Total	0	0	0	0	0	569	1796	0	0	2365	310	0	630	0	940	0	1806	318	0	2124	5429	0
Apprch %	0.0%	0.0%	0.0%	0.0%		24.1%	75.9%	0.0%	0.0%		33.0%	0.0%	67.0%	0.0%		0.0%	85.0%	15.0%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	10.5%	33.1%	0.0%	0.0%	43.6%	5.7%	0.0%	11.6%	0.0%	17.3%	0.0%	33.3%	5.9%	0.0%	39.1%	100.0%	

AM PEAK HOUR	Mountain House Pkwy Southbound					Byron Rd Westbound					Mountain House Pkwy Northbound					Byron Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	35	110	0	0	145	18	0	17	0	35	0	111	24	0	135	315
7:30	0	0	0	0	0	66	136	0	0	202	19	0	14	0	33	0	131	19	0	150	385
7:45	0	0	0	0	0	53	102	0	0	155	19	0	27	0	46	0	119	32	0	151	352
8:00	0	0	0	0	0	25	120	0	0	145	13	0	50	0	63	0	106	22	0	128	336
Total Volume	0	0	0	0	0	179	468	0	0	647	69	0	108	0	177	0	467	97	0	564	1388
% App Total	0.0%	0.0%	0.0%	0.0%		27.7%	72.3%	0.0%	0.0%		39.0%	0.0%	61.0%	0.0%		0.0%	82.8%	17.2%	0.0%		
PHF	.000	.000	.000	.000	.000	.678	.860	.000	.000	.801	.908	.000	.540	.000	.702	.000	.891	.758	.000	.934	.901

PM PEAK HOUR	Mountain House Pkwy Southbound					Byron Rd Westbound					Mountain House Pkwy Northbound					Byron Rd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:00 to 17:00																					
Peak Hour For Entire Intersection Begins at 16:00																					
16:00	0	0	0	0	0	23	100	0	0	123	23	0	76	0	99	0	132	20	0	152	374
16:15	0	0	0	0	0	36	135	0	0	171	16	0	68	0	84	0	120	15	0	135	390
16:30	0	0	0	0	0	41	106	0	0	147	24	0	56	0	80	0	126	22	0	148	375
16:45	0	0	0	0	0	39	105	0	0	144	17	0	58	0	75	0	111	20	0	131	350
Total Volume	0	0	0	0	0	139	446	0	0	585	80	0	258	0	338	0	489	77	0	566	1489
% App Total	0.0%	0.0%	0.0%	0.0%		23.8%	76.2%	0.0%	0.0%		23.7%	0.0%	76.3%	0.0%		0.0%	86.4%	13.6%	0.0%		
PHF	.000	.000	.000	.000	.000	.848	.826	.000	.000	.855	.833	.000	.849	.000	.854	.000	.926	.875	.000	.931	.954

ALL TRAFFIC DATA

City of Tracy
All Vehicles & Uturns On Unshifted
Nothing On Bank 1
Nothing On Bank 2

(916) 771-8700
orders@atdtraffic.com

File Name : Historical Byron Road & W Grant Line Road
Date : 11/19/2015

Unshifted Count = All Vehicles & Uturns

	Byron Road Southbound					W Grant Line Road Westbound					Byron Road Northbound					Driveway Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	76	22	0	0	98	41	0	117	0	158	0	39	47	0	86	0	0	0	0	0	342	0
7:15	66	36	0	0	102	36	0	114	0	150	0	46	42	0	88	0	0	0	0	0	340	0
7:30	70	29	0	0	99	25	0	145	0	170	0	60	48	0	108	0	0	0	0	0	377	0
7:45	87	38	0	0	125	43	0	126	0	169	0	73	64	0	137	0	0	0	0	0	431	0
Total	299	125	0	0	424	145	0	502	0	647	0	218	201	0	419	0	0	0	0	0	1490	0
8:00	110	44	0	0	154	45	0	104	0	149	0	58	77	0	135	0	0	0	0	0	438	0
8:15	95	43	0	0	138	42	0	98	0	140	0	39	59	0	98	0	0	0	0	0	376	0
8:30	99	22	0	0	121	33	0	95	0	128	0	57	54	0	111	0	0	0	0	0	360	0
8:45	89	44	0	0	133	24	0	82	0	106	0	41	51	0	92	0	0	0	0	0	331	0
Total	393	153	0	0	546	144	0	379	0	523	0	195	241	0	436	0	0	0	0	0	1505	0
16:00	141	67	0	0	208	72	1	121	0	194	0	35	104	0	139	0	2	0	0	2	543	0
16:15	129	53	0	0	182	83	0	158	0	241	0	30	110	0	140	0	0	0	0	0	563	0
16:30	111	52	0	0	163	93	0	120	0	213	0	54	117	0	171	0	0	0	0	0	547	0
16:45	112	51	0	0	163	88	0	144	0	232	0	38	116	0	154	0	0	0	0	0	549	0
Total	493	223	0	0	716	336	1	543	0	880	0	157	447	0	604	0	2	0	0	2	2202	0
17:00	133	57	0	0	190	78	0	129	0	207	0	32	118	0	150	0	0	0	0	0	547	0
17:15	121	42	0	0	163	108	0	123	0	231	0	32	114	0	146	0	0	0	0	0	540	0
17:30	137	67	0	0	204	91	0	132	0	223	0	28	97	0	125	0	0	0	0	0	552	0
17:45	123	56	0	0	179	98	0	138	0	236	0	24	94	1	119	0	0	0	1	1	535	2
Total	514	222	0	0	736	375	0	522	0	897	0	116	423	1	540	0	0	0	1	1	2174	2
Grand Total	1699	723	0	0	2422	1000	1	1946	0	2947	0	686	1312	1	1999	0	2	0	1	3	7371	2
Apprch %	70.1%	29.9%	0.0%	0.0%		33.9%	0.0%	66.0%	0.0%		0.0%	34.3%	65.6%	0.1%		0.0%	66.7%	0.0%	33.3%			
Total %	23.0%	9.8%	0.0%	0.0%	32.9%	13.6%	0.0%	26.4%	0.0%	40.0%	0.0%	9.3%	17.8%	0.0%	27.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Byron Road Southbound					W Grant Line Road Westbound					Byron Road Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	70	29	0	0	99	25	0	145	0	170	0	60	48	0	108	0	0	0	0	0	377
7:45	87	38	0	0	125	43	0	126	0	169	0	73	64	0	137	0	0	0	0	0	431
8:00	110	44	0	0	154	45	0	104	0	149	0	58	77	0	135	0	0	0	0	0	438
8:15	95	43	0	0	138	42	0	98	0	140	0	39	59	0	98	0	0	0	0	0	376
Total Volume	362	154	0	0	516	155	0	473	0	628	0	230	248	0	478	0	0	0	0	0	1622
% App Total	70.2%	29.8%	0.0%	0.0%		24.7%	0.0%	75.3%	0.0%		0.0%	48.1%	51.9%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.823	.875	.000	.000	.838	.861	.000	.816	.000	.924	.000	.788	.805	.000	.872	.000	.000	.000	.000	.000	.926

PM PEAK HOUR	Byron Road Southbound					W Grant Line Road Westbound					Byron Road Northbound					Driveway Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:15 to 17:15																					
Peak Hour For Entire Intersection Begins at 16:15																					
16:15	129	53	0	0	182	83	0	158	0	241	0	30	110	0	140	0	0	0	0	0	563
16:30	111	52	0	0	163	93	0	120	0	213	0	54	117	0	171	0	0	0	0	0	547
16:45	112	51	0	0	163	88	0	144	0	232	0	38	116	0	154	0	0	0	0	0	549
17:00	133	57	0	0	190	78	0	129	0	207	0	32	118	0	150	0	0	0	0	0	547
Total Volume	485	213	0	0	698	342	0	551	0	893	0	154	461	0	615	0	0	0	0	0	2206
% App Total	69.5%	30.5%	0.0%	0.0%		38.3%	0.0%	61.7%	0.0%		0.0%	25.0%	75.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.912	.934	.000	.000	.918	.919	.000	.872	.000	.926	.000	.713	.977	.000	.899	.000	.000	.000	.000	.000	.980

National Data and Surveying Services

City of Tracy
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Mountain House Pkwy & I-205 WB Ramps
Date : 3/29/2017

Unshifted Count = All Vehicles & Uturns

	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
4:30	0	43	53	0	96	82	84	34	0	200	2	10	0	0	12	0	0	0	0	0	308	0
4:45	0	51	59	0	110	112	104	40	0	256	0	11	0	0	11	0	0	0	0	0	377	0
5:00	0	75	84	0	159	159	60	54	0	273	0	17	0	0	17	0	0	0	0	0	449	0
5:15	0	77	84	0	161	137	73	55	0	265	2	16	0	0	18	0	0	0	0	0	444	0
Total	0	246	280	0	526	490	321	183	0	994	4	54	0	0	58	0	0	0	0	0	1578	0
5:30	0	83	126	0	209	137	55	37	0	229	0	17	0	0	17	0	0	0	0	0	455	0
5:45	0	82	94	0	176	143	92	31	0	266	0	28	0	0	28	0	0	0	0	0	470	0
6:00	0	109	98	0	207	125	75	32	0	232	1	25	0	0	26	0	0	0	0	0	465	0
6:15	0	131	127	0	258	147	59	57	0	263	1	27	0	0	28	0	0	0	0	0	549	0
Total	0	405	445	0	850	552	281	157	0	990	2	97	0	0	99	0	0	0	0	0	1939	0
6:30	0	113	101	0	214	142	55	56	0	253	0	30	0	0	30	0	0	0	0	0	497	0
6:45	0	126	107	0	233	151	67	50	0	268	2	27	0	0	29	0	0	0	0	0	530	0
7:00	0	134	91	0	225	169	21	58	0	248	0	50	0	0	50	0	0	0	0	0	523	0
7:15	0	122	100	0	222	118	29	53	0	200	1	44	0	0	45	0	0	0	0	0	467	0
Total	0	495	399	0	894	580	172	217	0	969	3	151	0	0	154	0	0	0	0	0	2017	0
7:30	0	135	78	0	213	102	0	59	0	161	1	46	0	0	47	0	0	0	0	0	421	0
7:45	0	145	75	0	220	95	2	61	0	158	1	51	0	0	52	0	0	0	0	0	430	0
8:00	0	118	93	0	211	89	2	52	0	143	2	41	0	0	43	0	0	0	0	0	397	0
8:15	0	133	103	0	236	121	1	51	0	173	4	35	0	0	39	0	0	0	0	0	448	0
Total	0	531	349	0	880	407	5	223	0	635	8	173	0	0	181	0	0	0	0	0	1696	0
8:30	0	86	82	0	168	102	0	38	0	140	3	28	0	0	31	0	0	0	0	0	339	0
8:45	0	96	62	0	158	79	2	51	0	132	4	34	0	0	38	0	0	0	0	0	328	0
9:00	0	71	72	0	143	55	0	47	0	102	4	39	0	0	43	0	0	0	0	0	288	0
9:15	0	55	67	0	122	52	0	34	0	86	3	49	0	0	52	0	0	0	0	0	260	0
Total	0	308	283	0	591	288	2	170	0	460	14	150	0	0	164	0	0	0	0	0	1215	0
9:30	0	84	52	0	136	73	21	85	0	179	2	40	0	0	42	0	0	0	0	0	357	0
9:45	0	67	54	1	122	82	12	112	0	206	3	39	0	0	42	0	0	0	0	0	370	1
10:00	0	77	43	0	120	62	2	71	0	135	5	34	0	0	39	0	0	0	0	0	294	0
10:15	0	68	48	0	116	55	1	44	0	100	6	27	0	0	33	0	0	0	0	0	249	0
Total	0	296	197	1	494	272	36	312	0	620	16	140	0	0	156	0	0	0	0	0	1270	1
10:30	0	76	51	1	128	52	1	36	0	89	4	23	0	0	27	0	0	0	0	0	244	1
10:45	0	66	44	0	110	48	1	50	0	99	4	28	0	0	32	0	0	0	0	0	241	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	142	95	1	238	100	2	86	0	188	8	51	0	0	59	0	0	0	0	0	485	1
11:00	0	74	31	0	105	39	1	65	0	105	3	33	0	0	36	0	0	0	0	0	246	0
11:15	0	111	43	0	154	38	1	64	0	103	4	32	0	0	36	0	0	0	0	0	293	0
11:30	0	87	33	0	120	54	2	76	0	132	5	45	0	0	50	0	0	0	0	0	302	0
11:45	0	65	37	0	102	66	0	64	0	130	7	37	0	0	44	0	0	0	0	0	276	0
Total	0	337	144	0	481	197	4	269	0	470	19	147	0	0	166	0	0	0	0	0	1117	0
12:00	0	67	32	0	99	64	0	48	0	112	7	45	0	0	52	0	0	0	0	0	263	0
12:15	0	87	34	0	121	75	1	61	0	137	3	47	0	0	50	0	0	0	0	0	308	0
12:30	0	90	27	0	117	58	0	50	0	108	3	50	0	0	53	0	0	0	0	0	278	0
12:45	0	73	35	0	108	65	2	45	0	112	4	50	0	0	54	0	0	0	0	0	274	0
Total	0	317	128	0	445	262	3	204	0	469	17	192	0	0	209	0	0	0	0	0	1123	0
13:00	0	80	41	1	122	59	0	46	0	105	2	50	0	0	52	0	0	0	0	0	279	1
13:15	0	70	27	0	97	59	0	57	0	116	4	51	0	0	55	0	0	0	0	0	268	0
13:30	0	74	36	0	110	75	1	77	0	153	2	58	0	0	60	0	0	0	0	0	323	0
13:45	0	76	29	0	105	60	1	81	0	142	5	74	0	0	79	0	0	0	0	0	326	0
Total	0	300	133	1	434	253	2	261	0	516	13	233	0	0	246	0	0	0	0	0	1196	1
14:00	0	76	23	0	99	49	1	61	0	111	4	74	0	0	78	0	0	0	0	0	288	0
14:15	0	92	28	0	120	62	0	50	0	112	2	75	0	0	77	0	0	0	0	0	309	0
14:30	0	99	26	1	126	61	0	44	0	105	1	62	0	0	63	0	0	0	0	0	294	1
14:45	0	101	19	0	120	56	0	48	0	104	7	74	0	0	81	0	0	0	0	0	305	0
Total	0	368	96	1	465	228	1	203	0	432	14	285	0	0	299	0	0	0	0	0	1196	1
15:00	0	103	25	0	128	48	1	67	0	116	4	79	0	0	83	0	0	0	0	0	327	0
15:15	0	111	35	0	146	45	2	71	0	118	4	71	0	0	75	0	0	0	0	0	339	0
15:30	0	121	24	0	145	43	0	74	0	117	7	64	0	0	71	0	0	0	0	0	333	0
15:45	0	135	30	0	165	46	0	81	0	127	1	45	0	0	46	0	0	0	0	0	338	0
Total	0	470	114	0	584	182	3	293	0	478	16	259	0	0	275	0	0	0	0	0	1337	0
16:00	0	117	35	0	152	46	1	52	0	99	7	50	0	0	57	0	0	0	0	0	308	0
16:15	0	105	35	0	140	53	0	74	0	127	0	61	0	0	61	0	0	0	0	0	328	0
16:30	0	105	39	0	144	52	0	59	0	111	1	68	0	0	69	0	0	0	0	0	324	0
16:45	0	119	29	0	148	77	0	69	0	146	2	85	0	0	87	0	0	0	0	0	381	0
Total	0	446	138	0	584	228	1	254	0	483	10	264	0	0	274	0	0	0	0	0	1341	0
17:00	0	125	26	0	151	67	2	87	0	156	3	57	0	0	60	0	0	0	0	0	367	0
17:15	0	107	21	0	128	81	1	76	0	158	0	87	0	0	87	0	0	0	0	0	373	0
17:30	0	101	25	0	126	76	0	81	0	157	5	96	0	0	101	0	0	0	0	0	384	0
17:45	0	92	21	0	113	78	0	85	0	163	2	104	0	0	106	0	0	0	0	0	382	0
Total	0	425	93	0	518	302	3	329	0	634	10	344	0	0	354	0	0	0	0	0	1506	0
18:00	0	108	25	0	133	60	1	99	0	160	1	90	0	0	91	0	0	0	0	0	384	0
18:15	0	117	29	0	146	53	0	73	0	126	5	100	0	0	105	0	0	0	0	0	377	0
18:30	0	107	25	0	132	38	0	66	0	104	1	79	0	0	80	0	0	0	0	0	316	0
18:45	0	91	15	0	106	23	0	48	0	71	3	84	0	0	87	0	0	0	0	0	264	0
Total	0	423	94	0	517	174	1	286	0	461	10	353	0	0	363	0	0	0	0	0	1341	0
19:00	0	82	18	0	100	20	1	49	0	70	0	68	0	0	68	0	0	0	0	0	238	0
19:15	0	86	17	1	104	16	3	44	0	63	1	74	0	0	75	0	0	0	0	0	242	1
19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	168	35	1	204	36	4	93	0	133	1	142	0	0	143	0	0	0	0	0	480	1
Grand Total	0	5677	3023	5	8705	4551	841	3540	0	8932	165	3035	0	0	3200	0	0	0	0	0	20837	5
Apprch %	0.0%	65.2%	34.7%	0.1%		51.0%	9.4%	39.6%	0.0%		5.2%	94.8%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%			
Total %	0.0%	27.2%	14.5%	0.0%	41.8%	21.8%	4.0%	17.0%	0.0%	42.9%	0.8%	14.6%	0.0%	0.0%	15.4%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	

AM PEAK HOUR	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	134	91	0	225	169	21	58	0	248	0	50	0	0	50	0	0	0	0	0	523
7:15	0	122	100	0	222	118	29	53	0	200	1	44	0	0	45	0	0	0	0	0	467
7:30	0	135	78	0	213	102	0	59	0	161	1	46	0	0	47	0	0	0	0	0	421
7:45	0	145	75	0	220	95	2	61	0	158	1	51	0	0	52	0	0	0	0	0	430
Total Volume	0	536	344	0	880	484	52	231	0	767	3	191	0	0	194	0	0	0	0	0	1841
% App Total	0.0%	60.9%	39.1%	0.0%		63.1%	6.8%	30.1%	0.0%		1.5%	98.5%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.924	.860	.000	.978	.716	.448	.947	.000	.773	.750	.936	.000	.000	.933	.000	.000	.000	.000	.000	.880

NOON PEAK	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 14:45 to 15:45																					
Peak Hour For Entire Intersection Begins at 14:45																					
14:45	0	101	19	0	120	56	0	48	0	104	7	74	0	0	81	0	0	0	0	0	305
15:00	0	103	25	0	128	48	1	67	0	116	4	79	0	0	83	0	0	0	0	0	327
15:15	0	111	35	0	146	45	2	71	0	118	4	71	0	0	75	0	0	0	0	0	339
15:30	0	121	24	0	145	43	0	74	0	117	7	64	0	0	71	0	0	0	0	0	333
Total Volume	0	436	103	0	539	192	3	260	0	455	22	288	0	0	310	0	0	0	0	0	1304
% App Total	0.0%	80.9%	19.1%	0.0%		42.2%	0.7%	57.1%	0.0%		7.1%	92.9%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.901	.736	.000	.923	.857	.375	.878	.000	.964	.786	.911	.000	.000	.934	.000	.000	.000	.000	.000	.962

PM PEAK HOUR	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:30 to 18:30																					
Peak Hour For Entire Intersection Begins at 17:30																					
17:30	0	101	25	0	126	76	0	81	0	157	5	96	0	0	101	0	0	0	0	0	384
17:45	0	92	21	0	113	78	0	85	0	163	2	104	0	0	106	0	0	0	0	0	382
18:00	0	108	25	0	133	60	1	99	0	160	1	90	0	0	91	0	0	0	0	0	384
18:15	0	117	29	0	146	53	0	73	0	126	5	100	0	0	105	0	0	0	0	0	377
Total Volume	0	418	100	0	518	267	1	338	0	606	13	390	0	0	403	0	0	0	0	0	1527
% App Total	0.0%	80.7%	19.3%	0.0%		44.1%	0.2%	55.8%	0.0%		3.2%	96.8%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.893	.862	.000	.887	.856	.250	.854	.000	.929	.650	.938	.000	.000	.950	.000	.000	.000	.000	.000	.994

National Data and Surveying Services

City of Tracy
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Mountain House Pkwy & I-205 WB Ramps
Date : 3/29/2017

Bank 2 Count = Heavy Trucks

	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
4:30	0	3	0	0	3	13	0	0	0	13	2	2	0	0	4	0	0	0	0	0	20	0
4:45	0	2	0	0	2	17	6	1	0	24	0	2	0	0	2	0	0	0	0	0	28	0
5:00	0	2	2	0	4	16	0	1	0	17	0	3	0	0	3	0	0	0	0	0	24	0
5:15	0	1	2	0	3	8	1	0	0	9	1	5	0	0	6	0	0	0	0	0	18	0
Total	0	8	4	0	12	54	7	2	0	63	3	12	0	0	15	0	0	0	0	0	90	0
5:30	0	4	2	0	6	18	0	0	0	18	0	5	0	0	5	0	0	0	0	0	29	0
5:45	0	4	2	0	6	15	5	2	0	22	0	2	0	0	2	0	0	0	0	0	30	0
6:00	0	8	0	0	8	17	6	0	0	23	0	2	0	0	2	0	0	0	0	0	33	0
6:15	0	7	1	0	8	21	4	4	0	29	0	4	0	0	4	0	0	0	0	0	41	0
Total	0	23	5	0	28	71	15	6	0	92	0	13	0	0	13	0	0	0	0	0	133	0
6:30	0	12	1	0	13	23	2	4	0	29	0	12	0	0	12	0	0	0	0	0	54	0
6:45	0	4	2	0	6	13	2	6	0	21	1	5	0	0	6	0	0	0	0	0	33	0
7:00	0	13	0	0	13	21	0	2	0	23	0	16	0	0	16	0	0	0	0	0	52	0
7:15	0	12	0	0	12	23	1	6	0	30	0	7	0	0	7	0	0	0	0	0	49	0
Total	0	41	3	0	44	80	5	18	0	103	1	40	0	0	41	0	0	0	0	0	188	0
7:30	0	10	0	0	10	20	0	8	0	28	0	5	0	0	5	0	0	0	0	0	43	0
7:45	0	22	0	0	22	20	0	9	0	29	1	12	0	0	13	0	0	0	0	0	64	0
8:00	0	12	0	0	12	11	0	3	0	14	0	10	0	0	10	0	0	0	0	0	36	0
8:15	0	22	1	0	23	26	1	6	0	33	3	9	0	0	12	0	0	0	0	0	68	0
Total	0	66	1	0	67	77	1	26	0	104	4	36	0	0	40	0	0	0	0	0	211	0
8:30	0	16	0	0	16	27	0	2	0	29	1	4	0	0	5	0	0	0	0	0	50	0
8:45	0	14	0	0	14	18	1	8	0	27	0	14	0	0	14	0	0	0	0	0	55	0
9:00	0	12	1	0	13	20	0	8	0	28	1	10	0	0	11	0	0	0	0	0	52	0
9:15	0	12	0	0	12	21	0	8	0	29	2	16	0	0	18	0	0	0	0	0	59	0
Total	0	54	1	0	55	86	1	26	0	113	4	44	0	0	48	0	0	0	0	0	216	0
9:30	0	10	3	0	13	23	1	6	0	30	1	11	0	0	12	0	0	0	0	0	55	0
9:45	0	12	2	0	14	24	2	9	0	35	1	14	0	0	15	0	0	0	0	0	64	0
10:00	0	16	1	0	17	29	0	5	0	34	2	11	0	0	13	0	0	0	0	0	64	0
10:15	0	10	0	0	10	19	1	3	0	23	2	2	0	0	4	0	0	0	0	0	37	0
Total	0	48	6	0	54	95	4	23	0	122	6	38	0	0	44	0	0	0	0	0	220	0
10:30	0	18	1	0	19	22	0	4	0	26	2	10	0	0	12	0	0	0	0	0	57	0
10:45	0	12	0	0	12	27	0	9	0	36	2	9	0	0	11	0	0	0	0	0	59	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	30	1	0	31	49	0	13	0	62	4	19	0	0	23	0	0	0	0	0	116	0
11:00	0	23	1	0	24	19	0	7	0	26	0	5	0	0	5	0	0	0	0	0	55	0
11:15	0	13	1	0	14	20	1	2	0	23	0	10	0	0	10	0	0	0	0	0	47	0
11:30	0	13	1	0	14	25	0	3	0	28	3	8	0	0	11	0	0	0	0	0	53	0
11:45	0	19	0	0	19	28	0	5	0	33	0	9	0	0	9	0	0	0	0	0	61	0
Total	0	68	3	0	71	92	1	17	0	110	3	32	0	0	35	0	0	0	0	0	216	0
12:00	0	10	2	0	12	10	0	6	0	16	2	6	0	0	8	0	0	0	0	0	36	0
12:15	0	23	0	0	23	18	1	5	0	24	0	7	0	0	7	0	0	0	0	0	54	0
12:30	0	10	0	0	10	19	0	4	0	23	1	6	0	0	7	0	0	0	0	0	40	0
12:45	0	13	2	0	15	21	1	5	0	27	1	7	0	0	8	0	0	0	0	0	50	0
Total	0	56	4	0	60	68	2	20	0	90	4	26	0	0	30	0	0	0	0	0	180	0
13:00	0	17	0	0	17	13	0	2	0	15	0	7	0	0	7	0	0	0	0	0	39	0
13:15	0	11	0	0	11	16	0	8	0	24	3	5	0	0	8	0	0	0	0	0	43	0
13:30	0	8	2	0	10	18	0	8	0	26	1	6	0	0	7	0	0	0	0	0	43	0
13:45	0	7	0	0	7	18	0	4	0	22	2	12	0	0	14	0	0	0	0	0	43	0
Total	0	43	2	0	45	65	0	22	0	87	6	30	0	0	36	0	0	0	0	0	168	0
14:00	0	14	0	0	14	20	0	3	0	23	0	5	0	0	5	0	0	0	0	0	42	0
14:15	0	7	0	0	7	18	0	4	0	22	0	1	0	0	1	0	0	0	0	0	30	0
14:30	0	12	1	0	13	17	0	8	0	25	0	5	0	0	5	0	0	0	0	0	43	0
14:45	0	16	1	0	17	18	0	1	0	19	0	4	0	0	4	0	0	0	0	0	40	0
Total	0	49	2	0	51	73	0	16	0	89	0	15	0	0	15	0	0	0	0	0	155	0
15:00	0	7	0	0	7	12	0	4	0	16	1	3	0	0	4	0	0	0	0	0	27	0
15:15	0	7	0	0	7	8	0	2	0	10	2	3	0	0	5	0	0	0	0	0	22	0
15:30	0	13	1	0	14	15	0	4	0	19	2	4	0	0	6	0	0	0	0	0	39	0
15:45	0	10	0	0	10	13	0	8	0	21	0	6	0	0	6	0	0	0	0	0	37	0
Total	0	37	1	0	38	48	0	18	0	66	5	16	0	0	21	0	0	0	0	0	125	0
16:00	0	8	1	0	9	14	0	3	0	17	1	9	0	0	10	0	0	0	0	0	36	0
16:15	0	10	0	0	10	18	0	4	0	22	0	4	0	0	4	0	0	0	0	0	36	0
16:30	0	11	0	0	11	8	0	1	0	9	1	2	0	0	3	0	0	0	0	0	23	0
16:45	0	7	0	0	7	14	0	0	0	14	1	2	0	0	3	0	0	0	0	0	24	0
Total	0	36	1	0	37	54	0	8	0	62	3	17	0	0	20	0	0	0	0	0	119	0
17:00	0	12	0	0	12	16	0	1	0	17	0	1	0	0	1	0	0	0	0	0	30	0
17:15	0	7	0	0	7	12	0	3	0	15	0	3	0	0	3	0	0	0	0	0	25	0
17:30	0	8	0	0	8	14	0	0	0	14	0	3	0	0	3	0	0	0	0	0	25	0
17:45	0	5	0	0	5	14	0	0	0	14	0	0	0	0	0	0	0	0	0	0	19	0
Total	0	32	0	0	32	56	0	4	0	60	0	7	0	0	7	0	0	0	0	0	99	0
18:00	0	3	1	0	4	15	0	1	0	16	0	1	0	0	1	0	0	0	0	0	21	0
18:15	0	3	0	0	3	14	0	0	0	14	3	2	0	0	5	0	0	0	0	0	22	0
18:30	0	2	0	0	2	15	0	0	0	15	1	7	0	0	8	0	0	0	0	0	25	0
18:45	0	2	0	0	2	8	0	0	0	8	0	2	0	0	2	0	0	0	0	0	12	0
Total	0	10	1	0	11	52	0	1	0	53	4	12	0	0	16	0	0	0	0	0	80	0
19:00	0	3	0	0	3	11	0	0	0	11	0	4	0	0	4	0	0	0	0	0	18	0
19:15	0	5	0	0	5	12	1	1	0	14	1	2	0	0	3	0	0	0	0	0	22	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	8	0	0	8	23	1	1	0	25	1	6	0	0	7	0	0	0	0	0	40	0
Grand Total	0	609	35	0	644	1043	37	221	0	1301	48	363	0	0	411	0	0	0	0	0	2356	0
Apprch %	0.0%	94.6%	5.4%			80.2%	2.8%	17.0%			11.7%	88.3%	0.0%			0.0%	0.0%	0.0%				
Total %	0.0%	25.8%	1.5%		27.3%	44.3%	1.6%	9.4%		55.2%	2.0%	15.4%	0.0%		17.4%	0.0%	0.0%	0.0%		0.0%	100.0%	

AM PEAK HOUR	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	13	0	0	13	21	0	2	0	23	0	16	0	0	16	0	0	0	0	0	52
7:15	0	12	0	0	12	23	1	6	0	30	0	7	0	0	7	0	0	0	0	0	49
7:30	0	10	0	0	10	20	0	8	0	28	0	5	0	0	5	0	0	0	0	0	43
7:45	0	22	0	0	22	20	0	9	0	29	1	12	0	0	13	0	0	0	0	0	64
Total Volume	0	57	0	0	57	84	1	25	0	110	1	40	0	0	41	0	0	0	0	0	208
% App Total	0.0%	100.0%	0.0%			76.4%	0.9%	22.7%			2.4%	97.6%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.648	.000		.648	.913	.250	.694		.917	.250	.625	.000		.641	.000	.000	.000		.000	.813

NOON PEAK	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 14:45 to 15:45																					
Peak Hour For Entire Intersection Begins at 14:45																					
14:45	0	16	1	0	17	18	0	1	0	19	0	4	0	0	4	0	0	0	0	0	40
15:00	0	7	0	0	7	12	0	4	0	16	1	3	0	0	4	0	0	0	0	0	27
15:15	0	7	0	0	7	8	0	2	0	10	2	3	0	0	5	0	0	0	0	0	22
15:30	0	13	1	0	14	15	0	4	0	19	2	4	0	0	6	0	0	0	0	0	39
Total Volume	0	43	2	0	45	53	0	11	0	64	5	14	0	0	19	0	0	0	0	0	128
% App Total	0.0%	95.6%	4.4%			82.8%	0.0%	17.2%			26.3%	73.7%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.672	.500		.662	.736	.000	.688		.842	.625	.875	.000		.792	.000	.000	.000		.000	.800

PM PEAK HOUR	Mountain House Pkwy Southbound					I-205 WB Ramps Westbound					Mountain House Pkwy Northbound					I-205 WB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:30 to 18:30																					
Peak Hour For Entire Intersection Begins at 17:30																					
17:30	0	8	0	0	8	14	0	0	0	14	0	3	0	0	3	0	0	0	0	0	25
17:45	0	5	0	0	5	14	0	0	0	14	0	0	0	0	0	0	0	0	0	0	19
18:00	0	3	1	0	4	15	0	1	0	16	0	1	0	0	1	0	0	0	0	0	21
18:15	0	3	0	0	3	14	0	0	0	14	3	2	0	0	5	0	0	0	0	0	22
Total Volume	0	19	1	0	20	57	0	1	0	58	3	6	0	0	9	0	0	0	0	0	87
% App Total	0.0%	95.0%	5.0%			98.3%	0.0%	1.7%			33.3%	66.7%	0.0%			0.0%	0.0%	0.0%			
PHF	.000	.594	.250		.625	.950	.000	.250		.906	.250	.500	.000		.450	.000	.000	.000		.000	.870

National Data and Surveying Services

City of Tracy
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Mountain House Pkwy & I-205 EB Ramps
Date : 3/30/2017

Unshifted Count = All Vehicles & Uturns

	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
4:30	0	139	9	0	148	0	0	0	0	0	0	10	48	0	58	2	0	5	0	7	213	0
4:45	0	187	19	0	206	0	0	0	0	0	0	11	44	0	55	2	0	5	0	7	268	0
5:00	0	191	9	0	200	0	0	0	0	0	0	14	43	0	57	3	0	5	0	8	265	0
5:15	0	217	4	0	221	0	0	0	0	0	0	24	52	0	76	4	0	1	0	5	302	0
Total	0	734	41	0	775	0	0	0	0	0	0	59	187	0	246	11	0	16	0	27	1048	0
5:30	0	249	20	0	269	0	0	0	0	0	0	19	21	0	40	3	0	4	0	7	316	0
5:45	0	205	13	0	218	0	0	0	0	0	0	23	14	0	37	5	0	5	0	10	265	0
6:00	0	222	10	0	232	0	0	0	0	0	0	18	27	0	45	6	1	1	0	8	285	0
6:15	0	236	30	0	266	0	0	0	0	0	0	17	40	0	57	18	2	5	0	25	348	0
Total	0	912	73	0	985	0	0	0	0	0	0	77	102	0	179	32	3	15	0	50	1214	0
6:30	0	199	44	0	243	0	0	0	0	0	0	23	29	0	52	13	0	3	0	16	311	0
6:45	0	219	30	0	249	0	0	0	0	0	0	31	47	0	78	14	0	6	0	20	347	0
7:00	1	220	48	0	269	0	0	0	0	0	0	24	44	0	68	15	1	4	0	20	357	0
7:15	1	234	45	0	280	0	0	0	0	0	0	34	41	0	75	23	0	10	0	33	388	0
Total	2	872	167	0	1041	0	0	0	0	0	0	112	161	0	273	65	1	23	0	89	1403	0
7:30	0	232	64	0	296	0	0	0	0	0	0	30	21	0	51	23	1	8	0	32	379	0
7:45	0	244	74	0	318	0	0	0	0	0	0	20	42	0	62	15	0	5	0	20	400	0
8:00	0	198	82	0	280	0	0	0	0	0	0	29	29	0	58	9	0	7	0	16	354	0
8:15	0	185	93	0	278	0	0	0	0	0	0	29	44	0	73	14	1	9	0	24	375	0
Total	0	859	313	0	1172	0	0	0	0	0	0	108	136	0	244	61	2	29	0	92	1508	0
8:30	0	164	61	0	225	0	0	0	0	0	0	25	42	0	67	10	0	6	0	16	308	0
8:45	0	150	54	0	204	0	0	0	0	0	0	21	81	0	102	11	0	0	0	11	317	0
9:00	0	95	57	0	152	0	0	0	0	0	0	17	67	0	84	14	0	2	0	16	252	0
9:15	0	56	61	0	117	0	0	0	0	0	0	25	83	0	108	18	0	9	0	27	252	0
Total	0	465	233	0	698	0	0	0	0	0	0	88	273	0	361	53	0	17	0	70	1129	0
9:30	0	74	71	1	146	0	0	0	0	0	0	21	49	0	70	10	0	9	0	19	235	1
9:45	0	76	65	0	141	0	0	0	0	0	0	21	59	0	80	19	0	6	0	25	246	0
10:00	0	85	56	0	141	0	0	0	0	0	0	25	54	0	79	12	1	6	0	19	239	0
10:15	0	69	52	0	121	0	0	0	0	0	0	16	34	0	50	23	0	8	0	31	202	0
Total	0	304	244	1	549	0	0	0	0	0	0	83	196	0	279	64	1	29	0	94	922	1
10:30	0	68	45	0	113	0	0	0	0	0	0	24	61	0	85	12	0	4	0	16	214	0
10:45	0	60	68	0	128	0	0	0	0	0	0	20	50	0	70	11	1	2	0	14	212	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	128	113	0	241	0	0	0	0	0	0	44	111	0	155	23	1	6	0	30	426	0
11:00	0	70	48	0	118	0	0	0	0	0	0	15	41	0	56	17	0	6	0	23	197	0
11:15	0	66	69	0	135	0	0	0	0	0	0	19	63	0	82	18	0	9	0	27	244	0
11:30	0	65	67	0	132	0	0	0	0	0	0	21	52	0	73	19	0	4	0	23	228	0
11:45	0	75	37	0	112	0	0	0	0	0	0	14	50	0	64	15	0	3	0	18	194	0
Total	0	276	221	0	497	0	0	0	0	0	0	69	206	0	275	69	0	22	0	91	863	0
12:00	0	101	47	0	148	0	0	0	0	0	0	18	68	0	86	30	0	13	0	43	277	0
12:15	0	112	39	0	151	0	0	0	0	0	0	24	61	0	85	26	0	18	0	44	280	0
12:30	0	82	61	0	143	0	0	0	0	0	0	21	59	0	80	32	0	10	0	42	265	0
12:45	0	86	60	1	147	0	0	0	0	0	0	10	83	0	93	44	0	9	0	53	293	1
Total	0	381	207	1	589	0	0	0	0	0	0	73	271	0	344	132	0	50	0	182	1115	1
13:00	0	78	55	0	133	0	0	0	0	0	0	16	74	0	90	34	0	12	0	46	269	0
13:15	0	78	42	0	120	0	0	0	0	0	0	28	62	0	90	35	1	8	0	44	254	0
13:30	0	112	39	0	151	0	0	0	0	0	0	33	140	0	173	44	0	5	0	49	373	0
13:45	0	75	71	0	146	0	0	0	0	0	0	25	89	0	114	53	1	7	0	61	321	0
Total	0	343	207	0	550	0	0	0	0	0	0	102	365	0	467	166	2	32	0	200	1217	0
14:00	1	59	53	0	113	0	0	0	0	0	0	40	98	0	138	46	0	14	0	60	311	0
14:15	0	63	94	0	157	0	0	0	0	0	0	20	76	0	96	35	0	7	0	42	295	0
14:30	0	97	97	0	194	0	0	0	0	0	0	34	168	0	202	43	1	9	0	53	449	0
14:45	0	85	65	0	150	0	0	0	0	0	0	29	96	0	125	42	2	5	0	49	324	0
Total	1	304	309	0	614	0	0	0	0	0	0	123	438	0	561	166	3	35	0	204	1379	0
15:00	0	92	76	0	168	0	0	0	0	0	0	31	105	0	136	46	0	7	0	53	357	0
15:15	0	89	69	0	158	0	0	0	0	0	0	27	102	0	129	29	1	7	0	37	324	0
15:30	0	79	106	0	185	0	0	0	0	0	0	47	126	0	173	51	0	8	0	59	417	0
15:45	0	88	84	0	172	0	0	0	0	0	0	45	85	0	130	37	0	11	0	48	350	0
Total	0	348	335	0	683	0	0	0	0	0	0	150	418	0	568	163	1	33	0	197	1448	0
16:00	0	70	83	0	153	0	0	0	0	0	0	34	116	0	150	45	0	6	0	51	354	0
16:15	0	79	81	0	160	0	0	0	0	0	0	31	88	0	119	32	0	8	0	40	319	0
16:30	0	86	65	0	151	0	0	0	0	0	0	43	148	0	191	51	0	9	0	60	402	0
16:45	0	92	75	0	167	0	0	0	0	0	0	39	128	0	167	31	0	5	0	36	370	0
Total	0	327	304	0	631	0	0	0	0	0	0	147	480	0	627	159	0	28	0	187	1445	0
17:00	0	81	73	0	154	0	0	0	0	0	0	42	192	0	234	39	0	2	0	41	429	0
17:15	1	100	84	0	185	0	0	0	0	0	0	36	152	0	188	41	0	7	0	48	421	0
17:30	0	89	88	0	177	0	0	0	0	0	0	47	134	0	181	45	0	6	0	51	409	0
17:45	1	107	75	0	183	0	0	0	0	0	0	40	128	0	168	44	0	5	0	49	400	0
Total	2	377	320	0	699	0	0	0	0	0	0	165	606	0	771	169	0	20	0	189	1659	0
18:00	1	82	81	0	164	0	0	0	0	0	0	43	136	0	179	54	0	6	0	60	403	0
18:15	0	75	71	0	146	0	0	0	0	0	0	44	163	0	207	49	0	3	0	52	405	0
18:30	0	55	52	0	107	0	0	0	0	0	0	33	120	0	153	55	0	7	0	62	322	0
18:45	0	42	52	0	94	0	0	0	0	0	0	24	105	0	129	46	0	1	0	47	270	0
Total	1	254	256	0	511	0	0	0	0	0	0	144	524	0	668	204	0	17	0	221	1400	0
19:00	0	40	65	0	105	0	0	0	0	0	0	40	94	0	134	54	0	1	0	55	294	0
19:15	1	40	65	0	106	0	0	0	0	0	0	25	99	0	124	70	1	9	0	80	310	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	80	130	0	211	0	0	0	0	0	0	65	193	0	258	124	1	10	0	135	604	0
Grand Total	7	6964	3473	2	10446	0	0	0	0	0	0	1609	4667	0	6276	1661	15	382	0	2058	18780	2
Apprch %	0.1%	66.7%	33.2%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	25.6%	74.4%	0.0%		80.7%	0.7%	18.6%	0.0%			
Total %	0.0%	37.1%	18.5%	0.0%	55.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	8.6%	24.9%	0.0%	33.4%	8.8%	0.1%	2.0%	0.0%	11.0%	100.0%	

AM PEAK HOUR	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	1	220	48	0	269	0	0	0	0	0	0	24	44	0	68	15	1	4	0	20	357
7:15	1	234	45	0	280	0	0	0	0	0	0	34	41	0	75	23	0	10	0	33	388
7:30	0	232	64	0	296	0	0	0	0	0	0	30	21	0	51	23	1	8	0	32	379
7:45	0	244	74	0	318	0	0	0	0	0	0	20	42	0	62	15	0	5	0	20	400
Total Volume	2	930	231	0	1163	0	0	0	0	0	0	108	148	0	256	76	2	27	0	105	1524
% App Total	0.2%	80.0%	19.9%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	42.2%	57.8%	0.0%		72.4%	1.9%	25.7%	0.0%		
PHF	.500	.953	.780	.000	.914	.000	.000	.000	.000	.000	.000	.794	.841	.000	.853	.826	.500	.675	.000	.795	.953

NOON PEAK	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 14:30 to 15:30																					
Peak Hour For Entire Intersection Begins at 14:30																					
14:30	0	97	97	0	194	0	0	0	0	0	0	34	168	0	202	43	1	9	0	53	449
14:45	0	85	65	0	150	0	0	0	0	0	0	29	96	0	125	42	2	5	0	49	324
15:00	0	92	76	0	168	0	0	0	0	0	0	31	105	0	136	46	0	7	0	53	357
15:15	0	89	69	0	158	0	0	0	0	0	0	27	102	0	129	29	1	7	0	37	324
Total Volume	0	363	307	0	670	0	0	0	0	0	0	121	471	0	592	160	4	28	0	192	1454
% App Total	0.0%	54.2%	45.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	20.4%	79.6%	0.0%		83.3%	2.1%	14.6%	0.0%		
PHF	.000	.936	.791	.000	.863	.000	.000	.000	.000	.000	.000	.890	.701	.000	.733	.870	.500	.778	.000	.906	.810

PM PEAK HOUR	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	81	73	0	154	0	0	0	0	0	0	42	192	0	234	39	0	2	0	41	429
17:15	1	100	84	0	185	0	0	0	0	0	0	36	152	0	188	41	0	7	0	48	421
17:30	0	89	88	0	177	0	0	0	0	0	0	47	134	0	181	45	0	6	0	51	409
17:45	1	107	75	0	183	0	0	0	0	0	0	40	128	0	168	44	0	5	0	49	400
Total Volume	2	377	320	0	699	0	0	0	0	0	0	165	606	0	771	169	0	20	0	189	1659
% App Total	0.3%	53.9%	45.8%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	21.4%	78.6%	0.0%		89.4%	0.0%	10.6%	0.0%		
PHF	.500	.881	.909	.000	.945	.000	.000	.000	.000	.000	.000	.878	.789	.000	.824	.939	.000	.714	.000	.926	.967

National Data and Surveying Services

City of Tracy
All Vehicles & Uturns On Unshifted
Peds & Bikes On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : Historical Mountain House Pkwy & I-205 EB Ramps
Date : 3/30/2017

Bank 2 Count = Heavy Trucks

	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound						
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total	Peds Total
4:30	0	18	0	0	18	0	0	0	0	0	0	6	11	0	17	0	0	2	0	2	37	0
4:45	0	18	0	0	18	0	0	0	0	0	0	4	4	0	8	1	0	2	0	3	29	0
5:00	0	12	0	0	12	0	0	0	0	0	0	6	4	0	10	0	0	1	0	1	23	0
5:15	0	10	0	0	10	0	0	0	0	0	0	11	8	0	19	1	0	0	0	1	30	0
Total	0	58	0	0	58	0	0	0	0	0	0	27	27	0	54	2	0	5	0	7	119	0
5:30	0	21	2	0	23	0	0	0	0	0	0	9	5	0	14	1	0	1	0	2	39	0
5:45	0	23	1	0	24	0	0	0	0	0	0	9	4	0	13	0	0	2	0	2	39	0
6:00	0	24	0	0	24	0	0	0	0	0	0	6	11	0	17	0	0	1	0	1	42	0
6:15	0	17	2	0	19	0	0	0	0	0	0	8	9	0	17	2	2	1	0	5	41	0
Total	0	85	5	0	90	0	0	0	0	0	0	32	29	0	61	3	2	5	0	10	161	0
6:30	0	26	0	0	26	0	0	0	0	0	0	5	17	0	22	1	0	0	0	1	49	0
6:45	0	27	2	0	29	0	0	0	0	0	0	14	25	0	39	1	0	1	0	2	70	0
7:00	0	28	3	0	31	0	0	0	0	0	0	10	25	0	35	0	0	2	0	2	68	0
7:15	1	33	1	0	35	0	0	0	0	0	0	12	15	0	27	2	0	2	0	4	66	0
Total	1	114	6	0	121	0	0	0	0	0	0	41	82	0	123	4	0	5	0	9	253	0
7:30	0	33	1	0	34	0	0	0	0	0	0	12	11	0	23	0	1	2	0	3	60	0
7:45	0	36	0	0	36	0	0	0	0	0	0	6	23	0	29	2	0	2	0	4	69	0
8:00	0	28	1	0	29	0	0	0	0	0	0	8	18	0	26	1	0	1	0	2	57	0
8:15	0	26	7	0	33	0	0	0	0	0	0	6	24	0	30	0	0	1	0	1	64	0
Total	0	123	9	0	132	0	0	0	0	0	0	32	76	0	108	3	1	6	0	10	250	0
8:30	0	26	4	0	30	0	0	0	0	0	0	5	22	0	27	0	0	1	0	1	58	0
8:45	0	37	1	0	38	0	0	0	0	0	0	9	48	0	57	1	0	0	0	1	96	0
9:00	0	28	3	0	31	0	0	0	0	0	0	6	41	0	47	0	0	0	0	0	78	0
9:15	0	19	5	0	24	0	0	0	0	0	0	9	43	0	52	1	0	0	0	1	77	0
Total	0	110	13	0	123	0	0	0	0	0	0	29	154	0	183	2	0	1	0	3	309	0
9:30	0	31	1	0	32	0	0	0	0	0	0	9	30	0	39	0	0	0	0	0	71	0
9:45	0	17	2	0	19	0	0	0	0	0	0	8	28	0	36	1	0	1	0	2	57	0
10:00	0	38	2	0	40	0	0	0	0	0	0	10	28	0	38	0	0	2	0	2	80	0
10:15	0	35	3	0	38	0	0	0	0	0	0	6	21	0	27	2	0	3	0	5	70	0
Total	0	121	8	0	129	0	0	0	0	0	0	33	107	0	140	3	0	6	0	9	278	0
10:30	0	30	4	0	34	0	0	0	0	0	0	9	36	0	45	0	0	2	0	2	81	0
10:45	0	31	1	0	32	0	0	0	0	0	0	10	27	0	37	0	0	1	0	1	70	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	61	5	0	66	0	0	0	0	0	0	19	63	0	82	0	0	3	0	3	151	0
11:00	0	27	4	0	31	0	0	0	0	0	0	8	24	0	32	1	0	2	0	3	66	0
11:15	0	25	5	0	30	0	0	0	0	0	0	7	40	0	47	0	0	2	0	2	79	0
11:30	0	25	4	0	29	0	0	0	0	0	0	6	28	0	34	1	0	1	0	2	65	0
11:45	0	40	2	0	42	0	0	0	0	0	0	5	17	0	22	1	0	0	0	1	65	0
Total	0	117	15	0	132	0	0	0	0	0	0	26	109	0	135	3	0	5	0	8	275	0
12:00	0	31	3	0	34	0	0	0	0	0	0	5	22	0	27	0	0	3	0	3	64	0
12:15	0	34	5	0	39	0	0	0	0	0	0	6	20	0	26	0	0	4	0	4	69	0
12:30	0	24	4	0	28	0	0	0	0	0	0	5	25	0	30	0	0	4	0	4	62	0
12:45	0	27	5	0	32	0	0	0	0	0	0	4	29	0	33	0	0	1	0	1	66	0
Total	0	116	17	0	133	0	0	0	0	0	0	20	96	0	116	0	0	12	0	12	261	0
13:00	0	21	2	0	23	0	0	0	0	0	0	5	15	0	20	0	0	2	0	2	45	0
13:15	0	32	2	0	34	0	0	0	0	0	0	9	21	0	30	2	0	3	0	5	69	0
13:30	0	28	1	0	29	0	0	0	0	0	0	11	19	0	30	0	0	1	0	1	60	0
13:45	0	18	3	0	21	0	0	0	0	0	0	7	22	0	29	1	0	3	0	4	54	0
Total	0	99	8	0	107	0	0	0	0	0	0	32	77	0	109	3	0	9	0	12	228	0
14:00	0	16	1	0	17	0	0	0	0	0	0	11	21	0	32	3	0	1	0	4	53	0
14:15	0	21	8	0	29	0	0	0	0	0	0	1	28	0	29	0	0	1	0	1	59	0
14:30	0	22	3	0	25	0	0	0	0	0	0	8	24	0	32	0	0	2	0	2	59	0
14:45	0	16	2	0	18	0	0	0	0	0	0	9	18	0	27	0	1	1	0	2	47	0
Total	0	75	14	0	89	0	0	0	0	0	0	29	91	0	120	3	1	5	0	9	218	0
15:00	0	19	1	0	20	0	0	0	0	0	0	7	20	0	27	2	0	0	0	2	49	0
15:15	0	11	5	0	16	0	0	0	0	0	0	5	15	0	20	0	0	1	0	1	37	0
15:30	0	19	3	0	22	0	0	0	0	0	0	5	21	0	26	0	0	3	0	3	51	0
15:45	0	21	2	0	23	0	0	0	0	0	0	7	8	0	15	0	0	0	0	0	38	0
Total	0	70	11	0	81	0	0	0	0	0	0	24	64	0	88	2	0	4	0	6	175	0
16:00	0	17	5	0	22	0	0	0	0	0	0	1	11	0	12	1	0	1	0	2	36	0
16:15	0	21	0	0	21	0	0	0	0	0	0	1	9	0	10	1	0	0	0	1	32	0
16:30	0	14	0	0	14	0	0	0	0	0	0	4	7	0	11	0	0	2	0	2	27	0
16:45	0	18	1	0	19	0	0	0	0	0	0	4	14	0	18	2	0	1	0	3	40	0
Total	0	70	6	0	76	0	0	0	0	0	0	10	41	0	51	4	0	4	0	8	135	0
17:00	0	19	0	0	19	0	0	0	0	0	0	2	21	0	23	0	0	0	0	0	42	0
17:15	0	18	1	0	19	0	0	0	0	0	0	1	9	0	10	1	0	0	0	1	30	0
17:30	0	11	1	0	12	0	0	0	0	0	0	2	13	0	15	0	0	0	0	0	27	0
17:45	0	10	0	0	10	0	0	0	0	0	0	4	6	0	10	2	0	1	0	3	23	0
Total	0	58	2	0	60	0	0	0	0	0	0	9	49	0	58	3	0	1	0	4	122	0
18:00	0	12	2	0	14	0	0	0	0	0	0	2	10	0	12	0	0	3	0	3	29	0
18:15	0	18	1	0	19	0	0	0	0	0	0	4	11	0	15	1	0	0	0	1	35	0
18:30	0	10	0	0	10	0	0	0	0	0	0	2	5	0	7	0	0	1	0	1	18	0
18:45	0	15	1	0	16	0	0	0	0	0	0	4	9	0	13	1	0	0	0	1	30	0
Total	0	55	4	0	59	0	0	0	0	0	0	12	35	0	47	2	0	4	0	6	112	0
19:00	0	16	0	0	16	0	0	0	0	0	0	2	11	0	13	0	0	1	0	1	30	0
19:15	1	14	1	0	16	0	0	0	0	0	0	1	12	0	13	0	0	3	0	3	32	0
19:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	30	1	0	32	0	0	0	0	0	0	3	23	0	26	0	0	4	0	4	62	0
Grand Total	2	1362	124	0	1488	0	0	0	0	0	0	378	1123	0	1501	37	4	79	0	120	3109	0
Apprch %	0.1%	91.5%	8.3%			0.0%	0.0%	0.0%			0.0%	25.2%	74.8%			30.8%	3.3%	65.8%				
Total %	0.1%	43.8%	4.0%		47.9%	0.0%	0.0%	0.0%		0.0%	0.0%	12.2%	36.1%		48.3%	1.2%	0.1%	2.5%		3.9%	100.0%	

AM PEAK HOUR	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 07:00 to 08:00																					
Peak Hour For Entire Intersection Begins at 07:00																					
7:00	0	28	3	0	31	0	0	0	0	0	0	10	25	0	35	0	0	2	0	2	68
7:15	1	33	1	0	35	0	0	0	0	0	0	12	15	0	27	2	0	2	0	4	66
7:30	0	33	1	0	34	0	0	0	0	0	0	12	11	0	23	0	1	2	0	3	60
7:45	0	36	0	0	36	0	0	0	0	0	0	6	23	0	29	2	0	2	0	4	69
Total Volume	1	130	5	0	136	0	0	0	0	0	0	40	74	0	114	4	1	8	0	13	263
% App Total	0.7%	95.6%	3.7%			0.0%	0.0%	0.0%			0.0%	35.1%	64.9%			30.8%	7.7%	61.5%			
PHF	.250	.903	.417		.944	.000	.000	.000		.000	.000	.833	.740		.814	.500	.250	1.000		.813	.953

NOON PEAK	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 14:30 to 15:30																					
Peak Hour For Entire Intersection Begins at 14:30																					
14:30	0	22	3	0	25	0	0	0	0	0	0	8	24	0	32	0	0	2	0	2	59
14:45	0	16	2	0	18	0	0	0	0	0	0	9	18	0	27	0	1	1	0	2	47
15:00	0	19	1	0	20	0	0	0	0	0	0	7	20	0	27	2	0	0	0	2	49
15:15	0	11	5	0	16	0	0	0	0	0	0	5	15	0	20	0	0	1	0	1	37
Total Volume	0	68	11	0	79	0	0	0	0	0	0	29	77	0	106	2	1	4	0	7	192
% App Total	0.0%	86.1%	13.9%			0.0%	0.0%	0.0%			0.0%	27.4%	72.6%			28.6%	14.3%	57.1%			
PHF	.000	.773	.550		.790	.000	.000	.000		.000	.000	.806	.802		.828	.250	.250	.500		.875	.814

PM PEAK HOUR	Mountain House Pkwy Southbound					I-205 EB Ramps Westbound					Mountain House Pkwy Northbound					I-205 EB Ramps Eastbound					
START TIME	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	LEFT	THRU	RIGHT	PEDS	APP.TOTAL	Total
Peak Hour Analysis From 17:00 to 18:00																					
Peak Hour For Entire Intersection Begins at 17:00																					
17:00	0	19	0	0	19	0	0	0	0	0	0	2	21	0	23	0	0	0	0	0	42
17:15	0	18	1	0	19	0	0	0	0	0	0	1	9	0	10	1	0	0	0	1	30
17:30	0	11	1	0	12	0	0	0	0	0	0	2	13	0	15	0	0	0	0	0	27
17:45	0	10	0	0	10	0	0	0	0	0	0	4	6	0	10	2	0	1	0	3	23
Total Volume	0	58	2	0	60	0	0	0	0	0	0	9	49	0	58	3	0	1	0	4	122
% App Total	0.0%	96.7%	3.3%			0.0%	0.0%	0.0%			0.0%	15.5%	84.5%			75.0%	0.0%	25.0%			
PHF	.000	.763	.500		.789	.000	.000	.000		.000	.000	.563	.583		.630	.375	.000	.250		.333	.726

Appendix C

LOS Worksheets

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	5	3	477	593	1
Future Vol, veh/h	0	5	3	477	593	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	15	12	0
Mvmt Flow	0	5	3	518	645	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1170	646	646	0	-	0
Stage 1	646	-	-	-	-	-
Stage 2	524	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.43	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.497	-	-	-
Pot Cap-1 Maneuver	215	475	808	-	-	-
Stage 1	526	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	214	475	808	-	-	-
Mov Cap-2 Maneuver	214	-	-	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	598	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	808	-	475	-	-
HCM Lane V/C Ratio	0.004	-	0.011	-	-
HCM Control Delay (s)	9.5	0	12.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	5	5	447	560	21
Future Vol, veh/h	10	5	5	447	560	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	70	20	40	16	13	29
Mvmt Flow	11	6	6	497	622	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1143	634	645	0	-	0
Stage 1	634	-	-	-	-	-
Stage 2	509	-	-	-	-	-
Critical Hdwy	7.1	6.4	4.5	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	4.13	3.48	2.56	-	-	-
Pot Cap-1 Maneuver	164	448	783	-	-	-
Stage 1	419	-	-	-	-	-
Stage 2	486	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	162	448	783	-	-	-
Mov Cap-2 Maneuver	162	-	-	-	-	-
Stage 1	414	-	-	-	-	-
Stage 2	486	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	783	-	206	-	-
HCM Lane V/C Ratio	0.007	-	0.081	-	-
HCM Control Delay (s)	9.6	0	24	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	8	139	8	14	35	232	223	6	25	454	7
Future Volume (veh/h)	6	8	139	8	14	35	232	223	6	25	454	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1707	1841	1707	1900	1900	1841	1500	1411	1781	1737	1900
Adj Flow Rate, veh/h	7	9	151	9	15	38	252	242	7	27	493	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	13	4	13	0	0	4	27	33	8	11	0
Cap, veh/h	91	118	194	14	24	60	302	733	21	39	607	10
Arrive On Green	0.13	0.13	0.13	0.06	0.06	0.06	0.17	0.51	0.51	0.02	0.36	0.36
Sat Flow, veh/h	731	940	1547	244	407	1030	1753	1450	42	1697	1704	28
Grp Volume(v), veh/h	16	0	151	62	0	0	252	0	249	27	0	501
Grp Sat Flow(s),veh/h/ln	1671	0	1547	1681	0	0	1753	0	1492	1697	0	1732
Q Serve(g_s), s	0.6	0.0	6.7	2.6	0.0	0.0	9.8	0.0	7.0	1.1	0.0	18.6
Cycle Q Clear(g_c), s	0.6	0.0	6.7	2.6	0.0	0.0	9.8	0.0	7.0	1.1	0.0	18.6
Prop In Lane	0.44		1.00	0.15		0.61	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	209	0	194	98	0	0	302	0	754	39	0	617
V/C Ratio(X)	0.08	0.00	0.78	0.63	0.00	0.00	0.83	0.00	0.33	0.68	0.00	0.81
Avail Cap(c_a), veh/h	681	0	631	733	0	0	492	0	754	165	0	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.4	0.0	30.1	32.6	0.0	0.0	28.4	0.0	10.4	34.4	0.0	20.6
Incr Delay (d2), s/veh	0.2	0.0	6.7	13.5	0.0	0.0	6.5	0.0	0.5	18.8	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.8	1.4	0.0	0.0	4.4	0.0	2.1	0.6	0.0	7.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.5	0.0	36.7	46.1	0.0	0.0	34.8	0.0	10.9	53.2	0.0	27.1
LnGrp LOS	C	A	D	D	A	A	C	A	B	D	A	C
Approach Vol, veh/h		167			62			501			528	
Approach Delay, s/veh		35.9			46.1			23.0			28.5	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	40.9		14.0	17.3	30.4		9.2				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.9	34.9		28.9	19.9	34.9		30.9				
Max Q Clear Time (g_c+I1), s	3.1	9.0		8.7	11.8	20.6		4.6				
Green Ext Time (p_c), s	0.0	2.8		0.5	0.4	4.7		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		28.1	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	55	176	1	0	270	2	2	4	1	5	3	215
Future Vol, veh/h	55	176	1	0	270	2	2	4	1	5	3	215
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	11	0	0	6	0	0	0	0	0	0	4
Mvmt Flow	74	238	1	0	365	3	3	5	1	7	4	291

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	368	0	0	239	0	0	901	755	239	757	754	367
Stage 1	-	-	-	-	-	-	387	387	-	367	367	-
Stage 2	-	-	-	-	-	-	514	368	-	390	387	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1191	-	-	1340	-	-	261	340	805	327	341	674
Stage 1	-	-	-	-	-	-	641	613	-	657	626	-
Stage 2	-	-	-	-	-	-	547	625	-	638	613	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1191	-	-	1340	-	-	139	316	805	304	316	674
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	316	-	304	316	-
Stage 1	-	-	-	-	-	-	595	569	-	610	626	-
Stage 2	-	-	-	-	-	-	309	625	-	585	569	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.9	0	20.2	15.3
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	247	1191	-	-	1340	-	-	647
HCM Lane V/C Ratio	0.038	0.062	-	-	-	-	-	0.466
HCM Control Delay (s)	20.2	8.2	0	-	0	-	-	15.3
HCM Lane LOS	C	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.2	-	-	0	-	-	2.5

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	3	4	277	513	0
Future Vol, veh/h	68	3	4	277	513	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	4	0	0	23	11	0
Mvmt Flow	87	4	5	355	658	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1023	658	658	0	-	0
Stage 1	658	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	259	468	939	-	-	0
Stage 1	511	-	-	-	-	0
Stage 2	698	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	257	468	939	-	-	-
Mov Cap-2 Maneuver	257	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	698	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.9	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	939	-	262	-
HCM Lane V/C Ratio	0.005	-	0.347	-
HCM Control Delay (s)	8.9	0	25.9	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	1.5	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	363	366	315	555	317	112
Future Volume (veh/h)	363	366	315	555	317	112
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1648	1856	1856	1722	1707
Adj Flow Rate, veh/h	412	416	358	631	360	127
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	17	3	3	12	13
Cap, veh/h	1256	501	429	2395	526	590
Arrive On Green	0.36	0.36	0.24	0.68	0.17	0.17
Sat Flow, veh/h	3589	1397	1767	3618	3182	1447
Grp Volume(v), veh/h	412	416	358	631	360	127
Grp Sat Flow(s),veh/h/ln	1749	1397	1767	1763	1591	1447
Q Serve(g_s), s	5.0	15.7	11.1	4.0	6.2	3.3
Cycle Q Clear(g_c), s	5.0	15.7	11.1	4.0	6.2	3.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1256	501	429	2395	526	590
V/C Ratio(X)	0.33	0.83	0.84	0.26	0.68	0.22
Avail Cap(c_a), veh/h	1782	712	992	4049	1072	838
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.5	16.9	20.8	3.6	22.7	11.1
Incr Delay (d2), s/veh	0.2	5.7	4.3	0.1	1.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	4.5	4.2	0.5	2.3	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.6	22.6	25.2	3.7	24.3	11.3
LnGrp LOS	B	C	C	A	C	B
Approach Vol, veh/h	828			989	487	
Approach Delay, s/veh	18.1			11.5	20.9	
Approach LOS	B			B	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		43.8			18.5	25.3	14.1
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		66.5			32.5	29.5	19.5
Max Q Clear Time (g_c+I1), s		6.0			13.1	17.7	8.2
Green Ext Time (p_c), s		4.1			0.9	3.0	1.4

Intersection Summary	
HCM 6th Ctrl Delay	15.9
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	29	1	182	100	198	5	240	56	134	1044	0
Future Volume (veh/h)	34	29	1	182	100	198	5	240	56	134	1044	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1900	1885	1767	1796	1307	1722	1796	1841	1870	1900
Adj Flow Rate, veh/h	35	30	1	147	164	206	5	250	0	140	1088	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	7	0	1	9	7	40	12	7	4	2	0
Cap, veh/h	110	105	4	299	295	411	7	1086		180	1527	
Arrive On Green	0.06	0.06	0.06	0.17	0.17	0.17	0.01	0.33	0.00	0.10	0.43	0.00
Sat Flow, veh/h	1810	1728	58	1795	1767	1522	1245	3272	1522	1753	3647	0
Grp Volume(v), veh/h	35	0	31	147	164	206	5	250	0	140	1088	0
Grp Sat Flow(s),veh/h/ln	1810	0	1786	1795	1767	1522	1245	1636	1522	1753	1777	0
Q Serve(g_s), s	1.3	0.0	1.2	5.4	6.2	8.3	0.3	4.0	0.0	5.6	18.2	0.0
Cycle Q Clear(g_c), s	1.3	0.0	1.2	5.4	6.2	8.3	0.3	4.0	0.0	5.6	18.2	0.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	110	0	109	299	295	411	7	1086		180	1527	
V/C Ratio(X)	0.32	0.00	0.28	0.49	0.56	0.50	0.76	0.23		0.78	0.71	
Avail Cap(c_a), veh/h	846	0	835	839	826	868	430	2398		606	2604	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	32.5	0.0	32.5	27.3	27.7	22.3	35.9	17.5	0.0	31.6	17.0	0.0
Incr Delay (d2), s/veh	1.6	0.0	1.4	1.2	1.6	0.9	98.0	0.1	0.0	7.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5	2.1	2.4	2.6	0.3	1.3	0.0	2.5	6.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.2	0.0	33.9	28.6	29.3	23.3	134.0	17.6	0.0	38.6	17.8	0.0
LnGrp LOS	C	A	C	C	C	C	F	B		D	B	
Approach Vol, veh/h		66			517			255	A		1228	A
Approach Delay, s/veh		34.0			26.7			19.9			20.2	
Approach LOS		C			C			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	31.0		10.6	5.4	38.1		18.3
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	25.0	53.0		33.8	25.0	53.0		33.8
Max Q Clear Time (g_c+I1), s	7.6	6.0		3.3	2.3	20.2		10.3
Green Ext Time (p_c), s	0.3	2.0		0.2	0.0	10.9		1.8

Intersection Summary	
HCM 6th Ctrl Delay	22.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	733	10	2	391	134	4	4	0	419	53	1
Future Volume (veh/h)	0	733	10	2	391	134	4	4	0	419	53	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1663	1900	1900	1900	1856	1767	1900
Adj Flow Rate, veh/h	0	772	11	2	412	141	4	4	0	441	56	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	5	16	0	0	0	3	9	0
Cap, veh/h	2	900	13	5	571	828	10	458	0	485	883	16
Arrive On Green	0.00	0.25	0.25	0.00	0.31	0.31	0.01	0.24	0.00	0.27	0.51	0.51
Sat Flow, veh/h	1810	3558	51	1810	1826	1409	1810	1900	0	1767	1730	31
Grp Volume(v), veh/h	0	382	401	2	412	141	4	4	0	441	0	57
Grp Sat Flow(s),veh/h/ln	1810	1763	1846	1810	1826	1409	1810	1900	0	1767	0	1761
Q Serve(g_s), s	0.0	16.3	16.3	0.1	15.8	3.6	0.2	0.1	0.0	19.0	0.0	1.3
Cycle Q Clear(g_c), s	0.0	16.3	16.3	0.1	15.8	3.6	0.2	0.1	0.0	19.0	0.0	1.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	446	467	5	571	828	10	458	0	485	0	899
V/C Ratio(X)	0.00	0.86	0.86	0.41	0.72	0.17	0.42	0.01	0.00	0.91	0.00	0.06
Avail Cap(c_a), veh/h	115	504	527	115	571	828	115	458	0	572	0	899
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.1	28.1	39.2	24.0	7.5	39.1	22.7	0.0	27.6	0.0	9.8
Incr Delay (d2), s/veh	0.0	12.6	12.1	46.2	4.4	0.1	26.1	0.0	0.0	16.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.6	7.9	0.1	6.6	0.8	0.1	0.1	0.0	9.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	40.7	40.2	85.4	28.4	7.5	65.2	22.8	0.0	44.5	0.0	9.9
LnGrp LOS	A	D	D	F	C	A	E	C	A	D	A	A
Approach Vol, veh/h		783			555			8			498	
Approach Delay, s/veh		40.4			23.3			44.0			40.5	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	23.5	4.7	24.4	4.9	44.7	0.0	29.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	19.0	5.0	22.5	5.0	39.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	21.3	2.1	2.1	18.3	2.2	3.3	0.0	17.8
Green Ext Time (p_c), s	0.6	0.0	0.0	1.6	0.0	0.2	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	35.3
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	35	20	2	201	294	17	374	5	242	723	38
Future Volume (veh/h)	11	35	20	2	201	294	17	374	5	242	723	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	12	37	21	2	214	0	18	398	0	257	769	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	385	201	5	296		39	1266		375	1573	
Arrive On Green	0.02	0.17	0.17	0.00	0.16	0.00	0.02	0.36	0.00	0.11	0.45	0.00
Sat Flow, veh/h	1767	2238	1170	1767	1856	1572	1767	3618	0	3428	3618	0
Grp Volume(v), veh/h	12	28	30	2	214	0	18	398	0	257	769	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1645	1767	1856	1572	1767	1763	0	1714	1763	0
Q Serve(g_s), s	0.3	0.7	0.8	0.1	5.5	0.0	0.5	4.1	0.0	3.6	7.8	0.0
Cycle Q Clear(g_c), s	0.3	0.7	0.8	0.1	5.5	0.0	0.5	4.1	0.0	3.6	7.8	0.0
Prop In Lane	1.00		0.71	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	27	303	283	5	296		39	1266		375	1573	
V/C Ratio(X)	0.44	0.09	0.10	0.41	0.72		0.46	0.31		0.69	0.49	
Avail Cap(c_a), veh/h	175	629	587	175	663		175	1266		401	1573	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.6	17.6	17.6	25.1	20.1	0.0	24.4	11.7	0.0	21.6	9.9	0.0
Incr Delay (d2), s/veh	10.9	0.1	0.2	47.9	3.4	0.0	8.2	0.7	0.0	4.4	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.2	0.1	2.2	0.0	0.3	1.2	0.0	1.4	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.5	17.7	17.8	73.0	23.5	0.0	32.6	12.3	0.0	26.1	11.0	0.0
LnGrp LOS	D	B	B	E	C		C	B		C	B	
Approach Vol, veh/h		70			216	A		416	A		1026	A
Approach Delay, s/veh		20.8			24.0			13.2			14.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	22.6	4.6	13.2	5.6	27.0	5.3	12.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	18.1	5.0	18.0	5.0	19.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	5.6	6.1	2.1	2.8	2.5	9.8	2.3	7.5
Green Ext Time (p_c), s	0.0	1.7	0.0	0.1	0.0	3.1	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	15.8
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	260	2	70	432	52	0	107	20	41	406	71
Future Volume (veh/h)	8	260	2	70	432	52	0	107	20	41	406	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	274	2	74	455	55	0	113	21	43	427	75
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	499	423	101	513	62	3	533	99	74	858	727
Arrive On Green	0.01	0.27	0.27	0.06	0.32	0.32	0.00	0.35	0.35	0.04	0.46	0.46
Sat Flow, veh/h	1767	1856	1572	1767	1624	196	1767	1522	283	1767	1856	1572
Grp Volume(v), veh/h	8	274	2	74	0	510	0	0	134	43	427	75
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1820	1767	0	1805	1767	1856	1572
Q Serve(g_s), s	0.3	8.1	0.1	2.6	0.0	17.0	0.0	0.0	3.3	1.5	10.3	1.7
Cycle Q Clear(g_c), s	0.3	8.1	0.1	2.6	0.0	17.0	0.0	0.0	3.3	1.5	10.3	1.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	18	499	423	101	0	575	3	0	632	74	858	727
V/C Ratio(X)	0.44	0.55	0.00	0.73	0.00	0.89	0.00	0.00	0.21	0.58	0.50	0.10
Avail Cap(c_a), veh/h	138	575	487	240	0	669	138	0	632	169	858	727
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.4	20.0	17.1	29.7	0.0	20.8	0.0	0.0	14.6	30.1	12.0	9.7
Incr Delay (d2), s/veh	15.5	0.9	0.0	9.7	0.0	12.4	0.0	0.0	0.8	7.1	2.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.1	0.0	1.3	0.0	7.9	0.0	0.0	1.3	0.7	3.9	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.0	21.0	17.1	39.4	0.0	33.2	0.0	0.0	15.3	37.2	14.1	10.0
LnGrp LOS	D	C	B	D	A	C	A	A	B	D	B	A
Approach Vol, veh/h		284			584			134			545	
Approach Delay, s/veh		21.7			33.9			15.3			15.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	26.9	8.2	21.7	0.0	34.1	5.2	24.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	22.4	8.7	19.8	5.0	23.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.5	5.3	4.6	10.1	0.0	12.3	2.3	19.0
Green Ext Time (p_c), s	0.0	0.5	0.0	0.9	0.0	2.1	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	13	262	7	55	14	342	522	8	5	459	14
Future Volume (veh/h)	7	13	262	7	55	14	342	522	8	5	459	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	14	0	8	60	15	372	567	9	5	499	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	31		123	100	25	501	1859	29	12	1342	40
Arrive On Green	0.03	0.03	0.00	0.07	0.07	0.07	0.15	0.52	0.52	0.01	0.38	0.38
Sat Flow, veh/h	663	1160	1572	1767	1433	358	3428	3552	56	1767	3494	105
Grp Volume(v), veh/h	22	0	0	8	0	75	372	281	295	5	251	263
Grp Sat Flow(s),veh/h/ln	1822	0	1572	1767	0	1791	1714	1763	1845	1767	1763	1837
Q Serve(g_s), s	0.6	0.0	0.0	0.2	0.0	2.0	5.0	4.4	4.4	0.1	4.9	4.9
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.2	0.0	2.0	5.0	4.4	4.4	0.1	4.9	4.9
Prop In Lane	0.36		1.00	1.00		0.20	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	48	0		123	0	125	501	923	966	12	677	706
V/C Ratio(X)	0.46	0.00		0.07	0.00	0.60	0.74	0.30	0.31	0.42	0.37	0.37
Avail Cap(c_a), veh/h	681	0		660	0	669	534	923	966	183	677	706
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.1	0.0	0.0	20.9	0.0	21.8	19.7	6.5	6.5	23.8	10.7	10.7
Incr Delay (d2), s/veh	6.6	0.0	0.0	0.2	0.0	4.6	5.2	0.9	0.8	22.0	1.6	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.1	0.0	0.8	1.9	1.0	1.0	0.1	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	0.0	0.0	21.2	0.0	26.3	24.9	7.4	7.3	45.8	12.2	12.2
LnGrp LOS	C	A		C	A	C	C	A	A	D	B	B
Approach Vol, veh/h		22	A		83			948			519	
Approach Delay, s/veh		29.7			25.8			14.2			12.5	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	29.7		5.8	11.5	23.0		7.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.3	21.0		18.0	7.5	18.5		18.0
Max Q Clear Time (g_c+I1), s	2.1	6.4		2.6	7.0	6.9		4.0
Green Ext Time (p_c), s	0.0	2.5		0.0	0.1	2.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	405	262	236	22	32	593
Future Volume (veh/h)	405	262	236	22	32	593
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1841	1752	1618	1767	1811	1885
Adj Flow Rate, veh/h	450	291	262	24	36	659
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	10	19	9	6	1
Cap, veh/h	503	980	322	298	507	928
Arrive On Green	0.29	0.56	0.20	0.20	0.29	0.29
Sat Flow, veh/h	1753	1752	1618	1497	1725	1598
Grp Volume(v), veh/h	450	291	262	24	36	659
Grp Sat Flow(s),veh/h/ln	1753	1752	1618	1497	1725	1598
Q Serve(g_s), s	15.1	5.4	9.5	0.8	0.9	18.0
Cycle Q Clear(g_c), s	15.1	5.4	9.5	0.8	0.9	18.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	503	980	322	298	507	928
V/C Ratio(X)	0.89	0.30	0.81	0.08	0.07	0.71
Avail Cap(c_a), veh/h	587	1230	476	440	507	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.9	7.1	23.5	20.0	15.6	9.2
Incr Delay (d2), s/veh	14.7	0.2	6.7	0.1	0.3	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	1.3	3.6	0.2	0.4	17.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	35.6	7.3	30.2	20.1	15.9	13.7
LnGrp LOS	D	A	C	C	B	B
Approach Vol, veh/h		741	286		695	
Approach Delay, s/veh		24.5	29.3		13.9	
Approach LOS		C	C		B	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		38.8		22.5	22.1	16.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		43.0		18.0	20.5	18.0
Max Q Clear Time (g_c+I1), s		7.4		20.0	17.1	11.5
Green Ext Time (p_c), s		1.5		0.0	0.5	0.7

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	467	245	191	498	120	189
Future Volume (veh/h)	467	245	191	498	120	189
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	519	272	212	553	133	210
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	739	386	405	1054	342	304
Arrive On Green	0.33	0.33	0.12	0.57	0.19	0.19
Sat Flow, veh/h	2331	1169	3428	1856	1767	1572
Grp Volume(v), veh/h	408	383	212	553	133	210
Grp Sat Flow(s),veh/h/ln	1763	1645	1714	1856	1767	1572
Q Serve(g_s), s	7.6	7.7	2.2	6.9	2.5	4.7
Cycle Q Clear(g_c), s	7.6	7.7	2.2	6.9	2.5	4.7
Prop In Lane		0.71	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	582	543	405	1054	342	304
V/C Ratio(X)	0.70	0.70	0.52	0.52	0.39	0.69
Avail Cap(c_a), veh/h	842	786	500	1379	844	751
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.0	11.0	15.6	5.0	13.3	14.2
Incr Delay (d2), s/veh	1.6	1.7	1.0	0.4	0.7	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	1.8	0.7	0.5	0.8	4.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.6	12.7	16.7	5.4	14.0	17.0
LnGrp LOS	B	B	B	A	B	B
Approach Vol, veh/h	791			765	343	
Approach Delay, s/veh	12.6			8.5	15.8	
Approach LOS	B			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		25.9		11.8	9.0	16.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		8.9		6.7	4.2	9.7
Green Ext Time (p_c), s		2.9		0.8	0.1	2.8

Intersection Summary			
HCM 6th Ctrl Delay		11.6	
HCM 6th LOS		B	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	473	230	248	393	167
Future Volume (veh/h)	155	473	230	248	393	167
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	167	509	247	267	423	180
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	454	404	529	449	468	1140
Arrive On Green	0.26	0.26	0.29	0.29	0.26	0.61
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	167	509	247	267	423	180
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	5.4	18.0	7.7	10.2	16.2	2.9
Cycle Q Clear(g_c), s	5.4	18.0	7.7	10.2	16.2	2.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	454	404	529	449	468	1140
V/C Ratio(X)	0.37	1.26	0.47	0.60	0.90	0.16
Avail Cap(c_a), veh/h	454	404	529	449	518	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	26.0	20.6	21.5	24.9	5.8
Incr Delay (d2), s/veh	0.5	135.1	2.9	5.7	18.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	21.2	3.3	3.9	8.1	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	161.1	23.6	27.3	43.1	6.1
LnGrp LOS	C	F	C	C	D	A
Approach Vol, veh/h	676		514			603
Approach Delay, s/veh	126.7		25.5			32.1
Approach LOS	F		C			C

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	23.0	24.5				47.5	22.5
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	20.5	18.0				43.0	18.0
Max Q Clear Time (g_c+I1), s	18.2	12.2				4.9	20.0
Green Ext Time (p_c), s	0.3	1.1				0.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	65.9
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	523	49	210	3	181	0	0	580	327
Future Volume (veh/h)	0	0	0	523	49	210	3	181	0	0	580	327
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1648	1870	1737	1411	1589	0	0	1737	1900
Adj Flow Rate, veh/h				594	56	239	3	206	0	0	659	0
Peak Hour Factor				0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %				17	2	11	33	21	0	0	11	0
Cap, veh/h				730	69	1157	303	1124	0	0	1766	
Arrive On Green				0.45	0.45	0.45	0.37	0.37	0.00	0.00	0.37	0.00
Sat Flow, veh/h				1635	154	2591	585	3098	0	0	4898	1610
Grp Volume(v), veh/h				650	0	239	3	206	0	0	659	0
Grp Sat Flow(s),veh/h/ln				1789	0	1295	585	1509	0	0	1581	1610
Q Serve(g_s), s				15.7	0.0	2.8	0.2	2.3	0.0	0.0	5.0	0.0
Cycle Q Clear(g_c), s				15.7	0.0	2.8	5.2	2.3	0.0	0.0	5.0	0.0
Prop In Lane				0.91		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				798	0	1157	303	1124	0	0	1766	
V/C Ratio(X)				0.81	0.00	0.21	0.01	0.18	0.00	0.00	0.37	
Avail Cap(c_a), veh/h				1170	0	1695	303	1124	0	0	1766	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.0	0.0	8.4	13.3	10.5	0.0	0.0	11.4	0.0
Incr Delay (d2), s/veh				2.9	0.0	0.1	0.1	0.4	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	0.0	0.5	0.0	0.6	0.0	0.0	1.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.8	0.0	8.5	13.3	10.9	0.0	0.0	12.0	0.0
LnGrp LOS				B	A	A	B	B	A	A	B	
Approach Vol, veh/h					889			209			659	A
Approach Delay, s/veh					13.1			10.9			12.0	
Approach LOS					B			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	23.0		23.0		26.7			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	18.5		18.5		32.5			
Max Q Clear Time (g_c+I1), s	7.2		7.0		17.7			
Green Ext Time (p_c), s	0.8		3.2		4.5			

Intersection Summary		
HCM 6th Ctrl Delay	12.4	
HCM 6th LOS	B	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	2	26	0	0	0	0	108	141	0	884	219
Future Volume (veh/h)	76	2	26	0	0	0	0	108	141	0	884	219
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1159	1455				0	1352	1159	0	1693	1870
Adj Flow Rate, veh/h	81	0	27				0	114	148	0	931	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	50	30				0	37	50	0	14	2
Cap, veh/h	286	0	101				0	1846	706	0	2312	
Arrive On Green	0.08	0.00	0.08				0.00	0.72	0.72	0.00	0.72	0.00
Sat Flow, veh/h	3478	0	1233				0	2636	982	0	3300	1585
Grp Volume(v), veh/h	81	0	27				0	114	148	0	931	0
Grp Sat Flow(s),veh/h/ln	1739	0	1233				0	1284	982	0	1608	1585
Q Serve(g_s), s	1.0	0.0	0.9				0.0	0.6	2.3	0.0	5.2	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.9				0.0	0.6	2.3	0.0	5.2	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	286	0	101				0	1846	706	0	2312	
V/C Ratio(X)	0.28	0.00	0.27				0.00	0.06	0.21	0.00	0.40	
Avail Cap(c_a), veh/h	1423	0	505				0	1846	706	0	2312	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.5	0.0	19.5				0.0	1.9	2.1	0.0	2.5	0.0
Incr Delay (d2), s/veh	0.5	0.0	1.4				0.0	0.1	0.7	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.3				0.0	0.0	0.1	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	0.0	20.9				0.0	1.9	2.8	0.0	3.0	0.0
LnGrp LOS	C	A	C				A	A	A	A	A	
Approach Vol, veh/h		108						262			931	A
Approach Delay, s/veh		20.2						2.4			3.0	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.0	8.2	37.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	18.5	32.5
Max Q Clear Time (g_c+I1), s	4.3	3.0	7.2
Green Ext Time (p_c), s	1.2	0.3	6.6

Intersection Summary	
HCM 6th Ctrl Delay	4.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	5	4	812	570	1
Future Vol, veh/h	6	5	4	812	570	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	9	0
Mvmt Flow	6	5	4	846	594	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1449	595	595	0	-	0
Stage 1	595	-	-	-	-	-
Stage 2	854	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	146	508	991	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	508	991	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	551	-	-	-	-	-
Stage 2	421	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	991	-	215	-	-
HCM Lane V/C Ratio	0.004	-	0.053	-	-
HCM Control Delay (s)	8.6	0	22.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	0	0	852	615	21
Future Vol, veh/h	21	0	0	852	615	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	14	0	0	4	9	43
Mvmt Flow	24	0	0	991	715	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1718	727	739	0	-	0
Stage 1	727	-	-	-	-	-
Stage 2	991	-	-	-	-	-
Critical Hdwy	6.54	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	92	427	876	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	342	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	92	427	876	-	-	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	342	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	57.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	876	-	92	-	-
HCM Lane V/C Ratio	-	-	0.265	-	-
HCM Control Delay (s)	0	-	57.7	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	1	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	24	331	12	11	31	296	574	5	30	217	4
Future Volume (veh/h)	14	24	331	12	11	31	296	574	5	30	217	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	14	25	341	12	11	32	305	592	5	31	224	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	163	292	390	16	15	44	354	706	6	45	368	7
Arrive On Green	0.26	0.26	0.26	0.04	0.04	0.04	0.20	0.39	0.39	0.03	0.22	0.22
Sat Flow, veh/h	628	1122	1497	372	341	991	1767	1808	15	1767	1701	30
Grp Volume(v), veh/h	39	0	341	55	0	0	305	0	597	31	0	228
Grp Sat Flow(s),veh/h/ln	1750	0	1497	1703	0	0	1767	0	1823	1767	0	1732
Q Serve(g_s), s	1.2	0.0	15.9	2.3	0.0	0.0	12.2	0.0	21.7	1.3	0.0	8.7
Cycle Q Clear(g_c), s	1.2	0.0	15.9	2.3	0.0	0.0	12.2	0.0	21.7	1.3	0.0	8.7
Prop In Lane	0.36		1.00	0.22		0.58	1.00		0.01	1.00		0.02
Lane Grp Cap(c), veh/h	455	0	390	75	0	0	354	0	712	45	0	374
V/C Ratio(X)	0.09	0.00	0.88	0.73	0.00	0.00	0.86	0.00	0.84	0.69	0.00	0.61
Avail Cap(c_a), veh/h	693	0	593	721	0	0	482	0	872	167	0	828
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	0.0	25.9	34.5	0.0	0.0	28.2	0.0	20.2	35.3	0.0	25.8
Incr Delay (d2), s/veh	0.1	0.0	9.3	25.1	0.0	0.0	11.4	0.0	7.8	16.8	0.0	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	6.4	1.5	0.0	0.0	6.0	0.0	9.8	0.7	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.5	0.0	35.2	59.6	0.0	0.0	39.6	0.0	28.0	52.1	0.0	29.2
LnGrp LOS	C	A	D	E	A	A	D	A	C	D	A	C
Approach Vol, veh/h		380			55			902			259	
Approach Delay, s/veh		33.7			59.6			31.9			32.0	
Approach LOS		C			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.0	33.6		24.1	19.7	20.9		8.3				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.9	34.9		28.9	19.9	34.9		30.9				
Max Q Clear Time (g_c+I1), s	3.3	23.7		17.9	14.2	10.7		4.3				
Green Ext Time (p_c), s	0.0	4.9		1.1	0.5	2.4		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		33.3	
HCM 6th LOS		C	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	230	369	0	4	290	9	0	3	0	4	4	61
Future Vol, veh/h	230	369	0	4	290	9	0	3	0	4	4	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	9	0	25	7	44	0	0	0	50	0	20
Mvmt Flow	253	405	0	4	319	10	0	3	0	4	4	67

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	329	0	0	405	0	0	1279	1248	405	1245	1243	324
Stage 1	-	-	-	-	-	-	911	911	-	332	332	-
Stage 2	-	-	-	-	-	-	368	337	-	913	911	-
Critical Hdwy	4.12	-	-	4.35	-	-	7.1	6.5	6.2	7.6	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.218	-	-	2.425	-	-	3.5	4	3.3	3.95	4	3.48
Pot Cap-1 Maneuver	1231	-	-	1040	-	-	144	175	650	121	176	677
Stage 1	-	-	-	-	-	-	331	356	-	592	648	-
Stage 2	-	-	-	-	-	-	656	645	-	271	356	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1231	-	-	1040	-	-	100	128	650	94	129	677
Mov Cap-2 Maneuver	-	-	-	-	-	-	100	128	-	94	129	-
Stage 1	-	-	-	-	-	-	243	262	-	435	645	-
Stage 2	-	-	-	-	-	-	584	642	-	197	262	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.1	33.9	15.4
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	128	1231	-	-	1040	-	-	422
HCM Lane V/C Ratio	0.026	0.205	-	-	0.004	-	-	0.18
HCM Control Delay (s)	33.9	8.7	0	-	8.5	0	-	15.4
HCM Lane LOS	D	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.8	-	-	0	-	-	0.6

Intersection	
Int Delay, s/veh	15.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	251	14	2	618	255	0
Future Vol, veh/h	251	14	2	618	255	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	264	15	2	651	268	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	923	268	268	0	-	0
Stage 1	268	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	302	776	1307	-	-	0
Stage 1	782	-	-	-	-	0
Stage 2	521	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	301	776	1307	-	-	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	65.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1307	-	311	-
HCM Lane V/C Ratio	0.002	-	0.897	-
HCM Control Delay (s)	7.8	0	65.6	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	8.4	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	664	238	105	476	537	235
Future Volume (veh/h)	664	238	105	476	537	235
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1693	1767	1841	1826	1885
Adj Flow Rate, veh/h	714	256	113	512	577	253
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	14	9	4	5	1
Cap, veh/h	1185	486	145	1846	899	564
Arrive On Green	0.34	0.34	0.09	0.53	0.27	0.27
Sat Flow, veh/h	3589	1434	1682	3589	3374	1598
Grp Volume(v), veh/h	714	256	113	512	577	253
Grp Sat Flow(s),veh/h/ln	1749	1434	1682	1749	1687	1598
Q Serve(g_s), s	7.4	6.3	2.9	3.5	6.6	5.3
Cycle Q Clear(g_c), s	7.4	6.3	2.9	3.5	6.6	5.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1185	486	145	1846	899	564
V/C Ratio(X)	0.60	0.53	0.78	0.28	0.64	0.45
Avail Cap(c_a), veh/h	2915	1195	634	4592	2195	1177
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.0	11.7	19.6	5.7	14.2	10.9
Incr Delay (d2), s/veh	0.5	0.9	8.7	0.1	0.8	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	1.4	1.2	0.5	2.2	1.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	12.5	12.5	28.3	5.8	15.0	11.5
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	970			625	830	
Approach Delay, s/veh	12.5			9.9	13.9	
Approach LOS	B			A	B	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		27.6			8.3	19.3	16.2
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		57.5			16.5	36.5	28.5
Max Q Clear Time (g_c+I1), s		5.5			4.9	9.4	8.6
Green Ext Time (p_c), s		3.2			0.2	5.4	3.0

Intersection Summary		
HCM 6th Ctrl Delay	12.3	
HCM 6th LOS	B	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	154	8	48	43	252	13	1198	209	223	339	9
Future Volume (veh/h)	0	154	8	48	43	252	13	1198	209	223	339	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	160	8	48	48	262	14	1248	0	232	353	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	200	192	10	268	293	492	21	1380		258	1802	
Arrive On Green	0.00	0.11	0.11	0.16	0.16	0.16	0.01	0.39	0.00	0.15	0.53	0.00
Sat Flow, veh/h	1810	1738	87	1668	1826	1572	1697	3554	1560	1697	3503	0
Grp Volume(v), veh/h	0	0	168	48	48	262	14	1248	0	232	353	0
Grp Sat Flow(s),veh/h/ln	1810	0	1825	1668	1826	1572	1697	1777	1560	1697	1706	0
Q Serve(g_s), s	0.0	0.0	11.7	3.2	2.9	17.8	1.1	42.9	0.0	17.4	7.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	11.7	3.2	2.9	17.8	1.1	42.9	0.0	17.4	7.0	0.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	200	0	202	268	293	492	21	1380		258	1802	
V/C Ratio(X)	0.00	0.00	0.83	0.18	0.16	0.53	0.68	0.90		0.90	0.20	
Avail Cap(c_a), veh/h	472	0	477	436	477	650	328	1455		328	1802	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	56.4	47.0	46.8	36.7	63.7	37.3	0.0	53.9	16.1	0.0
Incr Delay (d2), s/veh	0.0	0.0	8.6	0.3	0.3	0.9	32.0	8.2	0.0	22.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.7	1.3	1.3	6.6	0.6	18.9	0.0	8.7	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	65.0	47.3	47.1	37.6	95.7	45.6	0.0	76.5	16.1	0.0
LnGrp LOS	A	A	E	D	D	D	F	D		E	B	
Approach Vol, veh/h		168			358			1262	A		585	A
Approach Delay, s/veh		65.0			40.2			46.1			40.1	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.7	57.3		20.5	6.6	75.4		27.0
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	25.8	53.0		33.8	25.0	53.0		33.8
Max Q Clear Time (g_c+I1), s	19.4	44.9		13.7	3.1	9.0		19.8
Green Ext Time (p_c), s	0.3	5.4		0.7	0.0	2.9		1.0

Intersection Summary	
HCM 6th Ctrl Delay	45.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	398	0	1	864	629	5	14	3	157	6	0
Future Volume (veh/h)	1	398	0	1	864	629	5	14	3	157	6	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	1	406	0	1	882	642	5	14	3	160	6	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	2	1590	0	2	857	890	12	327	70	184	619	0
Arrive On Green	0.00	0.45	0.00	0.00	0.45	0.45	0.01	0.23	0.23	0.10	0.33	0.00
Sat Flow, veh/h	1810	3589	0	1810	1885	1598	1810	1422	305	1795	1900	0
Grp Volume(v), veh/h	1	406	0	1	882	642	5	0	17	160	6	0
Grp Sat Flow(s),veh/h/ln	1810	1749	0	1810	1885	1598	1810	0	1727	1795	1900	0
Q Serve(g_s), s	0.0	6.1	0.0	0.0	38.7	25.3	0.2	0.0	0.7	7.5	0.2	0.0
Cycle Q Clear(g_c), s	0.0	6.1	0.0	0.0	38.7	25.3	0.2	0.0	0.7	7.5	0.2	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.18	1.00		0.00
Lane Grp Cap(c), veh/h	2	1590	0	2	857	890	12	0	398	184	619	0
V/C Ratio(X)	0.40	0.26	0.00	0.40	1.03	0.72	0.42	0.00	0.04	0.87	0.01	0.00
Avail Cap(c_a), veh/h	106	1590	0	106	857	890	106	0	398	184	619	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.5	14.3	0.0	42.5	23.2	14.0	42.1	0.0	25.5	37.7	19.4	0.0
Incr Delay (d2), s/veh	81.1	0.1	0.0	81.1	38.4	2.9	22.1	0.0	0.2	33.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.1	0.0	0.1	23.1	7.7	0.2	0.0	0.3	4.8	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	123.5	14.4	0.0	123.5	61.6	16.9	64.2	0.0	25.7	71.3	19.4	0.0
LnGrp LOS	F	B	A	F	F	B	E	A	C	E	B	A
Approach Vol, veh/h		407			1525			22			166	
Approach Delay, s/veh		14.7			42.8			34.4			69.5	
Approach LOS		B			D			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	24.1	4.6	43.2	5.1	32.2	4.6	43.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	8.7	19.6	5.0	38.7	5.0	23.3	5.0	38.7
Max Q Clear Time (g_c+I1), s	9.5	2.7	2.0	8.1	2.2	2.2	2.0	40.7
Green Ext Time (p_c), s	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.4
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	306	12	2	17	285	19	843	6	367	385	7
Future Volume (veh/h)	62	306	12	2	17	285	19	843	6	367	385	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	326	13	2	18	0	20	897	0	390	410	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	99	497	20	5	168		42	1405		509	1844	
Arrive On Green	0.06	0.14	0.14	0.00	0.09	0.00	0.02	0.40	0.00	0.15	0.52	0.00
Sat Flow, veh/h	1767	3456	137	1767	1856	1572	1767	3618	0	3428	3618	0
Grp Volume(v), veh/h	66	166	173	2	18	0	20	897	0	390	410	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1831	1767	1856	1572	1767	1763	0	1714	1763	0
Q Serve(g_s), s	2.2	5.2	5.3	0.1	0.5	0.0	0.7	12.1	0.0	6.4	3.7	0.0
Cycle Q Clear(g_c), s	2.2	5.2	5.3	0.1	0.5	0.0	0.7	12.1	0.0	6.4	3.7	0.0
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	99	254	263	5	168		42	1405		509	1844	
V/C Ratio(X)	0.67	0.65	0.66	0.41	0.11		0.48	0.64		0.77	0.22	
Avail Cap(c_a), veh/h	153	543	564	150	569		150	1405		613	1844	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.2	23.8	23.8	29.2	24.5	0.0	28.3	14.2	0.0	24.0	7.6	0.0
Incr Delay (d2), s/veh	7.4	2.8	2.8	48.1	0.3	0.0	8.2	2.2	0.0	4.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.1	2.1	0.1	0.2	0.0	0.3	3.9	0.0	2.5	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.6	26.6	26.5	77.4	24.8	0.0	36.5	16.5	0.0	28.8	7.8	0.0
LnGrp LOS	C	C	C	E	C		D	B		C	A	
Approach Vol, veh/h		405			20	A		917	A		800	A
Approach Delay, s/veh		27.9			30.1			16.9			18.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	27.9	4.7	12.9	5.9	35.2	7.8	9.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	23.4	5.0	18.1	5.0	28.9	5.1	18.0
Max Q Clear Time (g_c+I1), s	8.4	14.1	2.1	7.3	2.7	5.7	4.2	2.5
Green Ext Time (p_c), s	0.3	3.7	0.0	1.2	0.0	2.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	19.5
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	547	2	15	274	74	6	569	86	59	139	19
Future Volume (veh/h)	89	547	2	15	274	74	6	569	86	59	139	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	105	644	2	18	322	87	7	669	101	69	164	22
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	129	663	562	33	426	115	15	685	103	85	880	746
Arrive On Green	0.07	0.36	0.36	0.02	0.30	0.30	0.01	0.44	0.44	0.05	0.47	0.47
Sat Flow, veh/h	1767	1856	1572	1767	1407	380	1767	1575	238	1767	1856	1572
Grp Volume(v), veh/h	105	644	2	18	0	409	7	0	770	69	164	22
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1787	1767	0	1813	1767	1856	1572
Q Serve(g_s), s	7.5	43.5	0.1	1.3	0.0	26.3	0.5	0.0	53.1	4.9	6.5	0.9
Cycle Q Clear(g_c), s	7.5	43.5	0.1	1.3	0.0	26.3	0.5	0.0	53.1	4.9	6.5	0.9
Prop In Lane	1.00		1.00	1.00		0.21	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	129	663	562	33	0	541	15	0	789	85	880	746
V/C Ratio(X)	0.82	0.97	0.00	0.55	0.00	0.76	0.46	0.00	0.98	0.82	0.19	0.03
Avail Cap(c_a), veh/h	160	663	562	69	0	547	69	0	789	85	880	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	40.3	26.3	62.0	0.0	40.1	62.8	0.0	35.3	60.1	19.3	17.8
Incr Delay (d2), s/veh	22.7	27.9	0.0	13.7	0.0	5.9	20.1	0.0	26.8	43.7	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	23.8	0.0	0.7	0.0	12.0	0.3	0.0	27.9	3.2	2.9	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.9	68.1	26.3	75.6	0.0	46.0	82.9	0.0	62.2	103.7	19.8	17.9
LnGrp LOS	F	E	C	E	A	D	F	A	E	F	B	B
Approach Vol, veh/h		751			427			777			255	
Approach Delay, s/veh		69.8			47.2			62.3			42.3	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	59.9	6.9	50.0	5.6	64.9	13.8	43.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	55.4	5.0	45.5	5.0	56.5	11.5	39.0
Max Q Clear Time (g_c+I1), s	16.3	55.1	3.3	45.5	2.5	8.5	9.5	28.3
Green Ext Time (p_c), s	0.0	0.1	0.0	0.0	0.0	1.0	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	59.7
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	71	404	5	26	6	365	632	16	22	493	4
Future Volume (veh/h)	20	71	404	5	26	6	365	632	16	22	493	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	22	77	0	5	28	7	397	687	17	24	536	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	107		75	61	15	516	1734	43	50	1331	10
Arrive On Green	0.07	0.07	0.00	0.04	0.04	0.04	0.15	0.49	0.49	0.03	0.37	0.37
Sat Flow, veh/h	408	1427	1572	1767	1433	358	3428	3516	87	1767	3587	27
Grp Volume(v), veh/h	99	0	0	5	0	35	397	344	360	24	263	277
Grp Sat Flow(s),veh/h/ln	1835	0	1572	1767	0	1791	1714	1763	1840	1767	1763	1851
Q Serve(g_s), s	2.6	0.0	0.0	0.1	0.0	1.0	5.5	6.1	6.1	0.7	5.5	5.5
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.1	0.0	1.0	5.5	6.1	6.1	0.7	5.5	5.5
Prop In Lane	0.22		1.00	1.00		0.20	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	137	0		75	0	76	516	869	907	50	654	687
V/C Ratio(X)	0.72	0.00		0.07	0.00	0.46	0.77	0.40	0.40	0.48	0.40	0.40
Avail Cap(c_a), veh/h	663	0		638	0	647	516	869	907	181	654	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	0.0	22.9	0.0	23.3	20.3	8.0	8.0	23.9	11.6	11.6
Incr Delay (d2), s/veh	6.9	0.0	0.0	0.4	0.0	4.2	7.0	1.4	1.3	6.9	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.1	0.0	0.4	2.2	1.6	1.7	0.3	1.8	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	23.3	0.0	27.5	27.3	9.3	9.3	30.8	13.4	13.4
LnGrp LOS	C	A		C	A	C	C	A	A	C	B	B
Approach Vol, veh/h		99	A		40			1101			564	
Approach Delay, s/veh		29.5			27.0			15.8			14.1	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	29.1		8.2	12.0	23.0		6.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0
Max Q Clear Time (g_c+I1), s	2.7	8.1		4.6	7.5	7.5		3.0
Green Ext Time (p_c), s	0.0	3.0		0.3	0.0	2.0		0.1

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	574	326	339	59	29	379
Future Volume (veh/h)	574	326	339	59	29	379
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1767	1811	1900	1752	1885
Adj Flow Rate, veh/h	611	347	361	63	31	403
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	9	6	0	10	1
Cap, veh/h	658	1146	410	365	401	970
Arrive On Green	0.37	0.65	0.23	0.23	0.24	0.24
Sat Flow, veh/h	1795	1767	1811	1610	1668	1598
Grp Volume(v), veh/h	611	347	361	63	31	403
Grp Sat Flow(s),veh/h/ln	1795	1767	1811	1610	1668	1598
Q Serve(g_s), s	26.5	7.0	15.6	2.6	1.2	10.8
Cycle Q Clear(g_c), s	26.5	7.0	15.6	2.6	1.2	10.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	658	1146	410	365	401	970
V/C Ratio(X)	0.93	0.30	0.88	0.17	0.08	0.42
Avail Cap(c_a), veh/h	786	1340	480	427	401	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	6.2	30.3	25.3	23.8	8.4
Incr Delay (d2), s/veh	15.5	0.1	15.3	0.2	0.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	1.7	7.8	0.9	0.5	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.2	6.4	45.7	25.5	24.2	9.7
LnGrp LOS	D	A	D	C	C	A
Approach Vol, veh/h		958	424		434	
Approach Delay, s/veh		27.9	42.7		10.7	
Approach LOS		C	D		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			57.1		24.0	34.2	22.9
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			61.5		19.5	35.5	21.5
Max Q Clear Time (g_c+I1), s			9.0		12.8	28.5	17.6
Green Ext Time (p_c), s			1.9		0.9	1.2	0.7

Intersection Summary		
HCM 6th Ctrl Delay		27.3
HCM 6th LOS		C



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	467	158	272	515	129	417
Future Volume (veh/h)	467	158	272	515	129	417
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	492	166	286	542	136	439
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	686	230	409	894	571	508
Arrive On Green	0.26	0.26	0.12	0.48	0.32	0.32
Sat Flow, veh/h	2685	869	3428	1856	1767	1572
Grp Volume(v), veh/h	334	324	286	542	136	439
Grp Sat Flow(s),veh/h/ln	1763	1699	1714	1856	1767	1572
Q Serve(g_s), s	7.9	8.0	3.7	9.9	2.6	12.1
Cycle Q Clear(g_c), s	7.9	8.0	3.7	9.9	2.6	12.1
Prop In Lane		0.51	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	466	450	409	894	571	508
V/C Ratio(X)	0.72	0.72	0.70	0.61	0.24	0.86
Avail Cap(c_a), veh/h	688	664	409	1127	690	614
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.4	15.4	19.5	8.7	11.4	14.6
Incr Delay (d2), s/veh	2.1	2.2	5.2	0.7	0.2	10.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	2.4	1.4	2.2	0.8	10.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.4	17.6	24.7	9.4	11.6	25.2
LnGrp LOS	B	B	C	A	B	C
Approach Vol, veh/h	658			828	575	
Approach Delay, s/veh	17.5			14.7	22.0	
Approach LOS	B			B	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.7		19.4	10.0	16.7
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		11.9		14.1	5.7	10.0
Green Ext Time (p_c), s		2.6		0.8	0.0	2.2

Intersection Summary		
HCM 6th Ctrl Delay		17.6
HCM 6th LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	342	551	154	461	511	224
Future Volume (veh/h)	342	551	154	461	511	224
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	349	562	157	470	521	229
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	431	383	502	426	560	1195
Arrive On Green	0.24	0.24	0.27	0.27	0.32	0.64
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	349	562	157	470	521	229
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	14.9	19.5	5.4	21.7	22.8	4.0
Cycle Q Clear(g_c), s	14.9	19.5	5.4	21.7	22.8	4.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	431	383	502	426	560	1195
V/C Ratio(X)	0.81	1.47	0.31	1.10	0.93	0.19
Avail Cap(c_a), veh/h	431	383	502	426	607	1195
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	30.3	23.2	29.2	26.5	5.8
Incr Delay (d2), s/veh	11.1	223.7	1.6	75.0	20.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.2	30.6	2.3	16.0	11.4	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.6	253.9	24.9	104.2	46.7	6.1
LnGrp LOS	D	F	C	F	D	A
Approach Vol, veh/h	911		627			750
Approach Delay, s/veh	171.8		84.3			34.3
Approach LOS	F		F			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	29.8	26.2			56.0	24.0
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	27.5	19.5			51.5	19.5
Max Q Clear Time (g_c+I1), s	24.8	23.7			6.0	21.5
Green Ext Time (p_c), s	0.5	0.0			1.2	0.0

Intersection Summary		
HCM 6th Ctrl Delay	102.8	
HCM 6th LOS	F	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	258	1	321	12	371	0	0	404	95
Future Volume (veh/h)	0	0	0	258	1	321	12	371	0	0	404	95
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1589	1900	1900	1559	1870	0	0	1826	1885
Adj Flow Rate, veh/h				261	1	324	12	375	0	0	408	0
Peak Hour Factor				0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %				21	0	0	23	2	0	0	5	1
Cap, veh/h				427	2	671	586	1961	0	0	2750	
Arrive On Green				0.24	0.24	0.24	0.55	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h				1803	7	2834	815	3647	0	0	5149	1598
Grp Volume(v), veh/h				262	0	324	12	375	0	0	408	0
Grp Sat Flow(s),veh/h/ln				1810	0	1417	815	1777	0	0	1662	1598
Q Serve(g_s), s				5.5	0.0	4.2	0.3	2.3	0.0	0.0	1.7	0.0
Cycle Q Clear(g_c), s				5.5	0.0	4.2	2.0	2.3	0.0	0.0	1.7	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				429	0	671	586	1961	0	0	2750	
V/C Ratio(X)				0.61	0.00	0.48	0.02	0.19	0.00	0.00	0.15	
Avail Cap(c_a), veh/h				1169	0	1830	586	1961	0	0	2750	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.5	0.0	14.0	5.2	4.8	0.0	0.0	4.7	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.5	0.1	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	1.0	0.0	0.4	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				15.9	0.0	14.5	5.2	5.0	0.0	0.0	4.8	0.0
LnGrp LOS				B	A	B	A	A	A	A	A	
Approach Vol, veh/h					586			387			408	A
Approach Delay, s/veh					15.2			5.0			4.8	
Approach LOS					B			A			A	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	28.0		28.0		14.6	
Change Period (Y+Rc), s	4.5		4.5		4.5	
Max Green Setting (Gmax), s	23.5		23.5		27.5	
Max Q Clear Time (g_c+I1), s	4.3		3.7		7.5	
Green Ext Time (p_c), s	2.1		2.4		2.6	

Intersection Summary		
HCM 6th Ctrl Delay	9.2	
HCM 6th LOS	A	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	194	0	19	0	0	0	0	189	576	0	358	304
Future Volume (veh/h)	194	0	19	0	0	0	0	189	576	0	358	304
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1826	1781	0	1678	1885
Adj Flow Rate, veh/h	200	0	20				0	195	594	0	369	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0				0	5	8	0	15	1
Cap, veh/h	370	0	165				0	2439	1061	0	2241	
Arrive On Green	0.10	0.00	0.10				0.00	0.70	0.70	0.00	0.70	0.00
Sat Flow, veh/h	3619	0	1610				0	3561	1510	0	3272	1598
Grp Volume(v), veh/h	200	0	20				0	195	594	0	369	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1735	1510	0	1594	1598
Q Serve(g_s), s	2.4	0.0	0.5				0.0	0.8	8.9	0.0	1.8	0.0
Cycle Q Clear(g_c), s	2.4	0.0	0.5				0.0	0.8	8.9	0.0	1.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	370	0	165				0	2439	1061	0	2241	
V/C Ratio(X)	0.54	0.00	0.12				0.00	0.08	0.56	0.00	0.16	
Avail Cap(c_a), veh/h	1448	0	644				0	2439	1061	0	2241	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.7	0.0	18.9				0.0	2.2	3.4	0.0	2.3	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.3				0.0	0.1	2.1	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.2				0.0	0.0	0.9	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.0	0.0	19.2				0.0	2.2	5.5	0.0	2.5	0.0
LnGrp LOS	C	A	B				A	A	A	A	A	
Approach Vol, veh/h		220						789			369	A
Approach Delay, s/veh		20.8						4.7			2.5	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.0	9.2	37.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	18.5	32.5
Max Q Clear Time (g_c+I1), s	10.9	4.4	3.8
Green Ext Time (p_c), s	3.4	0.6	2.3

Intersection Summary	
HCM 6th Ctrl Delay	6.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	50	120	477	593	45
Future Vol, veh/h	18	50	120	477	593	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	15	12	0
Mvmt Flow	20	54	130	518	645	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1448	670	694	0	-	0
Stage 1	670	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.43	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.497	-	-	-
Pot Cap-1 Maneuver	146	460	773	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	112	460	773	-	-	-
Mov Cap-2 Maneuver	112	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	456	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.1	2.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	773	-	252	-	-
HCM Lane V/C Ratio	0.169	-	0.293	-	-
HCM Control Delay (s)	10.6	0	25.1	-	-
HCM Lane LOS	B	A	D	-	-
HCM 95th %tile Q(veh)	0.6	-	1.2	-	-

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	5	5	465	580	208
Future Vol, veh/h	85	5	5	465	580	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	70	20	40	16	13	29
Mvmt Flow	94	6	6	517	644	231

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1289	760	875	0	-	0
Stage 1	760	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	7.1	6.4	4.5	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	4.13	3.48	2.56	-	-	-
Pot Cap-1 Maneuver	131	378	633	-	-	-
Stage 1	360	-	-	-	-	-
Stage 2	474	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	129	378	633	-	-	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	474	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	85.6	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	633	-	134	-	-
HCM Lane V/C Ratio	0.009	-	0.746	-	-
HCM Control Delay (s)	10.7	0	85.6	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0	-	4.4	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	8	254	11	14	35	278	258	7	25	543	7
Future Volume (veh/h)	6	8	254	11	14	35	278	258	7	25	543	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1707	1841	1707	1900	1900	1841	1500	1411	1781	1737	1900
Adj Flow Rate, veh/h	7	9	276	12	15	38	302	280	8	27	590	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	13	4	13	0	0	4	27	33	8	11	0
Cap, veh/h	146	188	310	19	23	59	332	749	21	36	594	8
Arrive On Green	0.20	0.20	0.20	0.06	0.06	0.06	0.19	0.52	0.52	0.02	0.35	0.35
Sat Flow, veh/h	731	940	1552	311	389	986	1753	1451	41	1697	1710	23
Grp Volume(v), veh/h	16	0	276	65	0	0	302	0	288	27	0	598
Grp Sat Flow(s),veh/h/ln	1671	0	1552	1687	0	0	1753	0	1492	1697	0	1733
Q Serve(g_s), s	0.8	0.0	17.4	3.8	0.0	0.0	16.9	0.0	11.6	1.6	0.0	34.5
Cycle Q Clear(g_c), s	0.8	0.0	17.4	3.8	0.0	0.0	16.9	0.0	11.6	1.6	0.0	34.5
Prop In Lane	0.44		1.00	0.18		0.58	1.00		0.03	1.00		0.01
Lane Grp Cap(c), veh/h	334	0	310	101	0	0	332	0	770	36	0	602
V/C Ratio(X)	0.05	0.00	0.89	0.64	0.00	0.00	0.91	0.00	0.37	0.76	0.00	0.99
Avail Cap(c_a), veh/h	481	0	447	519	0	0	347	0	770	117	0	602
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	39.1	46.2	0.0	0.0	39.9	0.0	14.6	48.9	0.0	32.7
Incr Delay (d2), s/veh	0.1	0.0	14.5	13.6	0.0	0.0	26.2	0.0	0.6	26.9	0.0	34.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	7.8	2.0	0.0	0.0	9.5	0.0	3.8	0.9	0.0	19.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	0.0	53.6	59.8	0.0	0.0	66.1	0.0	15.2	75.9	0.0	67.6
LnGrp LOS	C	A	D	E	A	A	E	A	B	E	A	E
Approach Vol, veh/h		292			65			590			625	
Approach Delay, s/veh		52.5			59.8			41.3			67.9	
Approach LOS		D			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	56.9		25.2	24.1	40.0		11.1				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.9	34.9		28.9	19.9	34.9		30.9				
Max Q Clear Time (g_c+I1), s	3.6	13.6		19.4	18.9	36.5		5.8				
Green Ext Time (p_c), s	0.0	3.0		0.7	0.1	0.0		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		54.7	
HCM 6th LOS		D	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	55	291	1	0	316	2	2	4	1	5	3	215
Future Vol, veh/h	55	291	1	0	316	2	2	4	1	5	3	215
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	11	0	0	6	0	0	0	0	0	0	4
Mvmt Flow	74	393	1	0	427	3	3	5	1	7	4	291

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	430	0	0	394	0	0	1118	972	394	974	971	429
Stage 1	-	-	-	-	-	-	542	542	-	429	429	-
Stage 2	-	-	-	-	-	-	576	430	-	545	542	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	1129	-	-	1176	-	-	186	254	659	233	255	622
Stage 1	-	-	-	-	-	-	528	523	-	608	587	-
Stage 2	-	-	-	-	-	-	506	587	-	526	523	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1129	-	-	1176	-	-	92	233	659	214	234	622
Mov Cap-2 Maneuver	-	-	-	-	-	-	92	233	-	214	234	-
Stage 1	-	-	-	-	-	-	484	479	-	557	587	-
Stage 2	-	-	-	-	-	-	268	587	-	475	479	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0	27	17.5
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	173	1129	-	-	1176	-	-	584
HCM Lane V/C Ratio	0.055	0.066	-	-	-	-	-	0.516
HCM Control Delay (s)	27	8.4	0	-	0	-	-	17.5
HCM Lane LOS	D	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	-	3

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	68	3	4	312	602	0
Future Vol, veh/h	68	3	4	312	602	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	4	0	0	23	11	0
Mvmt Flow	87	4	5	400	772	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1182	772	772	0	-	0
Stage 1	772	-	-	-	-	-
Stage 2	410	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	208	403	852	-	-	0
Stage 1	452	-	-	-	-	0
Stage 2	666	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	206	403	852	-	-	-
Mov Cap-2 Maneuver	206	-	-	-	-	-
Stage 1	448	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.6	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	852	-	210	-
HCM Lane V/C Ratio	0.006	-	0.433	-
HCM Control Delay (s)	9.3	0	34.6	-
HCM Lane LOS	A	A	D	-
HCM 95th %tile Q(veh)	0	-	2	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	363	411	359	555	335	129
Future Volume (veh/h)	363	411	359	555	335	129
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1648	1856	1856	1722	1707
Adj Flow Rate, veh/h	412	467	408	631	381	147
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	17	3	3	12	13
Cap, veh/h	1310	523	468	2486	521	620
Arrive On Green	0.37	0.37	0.26	0.71	0.16	0.16
Sat Flow, veh/h	3589	1397	1767	3618	3182	1447
Grp Volume(v), veh/h	412	467	408	631	381	147
Grp Sat Flow(s),veh/h/ln	1749	1397	1767	1763	1591	1447
Q Serve(g_s), s	5.7	21.6	15.1	4.4	7.8	4.4
Cycle Q Clear(g_c), s	5.7	21.6	15.1	4.4	7.8	4.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1310	523	468	2486	521	620
V/C Ratio(X)	0.31	0.89	0.87	0.25	0.73	0.24
Avail Cap(c_a), veh/h	1503	600	837	3416	904	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	20.2	24.1	3.6	27.3	12.5
Incr Delay (d2), s/veh	0.1	14.4	5.2	0.1	2.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	7.6	6.0	0.6	3.0	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	15.4	34.5	29.3	3.7	29.3	12.7
LnGrp LOS	B	C	C	A	C	B
Approach Vol, veh/h	879			1039	528	
Approach Delay, s/veh	25.5			13.7	24.6	
Approach LOS	C			B	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		52.9			22.7	30.2	15.7
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		66.5			32.5	29.5	19.5
Max Q Clear Time (g_c+I1), s		6.4			17.1	23.6	9.8
Green Ext Time (p_c), s		4.1			1.0	2.1	1.4

Intersection Summary		
HCM 6th Ctrl Delay		20.3
HCM 6th LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	44	1	193	106	227	5	240	82	208	1044	0
Future Volume (veh/h)	34	44	1	193	106	227	5	240	82	208	1044	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1900	1885	1767	1796	1307	1722	1796	1841	1870	1900
Adj Flow Rate, veh/h	35	46	1	156	174	236	5	250	0	217	1088	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	7	0	1	9	7	40	12	7	4	2	0
Cap, veh/h	119	115	3	317	312	499	7	914		265	1511	
Arrive On Green	0.07	0.07	0.07	0.18	0.18	0.18	0.01	0.28	0.00	0.15	0.43	0.00
Sat Flow, veh/h	1810	1751	38	1795	1767	1522	1245	3272	1522	1753	3647	0
Grp Volume(v), veh/h	35	0	47	156	174	236	5	250	0	217	1088	0
Grp Sat Flow(s),veh/h/ln	1810	0	1789	1795	1767	1522	1245	1636	1522	1753	1777	0
Q Serve(g_s), s	1.4	0.0	1.9	5.8	6.7	9.2	0.3	4.4	0.0	8.9	18.9	0.0
Cycle Q Clear(g_c), s	1.4	0.0	1.9	5.8	6.7	9.2	0.3	4.4	0.0	8.9	18.9	0.0
Prop In Lane	1.00		0.02	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	119	0	118	317	312	499	7	914		265	1511	
V/C Ratio(X)	0.29	0.00	0.40	0.49	0.56	0.47	0.76	0.27		0.82	0.72	
Avail Cap(c_a), veh/h	820	0	811	814	801	920	417	2326		588	2526	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	33.2	0.0	33.4	27.7	28.0	19.9	37.0	21.0	0.0	30.7	17.8	0.0
Incr Delay (d2), s/veh	1.4	0.0	2.2	1.2	1.6	0.7	98.4	0.2	0.0	6.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	2.3	2.7	2.9	0.3	1.5	0.0	3.8	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.5	0.0	35.6	28.9	29.6	20.6	135.5	21.2	0.0	36.8	18.6	0.0
LnGrp LOS	C	A	D	C	C	C	F	C		D	B	
Approach Vol, veh/h		82			566			255	A		1305	A
Approach Delay, s/veh		35.2			25.7			23.4			21.7	
Approach LOS		D			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.3	27.8		11.1	5.4	38.7		19.4
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	25.0	53.0		33.8	25.0	53.0		33.8
Max Q Clear Time (g_c+I1), s	10.9	6.4		3.9	2.3	20.9		11.2
Green Ext Time (p_c), s	0.5	2.0		0.3	0.0	10.8		2.0

Intersection Summary	
HCM 6th Ctrl Delay	23.4
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	770	10	2	414	140	4	4	0	456	53	1
Future Volume (veh/h)	0	770	10	2	414	140	4	4	0	456	53	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1663	1900	1900	1900	1856	1767	1900
Adj Flow Rate, veh/h	0	811	11	2	436	147	4	4	0	480	56	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	5	16	0	0	0	3	9	0
Cap, veh/h	2	914	12	5	573	854	10	438	0	516	895	16
Arrive On Green	0.00	0.26	0.26	0.00	0.31	0.31	0.01	0.23	0.00	0.29	0.52	0.52
Sat Flow, veh/h	1810	3561	48	1810	1826	1409	1810	1900	0	1767	1730	31
Grp Volume(v), veh/h	0	401	421	2	436	147	4	4	0	480	0	57
Grp Sat Flow(s),veh/h/ln	1810	1763	1847	1810	1826	1409	1810	1900	0	1767	0	1761
Q Serve(g_s), s	0.0	18.1	18.1	0.1	17.8	3.8	0.2	0.1	0.0	21.8	0.0	1.3
Cycle Q Clear(g_c), s	0.0	18.1	18.1	0.1	17.8	3.8	0.2	0.1	0.0	21.8	0.0	1.3
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	452	474	5	573	854	10	438	0	516	0	911
V/C Ratio(X)	0.00	0.89	0.89	0.41	0.76	0.17	0.42	0.01	0.00	0.93	0.00	0.06
Avail Cap(c_a), veh/h	110	481	504	110	573	854	110	438	0	546	0	911
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	29.5	29.5	41.1	25.5	7.1	40.9	24.5	0.0	28.4	0.0	9.9
Incr Delay (d2), s/veh	0.0	17.3	16.7	46.3	5.9	0.1	26.3	0.0	0.0	22.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.9	9.3	0.1	7.6	0.8	0.1	0.1	0.0	11.5	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	46.9	46.2	87.4	31.4	7.2	67.1	24.5	0.0	50.4	0.0	10.1
LnGrp LOS	A	D	D	F	C	A	E	C	A	D	A	B
Approach Vol, veh/h		822			585			8			537	
Approach Delay, s/veh		46.5			25.5			45.8			46.1	
Approach LOS		D			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.6	23.5	4.7	25.7	4.9	47.2	0.0	30.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	19.0	5.0	22.5	5.0	39.5	5.0	22.5
Max Q Clear Time (g_c+I1), s	23.8	2.1	2.1	20.1	2.2	3.3	0.0	19.8
Green Ext Time (p_c), s	0.3	0.0	0.0	1.1	0.0	0.2	0.0	0.8

Intersection Summary	
HCM 6th Ctrl Delay	40.1
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	35	20	2	201	303	17	397	5	265	760	38
Future Volume (veh/h)	11	35	20	2	201	303	17	397	5	265	760	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	12	37	21	2	214	0	18	422	0	282	809	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	27	384	201	5	295		39	1255		398	1586	
Arrive On Green	0.02	0.17	0.17	0.00	0.16	0.00	0.02	0.36	0.00	0.12	0.45	0.00
Sat Flow, veh/h	1767	2238	1170	1767	1856	1572	1767	3618	0	3428	3618	0
Grp Volume(v), veh/h	12	28	30	2	214	0	18	422	0	282	809	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1645	1767	1856	1572	1767	1763	0	1714	1763	0
Q Serve(g_s), s	0.3	0.7	0.8	0.1	5.6	0.0	0.5	4.5	0.0	4.0	8.3	0.0
Cycle Q Clear(g_c), s	0.3	0.7	0.8	0.1	5.6	0.0	0.5	4.5	0.0	4.0	8.3	0.0
Prop In Lane	1.00		0.71	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	27	302	282	5	295		39	1255		398	1586	
V/C Ratio(X)	0.44	0.09	0.10	0.41	0.73		0.46	0.34		0.71	0.51	
Avail Cap(c_a), veh/h	174	624	582	174	657		174	1255		398	1586	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.8	17.7	17.8	25.3	20.3	0.0	24.6	12.0	0.0	21.7	10.0	0.0
Incr Delay (d2), s/veh	10.9	0.1	0.2	47.9	3.4	0.0	8.3	0.7	0.0	5.7	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.2	0.3	0.1	2.2	0.0	0.3	1.3	0.0	1.6	2.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.8	17.9	17.9	73.2	23.7	0.0	32.8	12.7	0.0	27.4	11.2	0.0
LnGrp LOS	D	B	B	E	C		C	B		C	B	
Approach Vol, veh/h		70			216	A		440	A		1091	A
Approach Delay, s/veh		21.0			24.2			13.5			15.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.4	22.6	4.6	13.2	5.6	27.4	5.3	12.6
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.9	18.1	5.0	18.0	5.0	19.0	5.0	18.0
Max Q Clear Time (g_c+I1), s	10.3	6.5	2.1	2.8	2.5	10.3	2.3	7.6
Green Ext Time (p_c), s	0.0	1.8	0.0	0.1	0.0	3.1	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	16.2
HCM 6th LOS	B

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	283	2	70	441	52	0	113	20	41	443	71
Future Volume (veh/h)	8	283	2	70	441	52	0	113	20	41	443	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	298	2	74	464	55	0	119	21	43	466	75
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	506	429	101	520	62	3	535	94	74	854	723
Arrive On Green	0.01	0.27	0.27	0.06	0.32	0.32	0.00	0.35	0.35	0.04	0.46	0.46
Sat Flow, veh/h	1767	1856	1572	1767	1628	193	1767	1536	271	1767	1856	1572
Grp Volume(v), veh/h	8	298	2	74	0	519	0	0	140	43	466	75
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1821	1767	0	1807	1767	1856	1572
Q Serve(g_s), s	0.3	8.9	0.1	2.6	0.0	17.4	0.0	0.0	3.5	1.5	11.6	1.7
Cycle Q Clear(g_c), s	0.3	8.9	0.1	2.6	0.0	17.4	0.0	0.0	3.5	1.5	11.6	1.7
Prop In Lane	1.00		1.00	1.00		0.11	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	18	506	429	101	0	582	3	0	629	74	854	723
V/C Ratio(X)	0.44	0.59	0.00	0.73	0.00	0.89	0.00	0.00	0.22	0.58	0.55	0.10
Avail Cap(c_a), veh/h	137	571	484	239	0	665	137	0	629	168	854	723
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.6	20.2	17.0	29.8	0.0	20.8	0.0	0.0	14.8	30.3	12.5	9.8
Incr Delay (d2), s/veh	15.6	1.3	0.0	9.9	0.0	13.1	0.0	0.0	0.8	7.1	2.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.4	0.0	1.3	0.0	8.2	0.0	0.0	1.4	0.8	4.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.2	21.5	17.0	39.7	0.0	34.0	0.0	0.0	15.6	37.4	15.0	10.1
LnGrp LOS	D	C	B	D	A	C	A	A	B	D	B	B
Approach Vol, veh/h		308			593			140			584	
Approach Delay, s/veh		22.1			34.7			15.6			16.0	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	26.9	8.2	22.0	0.0	34.1	5.2	25.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	22.4	8.7	19.8	5.0	23.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.5	5.5	4.6	10.9	0.0	13.6	2.3	19.4
Green Ext Time (p_c), s	0.0	0.5	0.0	1.0	0.0	2.1	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	24.0
HCM 6th LOS	C



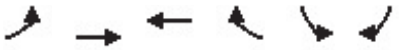
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	13	285	7	55	14	351	531	8	5	481	14
Future Volume (veh/h)	7	13	285	7	55	14	351	531	8	5	481	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	8	14	0	8	60	15	382	577	9	5	523	15
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	31		123	100	25	509	1864	29	12	1340	38
Arrive On Green	0.03	0.03	0.00	0.07	0.07	0.07	0.15	0.52	0.52	0.01	0.38	0.38
Sat Flow, veh/h	663	1160	1572	1767	1433	358	3428	3553	55	1767	3500	100
Grp Volume(v), veh/h	22	0	0	8	0	75	382	286	300	5	263	275
Grp Sat Flow(s),veh/h/ln	1822	0	1572	1767	0	1791	1714	1763	1846	1767	1763	1837
Q Serve(g_s), s	0.6	0.0	0.0	0.2	0.0	2.0	5.2	4.4	4.5	0.1	5.2	5.2
Cycle Q Clear(g_c), s	0.6	0.0	0.0	0.2	0.0	2.0	5.2	4.4	4.5	0.1	5.2	5.2
Prop In Lane	0.36		1.00	1.00		0.20	1.00		0.03	1.00		0.05
Lane Grp Cap(c), veh/h	48	0		123	0	125	509	925	968	12	675	704
V/C Ratio(X)	0.46	0.00		0.07	0.00	0.60	0.75	0.31	0.31	0.42	0.39	0.39
Avail Cap(c_a), veh/h	679	0		658	0	667	532	925	968	183	675	704
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.2	0.0	0.0	21.0	0.0	21.8	19.7	6.5	6.5	23.9	10.8	10.8
Incr Delay (d2), s/veh	6.6	0.0	0.0	0.2	0.0	4.6	5.7	0.9	0.8	22.0	1.7	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.1	0.0	0.8	2.0	1.0	1.1	0.1	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.8	0.0	0.0	21.2	0.0	26.4	25.4	7.4	7.3	45.9	12.5	12.4
LnGrp LOS	C	A		C	A	C	C	A	A	D	B	B
Approach Vol, veh/h		22	A		83			968			543	
Approach Delay, s/veh		29.8			25.9			14.5			12.8	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	4.8	29.8		5.8	11.7	23.0		7.9
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.3	21.0		18.0	7.5	18.5		18.0
Max Q Clear Time (g_c+I1), s	2.1	6.5		2.6	7.2	7.2		4.0
Green Ext Time (p_c), s	0.0	2.5		0.0	0.1	2.1		0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	410	274	267	22	32	606
Future Volume (veh/h)	410	274	267	22	32	606
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1841	1752	1618	1767	1811	1885
Adj Flow Rate, veh/h	456	304	297	24	36	673
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	10	19	9	6	1
Cap, veh/h	505	1009	352	326	487	912
Arrive On Green	0.29	0.58	0.22	0.22	0.28	0.28
Sat Flow, veh/h	1753	1752	1618	1497	1725	1598
Grp Volume(v), veh/h	456	304	297	24	36	673
Grp Sat Flow(s),veh/h/ln	1753	1752	1618	1497	1725	1598
Q Serve(g_s), s	15.9	5.7	11.2	0.8	1.0	18.0
Cycle Q Clear(g_c), s	15.9	5.7	11.2	0.8	1.0	18.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	505	1009	352	326	487	912
V/C Ratio(X)	0.90	0.30	0.84	0.07	0.07	0.74
Avail Cap(c_a), veh/h	564	1183	457	423	487	912
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	6.9	23.9	19.8	16.7	10.1
Incr Delay (d2), s/veh	16.8	0.2	10.8	0.1	0.3	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.6	1.3	4.6	0.2	0.4	18.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.6	7.1	34.7	19.9	17.0	15.5
LnGrp LOS	D	A	C	B	B	B
Approach Vol, veh/h		760	321		709	
Approach Delay, s/veh		26.0	33.6		15.6	
Approach LOS		C	C		B	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		41.2		22.5	22.8	18.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		43.0		18.0	20.5	18.0
Max Q Clear Time (g_c+I1), s		7.7		20.0	17.9	13.2
Green Ext Time (p_c), s		1.6		0.0	0.4	0.6

Intersection Summary	
HCM 6th Ctrl Delay	23.2
HCM 6th LOS	C



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	481	276	191	533	202	189
Future Volume (veh/h)	481	276	191	533	202	189
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	534	307	212	592	224	210
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	734	421	395	1058	352	314
Arrive On Green	0.34	0.34	0.12	0.57	0.20	0.20
Sat Flow, veh/h	2250	1238	3428	1856	1767	1572
Grp Volume(v), veh/h	436	405	212	592	224	210
Grp Sat Flow(s),veh/h/ln	1763	1633	1714	1856	1767	1572
Q Serve(g_s), s	8.5	8.5	2.3	7.9	4.5	4.8
Cycle Q Clear(g_c), s	8.5	8.5	2.3	7.9	4.5	4.8
Prop In Lane		0.76	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	600	555	395	1058	352	314
V/C Ratio(X)	0.73	0.73	0.54	0.56	0.64	0.67
Avail Cap(c_a), veh/h	812	752	482	1329	814	724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.3	11.3	16.3	5.3	14.3	14.5
Incr Delay (d2), s/veh	2.2	2.4	1.1	0.5	1.9	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.1	0.7	0.7	1.5	4.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.5	13.7	17.5	5.8	16.2	16.9
LnGrp LOS	B	B	B	A	B	B
Approach Vol, veh/h	841			804	434	
Approach Delay, s/veh	13.6			8.8	16.6	
Approach LOS	B			A	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		26.8		12.3	9.0	17.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		9.9		6.8	4.3	10.5
Green Ext Time (p_c), s		3.1		1.0	0.1	2.8

Intersection Summary		
HCM 6th Ctrl Delay		12.4
HCM 6th LOS		B



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	491	247	248	400	174
Future Volume (veh/h)	155	491	247	248	400	174
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	167	528	266	267	430	187
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	454	404	523	443	474	1140
Arrive On Green	0.26	0.26	0.28	0.28	0.27	0.61
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	167	528	266	267	430	187
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	5.4	18.0	8.4	10.3	16.5	3.0
Cycle Q Clear(g_c), s	5.4	18.0	8.4	10.3	16.5	3.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	454	404	523	443	474	1140
V/C Ratio(X)	0.37	1.31	0.51	0.60	0.91	0.16
Avail Cap(c_a), veh/h	454	404	523	443	518	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	26.0	21.1	21.7	24.8	5.8
Incr Delay (d2), s/veh	0.5	154.5	3.5	6.0	18.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	23.4	3.6	3.9	8.3	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	180.5	24.6	27.7	43.6	6.1
LnGrp LOS	C	F	C	C	D	A
Approach Vol, veh/h	695		533			617
Approach Delay, s/veh	142.4		26.1			32.2
Approach LOS	F		C			C

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	23.3	24.2				47.5	22.5
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	20.5	18.0				43.0	18.0
Max Q Clear Time (g_c+I1), s	18.5	12.3				5.0	20.0
Green Ext Time (p_c), s	0.3	1.1				0.9	0.0

Intersection Summary	
HCM 6th Ctrl Delay	72.0
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	523	49	251	3	222	0	0	596	342
Future Volume (veh/h)	0	0	0	523	49	251	3	222	0	0	596	342
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1648	1870	1737	1411	1589	0	0	1737	1900
Adj Flow Rate, veh/h				594	56	285	3	252	0	0	677	0
Peak Hour Factor				0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %				17	2	11	33	21	0	0	11	0
Cap, veh/h				733	69	1162	298	1120	0	0	1760	
Arrive On Green				0.45	0.45	0.45	0.37	0.37	0.00	0.00	0.37	0.00
Sat Flow, veh/h				1635	154	2591	575	3098	0	0	4898	1610
Grp Volume(v), veh/h				650	0	285	3	252	0	0	677	0
Grp Sat Flow(s),veh/h/ln				1789	0	1295	575	1509	0	0	1581	1610
Q Serve(g_s), s				15.7	0.0	3.4	0.2	2.9	0.0	0.0	5.2	0.0
Cycle Q Clear(g_c), s				15.7	0.0	3.4	5.4	2.9	0.0	0.0	5.2	0.0
Prop In Lane				0.91		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				802	0	1162	298	1120	0	0	1760	
V/C Ratio(X)				0.81	0.00	0.25	0.01	0.22	0.00	0.00	0.38	
Avail Cap(c_a), veh/h				1166	0	1689	298	1120	0	0	1760	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				11.9	0.0	8.5	13.5	10.8	0.0	0.0	11.5	0.0
Incr Delay (d2), s/veh				2.8	0.0	0.1	0.1	0.5	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.8	0.0	0.7	0.0	0.8	0.0	0.0	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.8	0.0	8.6	13.5	11.2	0.0	0.0	12.1	0.0
LnGrp LOS				B	A	A	B	B	A	A	B	
Approach Vol, veh/h					935			255			677	A
Approach Delay, s/veh					12.9			11.2			12.1	
Approach LOS					B			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	23.0		23.0		26.9			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	18.5		18.5		32.5			
Max Q Clear Time (g_c+I1), s	7.4		7.2		17.7			
Green Ext Time (p_c), s	1.0		3.2		4.7			

Intersection Summary		
HCM 6th Ctrl Delay	12.4	
HCM 6th LOS	B	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	2	26	0	0	0	0	108	141	0	884	235
Future Volume (veh/h)	117	2	26	0	0	0	0	108	141	0	884	235
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1159	1455				0	1352	1159	0	1693	1870
Adj Flow Rate, veh/h	124	0	27				0	114	148	0	931	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	50	30				0	37	50	0	14	2
Cap, veh/h	324	0	115				0	1824	697	0	2284	
Arrive On Green	0.09	0.00	0.09				0.00	0.71	0.71	0.00	0.71	0.00
Sat Flow, veh/h	3478	0	1233				0	2636	982	0	3300	1585
Grp Volume(v), veh/h	124	0	27				0	114	148	0	931	0
Grp Sat Flow(s),veh/h/ln	1739	0	1233				0	1284	982	0	1608	1585
Q Serve(g_s), s	1.5	0.0	0.9				0.0	0.6	2.4	0.0	5.4	0.0
Cycle Q Clear(g_c), s	1.5	0.0	0.9				0.0	0.6	2.4	0.0	5.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	324	0	115				0	1824	697	0	2284	
V/C Ratio(X)	0.38	0.00	0.23				0.00	0.06	0.21	0.00	0.41	
Avail Cap(c_a), veh/h	1406	0	499				0	1824	697	0	2284	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.5	0.0	19.2				0.0	2.0	2.3	0.0	2.7	0.0
Incr Delay (d2), s/veh	0.7	0.0	1.0				0.0	0.1	0.7	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.3				0.0	0.0	0.2	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.3	0.0	20.3				0.0	2.1	3.0	0.0	3.2	0.0
LnGrp LOS	C	A	C				A	A	A	A	A	
Approach Vol, veh/h		151						262			931	A
Approach Delay, s/veh		20.3						2.6			3.2	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.0	8.8	37.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	18.5	32.5
Max Q Clear Time (g_c+I1), s	4.4	3.5	7.4
Green Ext Time (p_c), s	1.2	0.4	6.6

Intersection Summary	
HCM 6th Ctrl Delay	5.0
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	67	170	109	812	570	39
Future Vol, veh/h	67	170	109	812	570	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	9	0
Mvmt Flow	70	177	114	846	594	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1689	615	635	0	-	0
Stage 1	615	-	-	-	-	-
Stage 2	1074	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	104	495	958	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	81	495	958	-	-	-
Mov Cap-2 Maneuver	81	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	331	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	183.7	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	958	-	202	-	-
HCM Lane V/C Ratio	0.119	-	1.222	-	-
HCM Control Delay (s)	9.3	0	183.7	-	-
HCM Lane LOS	A	A	F	-	-
HCM 95th %tile Q(veh)	0.4	-	12.8	-	-

Intersection	
Int Delay, s/veh	230

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	271	0	0	913	636	178
Future Vol, veh/h	271	0	0	913	636	178
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	14	0	0	4	9	43
Mvmt Flow	315	0	0	1062	740	207

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1906	844	947	0	-	0
Stage 1	844	-	-	-	-	-
Stage 2	1062	-	-	-	-	-
Critical Hdwy	6.54	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 70	366	733	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	~ 315	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 70	366	733	-	-	-
Mov Cap-2 Maneuver	~ 70	-	-	-	-	-
Stage 1	402	-	-	-	-	-
Stage 2	~ 315	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $	1695.7	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	733	-	70	-	-
HCM Lane V/C Ratio	-	-	4.502	-	-
HCM Control Delay (s)	0	-	$ 1695.7	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	34.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	24	428	16	11	31	456	695	8	30	294	4
Future Volume (veh/h)	14	24	428	16	11	31	456	695	8	30	294	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	14	25	441	16	11	32	470	716	8	31	303	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	192	343	458	22	15	44	372	733	8	42	376	5
Arrive On Green	0.31	0.31	0.31	0.05	0.05	0.05	0.21	0.41	0.41	0.02	0.22	0.22
Sat Flow, veh/h	628	1122	1497	464	319	927	1767	1802	20	1767	1710	23
Grp Volume(v), veh/h	39	0	441	59	0	0	470	0	724	31	0	307
Grp Sat Flow(s),veh/h/ln	1750	0	1497	1710	0	0	1767	0	1822	1767	0	1733
Q Serve(g_s), s	1.5	0.0	27.4	3.2	0.0	0.0	19.9	0.0	36.9	1.6	0.0	15.9
Cycle Q Clear(g_c), s	1.5	0.0	27.4	3.2	0.0	0.0	19.9	0.0	36.9	1.6	0.0	15.9
Prop In Lane	0.36		1.00	0.27		0.54	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	535	0	458	81	0	0	372	0	741	42	0	381
V/C Ratio(X)	0.07	0.00	0.96	0.73	0.00	0.00	1.26	0.00	0.98	0.74	0.00	0.81
Avail Cap(c_a), veh/h	535	0	458	559	0	0	372	0	741	129	0	640
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.3	0.0	32.2	44.4	0.0	0.0	37.3	0.0	27.6	45.8	0.0	34.9
Incr Delay (d2), s/veh	0.1	0.0	32.5	22.8	0.0	0.0	138.0	0.0	27.4	22.7	0.0	8.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	13.8	1.9	0.0	0.0	22.6	0.0	20.6	1.0	0.0	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.3	0.0	64.8	67.2	0.0	0.0	175.2	0.0	54.9	68.5	0.0	43.2
LnGrp LOS	C	A	E	E	A	A	F	A	D	E	A	D
Approach Vol, veh/h		480			59			1194			338	
Approach Delay, s/veh		61.4			67.2			102.3			45.6	
Approach LOS		E			E			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	43.5		34.0	25.0	25.9		9.6				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.9	34.9		28.9	19.9	34.9		30.9				
Max Q Clear Time (g_c+I1), s	3.6	38.9		29.4	21.9	17.9		5.2				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	2.9		0.5				

Intersection Summary			
HCM 6th Ctrl Delay		82.6	
HCM 6th LOS		F	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	230	466	0	4	450	9	0	3	0	4	4	61
Future Vol, veh/h	230	466	0	4	450	9	0	3	0	4	4	61
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	9	0	25	7	44	0	0	0	50	0	20
Mvmt Flow	253	512	0	4	495	10	0	3	0	4	4	67

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	0	512	0	0	1562	1531	512	1528	1526	500
Stage 1	-	-	-	-	-	-	1018	1018	-	508	508	-
Stage 2	-	-	-	-	-	-	544	513	-	1020	1018	-
Critical Hdwy	4.12	-	-	4.35	-	-	7.1	6.5	6.2	7.6	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.218	-	-	2.425	-	-	3.5	4	3.3	3.95	4	3.48
Pot Cap-1 Maneuver	1060	-	-	945	-	-	92	118	566	75	119	536
Stage 1	-	-	-	-	-	-	289	317	-	468	542	-
Stage 2	-	-	-	-	-	-	527	539	-	233	317	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1060	-	-	945	-	-	57	78	566	54	79	536
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	78	-	54	79	-
Stage 1	-	-	-	-	-	-	192	211	-	312	539	-
Stage 2	-	-	-	-	-	-	455	536	-	153	211	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.1	0.1	53.2	21.8
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	78	1060	-	-	945	-	-	289
HCM Lane V/C Ratio	0.042	0.238	-	-	0.005	-	-	0.262
HCM Control Delay (s)	53.2	9.5	0	-	8.8	0	-	21.8
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	0.9	-	-	0	-	-	1

Intersection	
Int Delay, s/veh	32.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	251	14	2	739	332	0
Future Vol, veh/h	251	14	2	739	332	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	264	15	2	778	349	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1131	349	349	0	-	0
Stage 1	349	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 227	699	1221	-	-	0
Stage 1	719	-	-	-	-	0
Stage 2	454	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 226	699	1221	-	-	-
Mov Cap-2 Maneuver	~ 226	-	-	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	454	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	164.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1221	-	234	-
HCM Lane V/C Ratio	0.002	-	1.192	-
HCM Control Delay (s)	8	0	164.2	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	13.4	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	664	277	143	476	598	295
Future Volume (veh/h)	664	277	143	476	598	295
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1693	1767	1841	1826	1885
Adj Flow Rate, veh/h	714	298	154	512	643	317
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	14	9	4	5	1
Cap, veh/h	1149	471	199	1879	948	638
Arrive On Green	0.33	0.33	0.12	0.54	0.28	0.28
Sat Flow, veh/h	3589	1434	1682	3589	3374	1598
Grp Volume(v), veh/h	714	298	154	512	643	317
Grp Sat Flow(s),veh/h/ln	1749	1434	1682	1749	1687	1598
Q Serve(g_s), s	8.5	8.7	4.4	3.9	8.4	7.4
Cycle Q Clear(g_c), s	8.5	8.7	4.4	3.9	8.4	7.4
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1149	471	199	1879	948	638
V/C Ratio(X)	0.62	0.63	0.77	0.27	0.68	0.50
Avail Cap(c_a), veh/h	2576	1057	560	4059	1940	1108
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	14.1	21.2	6.2	15.8	11.2
Incr Delay (d2), s/veh	0.6	1.4	6.3	0.1	0.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.1	1.7	0.7	2.9	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	14.6	15.5	27.6	6.3	16.7	11.8
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	1012			666	960	
Approach Delay, s/veh	14.9			11.2	15.1	
Approach LOS	B			B	B	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		31.1			10.4	20.8	18.4
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		57.5			16.5	36.5	28.5
Max Q Clear Time (g_c+I1), s		5.9			6.4	10.7	10.4
Green Ext Time (p_c), s		3.2			0.2	5.5	3.5

Intersection Summary		
HCM 6th Ctrl Delay		14.0
HCM 6th LOS		B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	167	8	87	63	353	13	1198	229	287	339	9
Future Volume (veh/h)	0	167	8	87	63	353	13	1198	229	287	339	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	174	8	78	83	368	14	1248	0	299	353	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	209	202	9	348	381	587	20	1243		280	1717	
Arrive On Green	0.00	0.12	0.12	0.21	0.21	0.21	0.01	0.35	0.00	0.17	0.50	0.00
Sat Flow, veh/h	1810	1746	80	1668	1826	1572	1697	3554	1560	1697	3503	0
Grp Volume(v), veh/h	0	0	182	78	83	368	14	1248	0	299	353	0
Grp Sat Flow(s),veh/h/ln	1810	0	1826	1668	1826	1572	1697	1777	1560	1697	1706	0
Q Serve(g_s), s	0.0	0.0	14.8	5.9	5.7	29.0	1.2	53.0	0.0	25.0	8.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	14.8	5.9	5.7	29.0	1.2	53.0	0.0	25.0	8.7	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	209	0	211	348	381	587	20	1243		280	1717	
V/C Ratio(X)	0.00	0.00	0.86	0.22	0.22	0.63	0.70	1.00		1.07	0.21	
Avail Cap(c_a), veh/h	404	0	407	372	407	610	280	1243		280	1717	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	65.8	49.8	49.7	38.8	74.6	49.2	0.0	63.2	20.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	9.9	0.3	0.3	1.9	36.2	26.5	0.0	72.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	7.3	2.4	2.6	11.1	0.7	26.9	0.0	16.1	3.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	75.7	50.1	50.0	40.7	110.8	75.7	0.0	136.2	20.9	0.0
LnGrp LOS	A	A	E	D	D	D	F	F		F	C	
Approach Vol, veh/h		182			529			1262	A		652	A
Approach Delay, s/veh		75.7			43.6			76.1			73.8	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	30.0	60.0		23.7	6.8	83.2		37.8
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	25.0	53.0		33.8	25.0	53.0		33.8
Max Q Clear Time (g_c+I1), s	27.0	55.0		16.8	3.2	10.7		31.0
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	2.9		0.6

Intersection Summary	
HCM 6th Ctrl Delay	68.9
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	430	0	1	944	650	5	14	3	189	6	0
Future Volume (veh/h)	1	430	0	1	944	650	5	14	3	189	6	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	1	439	0	1	963	663	5	14	3	193	6	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	2	1590	0	2	857	890	12	327	70	184	619	0
Arrive On Green	0.00	0.45	0.00	0.00	0.45	0.45	0.01	0.23	0.23	0.10	0.33	0.00
Sat Flow, veh/h	1810	3589	0	1810	1885	1598	1810	1422	305	1795	1900	0
Grp Volume(v), veh/h	1	439	0	1	963	663	5	0	17	193	6	0
Grp Sat Flow(s),veh/h/ln	1810	1749	0	1810	1885	1598	1810	0	1727	1795	1900	0
Q Serve(g_s), s	0.0	6.7	0.0	0.0	38.7	26.8	0.2	0.0	0.7	8.7	0.2	0.0
Cycle Q Clear(g_c), s	0.0	6.7	0.0	0.0	38.7	26.8	0.2	0.0	0.7	8.7	0.2	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.18	1.00		0.00
Lane Grp Cap(c), veh/h	2	1590	0	2	857	890	12	0	398	184	619	0
V/C Ratio(X)	0.40	0.28	0.00	0.40	1.12	0.75	0.42	0.00	0.04	1.05	0.01	0.00
Avail Cap(c_a), veh/h	106	1590	0	106	857	890	106	0	398	184	619	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.5	14.5	0.0	42.5	23.2	14.3	42.1	0.0	25.5	38.2	19.4	0.0
Incr Delay (d2), s/veh	81.1	0.1	0.0	81.1	70.6	3.4	22.1	0.0	0.2	80.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.3	0.0	0.1	30.8	8.2	0.2	0.0	0.3	7.7	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	123.5	14.6	0.0	123.5	93.8	17.7	64.2	0.0	25.7	119.0	19.4	0.0
LnGrp LOS	F	B	A	F	F	B	E	A	C	F	B	A
Approach Vol, veh/h		440			1627			22			199	
Approach Delay, s/veh		14.8			62.8			34.4			116.0	
Approach LOS		B			E			C			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	24.1	4.6	43.2	5.1	32.2	4.6	43.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	8.7	19.6	5.0	38.7	5.0	23.3	5.0	38.7
Max Q Clear Time (g_c+I1), s	10.7	2.7	2.0	8.7	2.2	2.2	2.0	40.7
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	57.9
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	306	12	2	17	315	19	923	6	387	417	7
Future Volume (veh/h)	62	306	12	2	17	315	19	923	6	387	417	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	66	326	13	2	18	0	20	982	0	412	444	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	99	496	20	5	168		42	1395		527	1854	
Arrive On Green	0.06	0.14	0.14	0.00	0.09	0.00	0.02	0.40	0.00	0.15	0.53	0.00
Sat Flow, veh/h	1767	3456	137	1767	1856	1572	1767	3618	0	3428	3618	0
Grp Volume(v), veh/h	66	166	173	2	18	0	20	982	0	412	444	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1831	1767	1856	1572	1767	1763	0	1714	1763	0
Q Serve(g_s), s	2.2	5.3	5.3	0.1	0.5	0.0	0.7	13.8	0.0	6.8	4.0	0.0
Cycle Q Clear(g_c), s	2.2	5.3	5.3	0.1	0.5	0.0	0.7	13.8	0.0	6.8	4.0	0.0
Prop In Lane	1.00		0.08	1.00		1.00	1.00		0.00	1.00		0.00
Lane Grp Cap(c), veh/h	99	253	263	5	168		42	1395		527	1854	
V/C Ratio(X)	0.67	0.66	0.66	0.41	0.11		0.48	0.70		0.78	0.24	
Avail Cap(c_a), veh/h	152	539	560	149	565		149	1395		609	1854	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.4	23.9	24.0	29.4	24.7	0.0	28.5	15.0	0.0	24.1	7.6	0.0
Incr Delay (d2), s/veh	7.5	2.9	2.8	48.1	0.3	0.0	8.2	3.0	0.0	5.7	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	2.1	2.2	0.1	0.2	0.0	0.3	4.6	0.0	2.7	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	34.9	26.8	26.8	77.6	25.0	0.0	36.7	18.0	0.0	29.8	7.9	0.0
LnGrp LOS	C	C	C	E	C		D	B		C	A	
Approach Vol, veh/h		405			20	A		1002	A		856	A
Approach Delay, s/veh		28.1			30.3			18.3			18.4	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	27.9	4.7	13.0	5.9	35.6	7.8	9.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	23.4	5.0	18.1	5.0	28.9	5.1	18.0
Max Q Clear Time (g_c+I1), s	8.8	15.8	2.1	7.3	2.7	6.0	4.2	2.5
Green Ext Time (p_c), s	0.3	3.5	0.0	1.2	0.0	2.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	567	2	15	305	74	6	590	86	59	171	19
Future Volume (veh/h)	89	567	2	15	305	74	6	590	86	59	171	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	105	667	2	18	359	87	7	694	101	69	201	22
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	129	663	562	33	437	106	15	689	100	85	880	746
Arrive On Green	0.07	0.36	0.36	0.02	0.30	0.30	0.01	0.44	0.44	0.05	0.47	0.47
Sat Flow, veh/h	1767	1856	1572	1767	1443	350	1767	1584	230	1767	1856	1572
Grp Volume(v), veh/h	105	667	2	18	0	446	7	0	795	69	201	22
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1793	1767	0	1814	1767	1856	1572
Q Serve(g_s), s	7.5	45.5	0.1	1.3	0.0	29.4	0.5	0.0	55.4	4.9	8.1	0.9
Cycle Q Clear(g_c), s	7.5	45.5	0.1	1.3	0.0	29.4	0.5	0.0	55.4	4.9	8.1	0.9
Prop In Lane	1.00		1.00	1.00		0.20	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	129	663	562	33	0	543	15	0	789	85	880	746
V/C Ratio(X)	0.82	1.01	0.00	0.55	0.00	0.82	0.46	0.00	1.01	0.82	0.23	0.03
Avail Cap(c_a), veh/h	160	663	562	69	0	549	69	0	789	85	880	746
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.2	40.9	26.3	62.0	0.0	41.2	62.8	0.0	36.0	60.1	19.7	17.8
Incr Delay (d2), s/veh	22.7	36.5	0.0	13.7	0.0	9.6	20.1	0.0	33.9	43.7	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	26.3	0.0	0.7	0.0	13.8	0.3	0.0	30.4	3.2	3.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	80.9	77.4	26.3	75.6	0.0	50.8	82.9	0.0	69.9	103.7	20.3	17.9
LnGrp LOS	F	F	C	E	A	D	F	A	F	F	C	B
Approach Vol, veh/h		774			464			802			292	
Approach Delay, s/veh		77.7			51.7			70.0			39.9	
Approach LOS		E			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	59.9	6.9	50.0	5.6	64.9	13.8	43.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.1	55.4	5.0	45.5	5.0	56.5	11.5	39.0
Max Q Clear Time (g_c+I1), s	6.9	57.4	3.3	47.5	2.5	10.1	9.5	31.4
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.2	0.0	1.5

Intersection Summary	
HCM 6th Ctrl Delay	65.2
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	71	424	5	26	6	395	662	16	22	512	4
Future Volume (veh/h)	20	71	424	5	26	6	395	662	16	22	512	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	22	77	0	5	28	7	429	720	17	24	557	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	107		75	61	15	516	1736	41	50	1331	10
Arrive On Green	0.07	0.07	0.00	0.04	0.04	0.04	0.15	0.49	0.49	0.03	0.37	0.37
Sat Flow, veh/h	408	1427	1572	1767	1433	358	3428	3520	83	1767	3588	26
Grp Volume(v), veh/h	99	0	0	5	0	35	429	360	377	24	274	287
Grp Sat Flow(s),veh/h/ln	1835	0	1572	1767	0	1791	1714	1763	1841	1767	1763	1851
Q Serve(g_s), s	2.6	0.0	0.0	0.1	0.0	1.0	6.1	6.5	6.5	0.7	5.8	5.8
Cycle Q Clear(g_c), s	2.6	0.0	0.0	0.1	0.0	1.0	6.1	6.5	6.5	0.7	5.8	5.8
Prop In Lane	0.22		1.00	1.00		0.20	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	137	0		75	0	76	516	869	908	50	654	687
V/C Ratio(X)	0.72	0.00		0.07	0.00	0.46	0.83	0.41	0.41	0.48	0.42	0.42
Avail Cap(c_a), veh/h	663	0		638	0	647	516	869	908	181	654	687
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	0.0	0.0	22.9	0.0	23.3	20.6	8.1	8.1	23.9	11.7	11.7
Incr Delay (d2), s/veh	6.9	0.0	0.0	0.4	0.0	4.2	11.1	1.5	1.4	6.9	2.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.1	0.0	0.4	2.7	1.7	1.8	0.3	1.9	2.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.5	0.0	0.0	23.3	0.0	27.5	31.7	9.5	9.5	30.8	13.6	13.5
LnGrp LOS	C	A		C	A	C	C	A	A	C	B	B
Approach Vol, veh/h		99	A		40			1166			585	
Approach Delay, s/veh		29.5			27.0			17.6			14.3	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.9	29.1		8.2	12.0	23.0		6.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0
Max Q Clear Time (g_c+I1), s	2.7	8.5		4.6	8.1	7.8		3.0
Green Ext Time (p_c), s	0.0	3.1		0.3	0.0	2.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	592	368	366	59	29	390
Future Volume (veh/h)	592	368	366	59	29	390
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1767	1811	1900	1752	1885
Adj Flow Rate, veh/h	630	391	389	63	31	415
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	9	6	0	10	1
Cap, veh/h	671	1173	430	382	383	965
Arrive On Green	0.37	0.66	0.24	0.24	0.23	0.23
Sat Flow, veh/h	1795	1767	1811	1610	1668	1598
Grp Volume(v), veh/h	630	391	389	63	31	415
Grp Sat Flow(s),veh/h/ln	1795	1767	1811	1610	1668	1598
Q Serve(g_s), s	28.7	8.1	17.7	2.6	1.2	11.8
Cycle Q Clear(g_c), s	28.7	8.1	17.7	2.6	1.2	11.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	671	1173	430	382	383	965
V/C Ratio(X)	0.94	0.33	0.91	0.16	0.08	0.43
Avail Cap(c_a), veh/h	751	1280	459	408	383	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.6	6.1	31.4	25.7	25.6	9.0
Incr Delay (d2), s/veh	18.4	0.2	20.6	0.2	0.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.0	9.4	0.9	0.5	14.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	44.0	6.3	52.0	25.9	26.1	10.4
LnGrp LOS	D	A	D	C	C	B
Approach Vol, veh/h		1021	452		446	
Approach Delay, s/veh		29.6	48.4		11.5	
Approach LOS		C	D		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			60.9		24.0	36.2	24.6
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			61.5		19.5	35.5	21.5
Max Q Clear Time (g_c+I1), s			10.1		13.8	30.7	19.7
Green Ext Time (p_c), s			2.2		0.9	1.0	0.4

Intersection Summary		
HCM 6th Ctrl Delay		29.8
HCM 6th LOS		C



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	517	273	272	547	203	417
Future Volume (veh/h)	517	273	272	547	203	417
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	544	287	286	576	214	439
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	678	357	375	933	562	500
Arrive On Green	0.30	0.30	0.11	0.50	0.32	0.32
Sat Flow, veh/h	2324	1175	3428	1856	1767	1572
Grp Volume(v), veh/h	429	402	286	576	214	439
Grp Sat Flow(s),veh/h/ln	1763	1644	1714	1856	1767	1572
Q Serve(g_s), s	11.3	11.3	4.1	11.2	4.7	13.3
Cycle Q Clear(g_c), s	11.3	11.3	4.1	11.2	4.7	13.3
Prop In Lane		0.71	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	535	499	375	933	562	500
V/C Ratio(X)	0.80	0.80	0.76	0.62	0.38	0.88
Avail Cap(c_a), veh/h	632	589	375	1034	633	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.1	16.1	21.7	9.0	13.3	16.2
Incr Delay (d2), s/veh	6.3	6.9	8.9	0.9	0.4	13.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	4.0	1.8	2.7	1.5	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.4	23.0	30.6	9.9	13.7	29.8
LnGrp LOS	C	C	C	A	B	C
Approach Vol, veh/h	831			862	653	
Approach Delay, s/veh	22.7			16.8	24.5	
Approach LOS	C			B	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		29.8		20.5	10.0	19.8
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.5	18.0
Max Q Clear Time (g_c+I1), s		13.2		15.3	6.1	13.3
Green Ext Time (p_c), s		2.8		0.7	0.0	2.0

Intersection Summary		
HCM 6th Ctrl Delay		21.0
HCM 6th LOS		C



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	342	568	169	461	536	249
Future Volume (veh/h)	342	568	169	461	536	249
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	349	580	172	470	547	254
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	479	426	537	455	579	1214
Arrive On Green	0.27	0.27	0.29	0.29	0.33	0.65
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	349	580	172	470	547	254
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	21.5	32.5	8.7	34.7	36.2	6.6
Cycle Q Clear(g_c), s	21.5	32.5	8.7	34.7	36.2	6.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	479	426	537	455	579	1214
V/C Ratio(X)	0.73	1.36	0.32	1.03	0.95	0.21
Avail Cap(c_a), veh/h	479	426	537	455	670	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	43.8	33.4	42.6	39.3	8.3
Incr Delay (d2), s/veh	5.6	177.4	1.6	51.0	20.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	33.2	4.0	19.0	17.9	2.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	45.3	221.2	35.0	93.7	60.1	8.7
LnGrp LOS	D	F	C	F	E	A
Approach Vol, veh/h	929		642			801
Approach Delay, s/veh	155.1		77.9			43.8
Approach LOS	F		E			D

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	43.8	39.2				83.0	37.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	45.5	28.5				78.5	32.5
Max Q Clear Time (g_c+I1), s	38.2	36.7				8.6	34.5
Green Ext Time (p_c), s	1.1	0.0				1.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	96.6
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	258	1	358	12	407	0	0	462	152
Future Volume (veh/h)	0	0	0	258	1	358	12	407	0	0	462	152
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1589	1900	1900	1559	1870	0	0	1826	1885
Adj Flow Rate, veh/h				261	1	362	12	411	0	0	467	0
Peak Hour Factor				0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %				21	0	0	23	2	0	0	5	1
Cap, veh/h				433	2	680	557	1953	0	0	2740	
Arrive On Green				0.24	0.24	0.24	0.55	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h				1803	7	2834	772	3647	0	0	5149	1598
Grp Volume(v), veh/h				262	0	362	12	411	0	0	467	0
Grp Sat Flow(s),veh/h/ln				1810	0	1417	772	1777	0	0	1662	1598
Q Serve(g_s), s				5.5	0.0	4.8	0.3	2.5	0.0	0.0	2.0	0.0
Cycle Q Clear(g_c), s				5.5	0.0	4.8	2.3	2.5	0.0	0.0	2.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				434	0	680	557	1953	0	0	2740	
V/C Ratio(X)				0.60	0.00	0.53	0.02	0.21	0.00	0.00	0.17	
Avail Cap(c_a), veh/h				1164	0	1823	557	1953	0	0	2740	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.4	0.0	14.2	5.4	4.9	0.0	0.0	4.8	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.6	0.1	0.2	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.8	0.0	1.2	0.0	0.5	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				15.8	0.0	14.8	5.4	5.1	0.0	0.0	4.9	0.0
LnGrp LOS				B	A	B	A	A	A	A	A	
Approach Vol, veh/h					624			423			467	A
Approach Delay, s/veh					15.2			5.2			4.9	
Approach LOS					B			A			A	

Timer - Assigned Phs	2		6		8	
Phs Duration (G+Y+Rc), s	28.0		28.0		14.8	
Change Period (Y+Rc), s	4.5		4.5		4.5	
Max Green Setting (Gmax), s	23.5		23.5		27.5	
Max Q Clear Time (g_c+I1), s	4.5		4.0		7.5	
Green Ext Time (p_c), s	2.4		2.7		2.8	

Intersection Summary		
HCM 6th Ctrl Delay		9.2
HCM 6th LOS		A

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	0	19	0	0	0	0	189	576	0	358	362
Future Volume (veh/h)	230	0	19	0	0	0	0	189	576	0	358	362
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1826	1781	0	1678	1885
Adj Flow Rate, veh/h	237	0	20				0	195	594	0	369	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0				0	5	8	0	15	1
Cap, veh/h	418	0	186				0	2403	1046	0	2208	
Arrive On Green	0.12	0.00	0.12				0.00	0.69	0.69	0.00	0.69	0.00
Sat Flow, veh/h	3619	0	1610				0	3561	1510	0	3272	1598
Grp Volume(v), veh/h	237	0	20				0	195	594	0	369	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1735	1510	0	1594	1598
Q Serve(g_s), s	2.9	0.0	0.5				0.0	0.9	9.4	0.0	1.9	0.0
Cycle Q Clear(g_c), s	2.9	0.0	0.5				0.0	0.9	9.4	0.0	1.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	418	0	186				0	2403	1046	0	2208	
V/C Ratio(X)	0.57	0.00	0.11				0.00	0.08	0.57	0.00	0.17	
Avail Cap(c_a), veh/h	1427	0	635				0	2403	1046	0	2208	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.6	0.0	18.6				0.0	2.3	3.7	0.0	2.5	0.0
Incr Delay (d2), s/veh	1.2	0.0	0.3				0.0	0.1	2.2	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.2				0.0	0.1	1.1	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	18.8				0.0	2.4	5.9	0.0	2.7	0.0
LnGrp LOS	C	A	B				A	A	A	A	A	
Approach Vol, veh/h		257						789			369	A
Approach Delay, s/veh		20.7						5.0			2.7	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.0	9.9	37.0
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	18.5	32.5
Max Q Clear Time (g_c+I1), s	11.4	4.9	3.9
Green Ext Time (p_c), s	3.4	0.7	2.3

Intersection Summary	
HCM 6th Ctrl Delay	7.3
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	4	782	836	1
Future Vol, veh/h	0	8	4	782	836	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	15	12	0
Mvmt Flow	0	9	4	850	909	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1768	910	910	0	-	0
Stage 1	910	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.43	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.497	-	-	-
Pot Cap-1 Maneuver	93	336	635	-	-	-
Stage 1	396	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	92	336	635	-	-	-
Mov Cap-2 Maneuver	92	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	419	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	635	-	336	-	-
HCM Lane V/C Ratio	0.007	-	0.026	-	-
HCM Control Delay (s)	10.7	0	16	-	-
HCM Lane LOS	B	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	119

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	149	74	4	790	777	23
Future Vol, veh/h	149	74	4	790	777	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	70	20	40	16	13	29
Mvmt Flow	166	82	4	878	863	26

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1762	876	889	0	-	0
Stage 1	876	-	-	-	-	-
Stage 2	886	-	-	-	-	-
Critical Hdwy	7.1	6.4	4.5	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	4.13	3.48	2.56	-	-	-
Pot Cap-1 Maneuver	~ 63	323	624	-	-	-
Stage 1	313	-	-	-	-	-
Stage 2	309	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 62	323	624	-	-	-
Mov Cap-2 Maneuver	~ 62	-	-	-	-	-
Stage 1	309	-	-	-	-	-
Stage 2	309	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 969.4	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	624	-	85	-	-
HCM Lane V/C Ratio	0.007	-	2.915	-	-
HCM Control Delay (s)	10.8	0	$ 969.4	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0	-	24.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	39	329	8	15	36	384	486	6	28	543	8
Future Volume (veh/h)	37	39	329	8	15	36	384	486	6	28	543	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1707	1841	1707	1900	1900	1841	1500	1411	1781	1737	1900
Adj Flow Rate, veh/h	40	42	358	9	16	39	417	528	7	30	590	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	13	4	13	0	0	4	27	33	8	11	0
Cap, veh/h	83	87	158	11	20	49	447	883	12	40	624	10
Arrive On Green	0.10	0.10	0.10	0.05	0.05	0.05	0.26	0.60	0.60	0.02	0.37	0.37
Sat Flow, veh/h	813	854	1545	236	420	1023	1753	1477	20	1697	1706	26
Grp Volume(v), veh/h	82	0	358	64	0	0	417	0	535	30	0	599
Grp Sat Flow(s),veh/h/ln	1667	0	1545	1678	0	0	1753	0	1496	1697	0	1732
Q Serve(g_s), s	4.1	0.0	9.1	3.4	0.0	0.0	20.7	0.0	20.0	1.6	0.0	29.9
Cycle Q Clear(g_c), s	4.1	0.0	9.1	3.4	0.0	0.0	20.7	0.0	20.0	1.6	0.0	29.9
Prop In Lane	0.49		1.00	0.14		0.61	1.00		0.01	1.00		0.02
Lane Grp Cap(c), veh/h	170	0	158	81	0	0	447	0	894	40	0	634
V/C Ratio(X)	0.48	0.00	2.27	0.79	0.00	0.00	0.93	0.00	0.60	0.75	0.00	0.94
Avail Cap(c_a), veh/h	170	0	158	83	0	0	450	0	894	116	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	37.8	0.0	40.0	42.0	0.0	0.0	32.5	0.0	11.2	43.3	0.0	27.4
Incr Delay (d2), s/veh	2.1	0.0	591.9	43.9	0.0	0.0	26.3	0.0	1.7	24.3	0.0	23.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	29.3	2.4	0.0	0.0	11.7	0.0	6.1	0.9	0.0	15.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.9	0.0	631.9	85.9	0.0	0.0	58.7	0.0	12.9	67.5	0.0	50.6
LnGrp LOS	D	A	F	F	A	A	E	A	B	E	A	D
Approach Vol, veh/h		440			64			952			629	
Approach Delay, s/veh		521.6			85.9			33.0			51.4	
Approach LOS		F			F			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	58.4		14.2	27.9	37.7		9.4				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.1	50.0		9.1	22.9	33.2		4.4				
Max Q Clear Time (g_c+I1), s	3.6	22.0		11.1	22.7	31.9		5.4				
Green Ext Time (p_c), s	0.0	7.2		0.0	0.0	0.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		143.3	
HCM 6th LOS		F	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	84	413	1	0	423	4	3	5	1	11	3	263
Future Vol, veh/h	84	413	1	0	423	4	3	5	1	11	3	263
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	11	0	0	6	0	0	0	0	0	0	4
Mvmt Flow	114	558	1	0	572	5	4	7	1	15	4	355

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	577	0	0	559	0	0	1541	1364	559	1366	1362	575
Stage 1	-	-	-	-	-	-	787	787	-	575	575	-
Stage 2	-	-	-	-	-	-	754	577	-	791	787	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	996	-	-	1022	-	-	95	149	532	126	149	514
Stage 1	-	-	-	-	-	-	388	406	-	507	506	-
Stage 2	-	-	-	-	-	-	404	505	-	386	406	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	996	-	-	1022	-	-	25	124	532	105	124	514
Mov Cap-2 Maneuver	-	-	-	-	-	-	25	124	-	105	124	-
Stage 1	-	-	-	-	-	-	324	339	-	423	506	-
Stage 2	-	-	-	-	-	-	124	505	-	315	339	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0	88.1	47.7
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	55	996	-	-	1022	-	-	432
HCM Lane V/C Ratio	0.221	0.114	-	-	-	-	-	0.866
HCM Control Delay (s)	88.1	9.1	0	-	0	-	-	47.7
HCM Lane LOS	F	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	0.7	0.4	-	-	0	-	-	8.8

Intersection	
Int Delay, s/veh	10.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	97	3	4	567	611	0
Future Vol, veh/h	97	3	4	567	611	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	4	0	0	23	11	0
Mvmt Flow	124	4	5	727	783	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1520	783	783	0	-	0
Stage 1	783	-	-	-	-	-
Stage 2	737	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	129	397	844	-	-	0
Stage 1	447	-	-	-	-	0
Stage 2	470	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	128	397	844	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	470	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	137.8	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	844	-	131	-
HCM Lane V/C Ratio	0.006	-	0.979	-
HCM Control Delay (s)	9.3	0	137.8	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	6.8	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	542	483	366	795	618	144
Future Volume (veh/h)	542	483	366	795	618	144
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1648	1856	1856	1722	1707
Adj Flow Rate, veh/h	616	549	416	903	702	164
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	17	3	3	12	13
Cap, veh/h	975	389	464	2146	813	749
Arrive On Green	0.28	0.28	0.26	0.61	0.26	0.26
Sat Flow, veh/h	3589	1397	1767	3618	3182	1447
Grp Volume(v), veh/h	616	549	416	903	702	164
Grp Sat Flow(s),veh/h/ln	1749	1397	1767	1763	1591	1447
Q Serve(g_s), s	10.2	18.5	15.1	8.9	14.0	4.1
Cycle Q Clear(g_c), s	10.2	18.5	15.1	8.9	14.0	4.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	975	389	464	2146	813	749
V/C Ratio(X)	0.63	1.41	0.90	0.42	0.86	0.22
Avail Cap(c_a), veh/h	975	389	519	2258	887	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	23.9	23.6	6.8	23.6	8.7
Incr Delay (d2), s/veh	1.3	199.3	17.1	0.1	8.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	26.6	7.4	2.0	5.8	1.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.3	223.2	40.7	7.0	31.9	8.8
LnGrp LOS	C	F	D	A	C	A
Approach Vol, veh/h	1165			1319	866	
Approach Delay, s/veh	117.0			17.6	27.5	
Approach LOS	F			B	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		44.9			21.9	23.0	21.5
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		42.5			19.5	18.5	18.5
Max Q Clear Time (g_c+I1), s		10.9			17.1	20.5	16.0
Green Ext Time (p_c), s		6.1			0.3	0.0	1.0

Intersection Summary		
HCM 6th Ctrl Delay	54.7	
HCM 6th LOS	D	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	89	3	184	101	384	10	567	108	342	1507	20
Future Volume (veh/h)	106	89	3	184	101	384	10	567	108	342	1507	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1900	1885	1767	1796	1307	1722	1796	1841	1870	1900
Adj Flow Rate, veh/h	110	93	3	148	166	400	10	591	0	356	1570	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	7	0	1	9	7	40	12	7	4	2	0
Cap, veh/h	149	143	5	383	377	660	12	874		387	1699	
Arrive On Green	0.08	0.08	0.08	0.21	0.21	0.21	0.01	0.27	0.00	0.22	0.48	0.00
Sat Flow, veh/h	1810	1730	56	1795	1767	1522	1245	3272	1522	1753	3647	0
Grp Volume(v), veh/h	110	0	96	148	166	400	10	591	0	356	1570	0
Grp Sat Flow(s),veh/h/ln	1810	0	1786	1795	1767	1522	1245	1636	1522	1753	1777	0
Q Serve(g_s), s	6.7	0.0	5.9	8.0	9.2	22.7	0.9	18.2	0.0	22.4	46.5	0.0
Cycle Q Clear(g_c), s	6.7	0.0	5.9	8.0	9.2	22.7	0.9	18.2	0.0	22.4	46.5	0.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	149	0	147	383	377	660	12	874		387	1699	
V/C Ratio(X)	0.74	0.00	0.65	0.39	0.44	0.61	0.84	0.68		0.92	0.92	
Avail Cap(c_a), veh/h	434	0	428	383	377	660	50	890		452	1740	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.4	0.0	50.1	38.0	38.5	24.5	55.7	36.9	0.0	42.9	27.5	0.0
Incr Delay (d2), s/veh	6.9	0.0	4.8	0.6	0.8	1.6	81.3	2.2	0.0	22.3	8.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	2.7	3.4	3.9	7.7	0.5	7.1	0.0	11.5	19.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	57.3	0.0	54.9	38.6	39.3	26.1	137.0	39.1	0.0	65.2	36.3	0.0
LnGrp LOS	E	A	D	D	D	C	F	D		E	D	
Approach Vol, veh/h		206			714			601	A		1926	A
Approach Delay, s/veh		56.2			31.7			40.7			41.7	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.8	37.1		15.5	6.1	60.8		30.2
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	29.6	30.6		27.0	4.5	55.1		24.0
Max Q Clear Time (g_c+I1), s	24.4	20.2		8.7	2.9	48.5		24.7
Green Ext Time (p_c), s	0.5	3.2		0.6	0.0	5.3		0.0

Intersection Summary	
HCM 6th Ctrl Delay	40.3
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1439	16	3	855	203	11	174	0	420	53	1
Future Volume (veh/h)	1	1439	16	3	855	203	11	174	0	420	53	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1663	1900	1900	1900	1856	1767	1900
Adj Flow Rate, veh/h	1	1515	17	3	900	214	12	183	0	442	56	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	5	16	0	0	0	3	9	0
Cap, veh/h	2	1759	20	7	904	1057	24	237	0	450	634	11
Arrive On Green	0.00	0.49	0.49	0.00	0.50	0.50	0.01	0.12	0.00	0.25	0.37	0.37
Sat Flow, veh/h	1810	3571	40	1810	1826	1409	1810	1900	0	1767	1730	31
Grp Volume(v), veh/h	1	747	785	3	900	214	12	183	0	442	0	57
Grp Sat Flow(s),veh/h/ln	1810	1763	1848	1810	1826	1409	1810	1900	0	1767	0	1761
Q Serve(g_s), s	0.1	54.2	54.3	0.2	71.2	6.5	1.0	13.5	0.0	36.1	0.0	3.1
Cycle Q Clear(g_c), s	0.1	54.2	54.3	0.2	71.2	6.5	1.0	13.5	0.0	36.1	0.0	3.1
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	868	911	7	904	1057	24	237	0	450	0	645
V/C Ratio(X)	0.41	0.86	0.86	0.42	1.00	0.20	0.50	0.77	0.00	0.98	0.00	0.09
Avail Cap(c_a), veh/h	62	873	915	62	904	1057	65	237	0	450	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	72.4	32.4	32.5	72.1	36.5	5.3	71.2	61.6	0.0	53.8	0.0	30.1
Incr Delay (d2), s/veh	82.5	8.7	8.4	35.3	28.7	0.1	15.3	21.4	0.0	37.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	23.5	24.6	0.2	36.2	1.6	0.5	7.8	0.0	20.3	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	154.9	41.2	40.9	107.4	65.2	5.4	86.5	82.9	0.0	91.2	0.0	30.4
LnGrp LOS	F	D	D	F	E	A	F	F	A	F	A	C
Approach Vol, veh/h		1533			1117			195			499	
Approach Delay, s/veh		41.1			53.9			83.1			84.3	
Approach LOS		D			D			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	81.5	22.6	5.1	76.0	6.4	57.7	4.7	76.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.0	18.1	5.0	71.9	5.2	49.9	5.0	71.9
Max Q Clear Time (g_c+I1), s	38.1	15.5	2.2	56.3	3.0	5.1	2.1	73.2
Green Ext Time (p_c), s	0.0	0.2	0.0	8.3	0.0	0.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.3
HCM 6th LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	402	2	61	870	49	0	323	60	46	421	80
Future Volume (veh/h)	9	402	2	61	870	49	0	323	60	46	421	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	423	2	64	916	52	0	340	63	48	443	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	20	997	5	92	1077	61	3	539	100	78	866	734
Arrive On Green	0.01	0.28	0.28	0.05	0.32	0.32	0.00	0.35	0.35	0.04	0.47	0.47
Sat Flow, veh/h	1767	3598	17	1767	3391	193	1767	1523	282	1767	1856	1572
Grp Volume(v), veh/h	9	207	218	64	476	492	0	0	403	48	443	84
Grp Sat Flow(s),veh/h/ln	1767	1763	1852	1767	1763	1821	1767	0	1805	1767	1856	1572
Q Serve(g_s), s	0.3	6.4	6.4	2.4	16.7	16.7	0.0	0.0	12.3	1.8	11.1	2.0
Cycle Q Clear(g_c), s	0.3	6.4	6.4	2.4	16.7	16.7	0.0	0.0	12.3	1.8	11.1	2.0
Prop In Lane	1.00		0.01	1.00		0.11	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	20	488	513	92	560	579	3	0	639	78	866	734
V/C Ratio(X)	0.44	0.42	0.42	0.69	0.85	0.85	0.00	0.00	0.63	0.61	0.51	0.11
Avail Cap(c_a), veh/h	134	576	605	185	627	647	134	0	639	136	866	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	19.6	19.6	30.8	21.1	21.1	0.0	0.0	17.8	31.0	12.4	9.9
Incr Delay (d2), s/veh	14.3	0.6	0.6	8.9	9.9	9.6	0.0	0.0	4.7	7.5	2.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.3	2.4	1.1	7.2	7.4	0.0	0.0	5.1	0.9	4.3	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	20.2	20.1	39.7	31.0	30.7	0.0	0.0	22.4	38.6	14.5	10.3
LnGrp LOS	D	C	C	D	C	C	A	A	C	D	B	B
Approach Vol, veh/h		434			1032			403			575	
Approach Delay, s/veh		20.7			31.4			22.4			15.9	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	27.9	8.0	22.8	0.0	35.3	5.3	25.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	23.4	6.9	21.6	5.0	23.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.8	14.3	4.4	8.4	0.0	13.1	2.3	18.7
Green Ext Time (p_c), s	0.0	1.5	0.0	1.7	0.0	2.1	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	24.4
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	15	423	12	88	23	833	570	9	6	590	18
Future Volume (veh/h)	8	15	423	12	88	23	833	570	9	6	590	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	16	0	13	96	25	905	620	10	7	641	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	32		164	132	34	1063	2148	35	16	1061	33
Arrive On Green	0.03	0.03	0.00	0.09	0.09	0.09	0.31	0.60	0.60	0.01	0.30	0.30
Sat Flow, veh/h	656	1167	1572	1767	1419	370	3428	3551	57	1767	3490	109
Grp Volume(v), veh/h	25	0	0	13	0	121	905	308	322	7	324	337
Grp Sat Flow(s),veh/h/ln	1823	0	1572	1767	0	1789	1714	1763	1845	1767	1763	1836
Q Serve(g_s), s	0.9	0.0	0.0	0.5	0.0	4.5	16.8	5.7	5.7	0.3	10.6	10.6
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.5	0.0	4.5	16.8	5.7	5.7	0.3	10.6	10.6
Prop In Lane	0.36		1.00	1.00		0.21	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	50	0		164	0	166	1063	1066	1116	16	536	558
V/C Ratio(X)	0.50	0.00		0.08	0.00	0.73	0.85	0.29	0.29	0.43	0.60	0.60
Avail Cap(c_a), veh/h	484	0		469	0	475	1340	1066	1116	130	536	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	0.0	28.1	0.0	29.9	21.9	6.4	6.4	33.4	20.1	20.1
Incr Delay (d2), s/veh	7.3	0.0	0.0	0.2	0.0	6.0	4.5	0.7	0.7	17.4	5.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.2	0.0	2.0	6.2	1.5	1.5	0.2	4.3	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	0.0	28.3	0.0	35.9	26.4	7.1	7.1	50.8	25.1	24.9
LnGrp LOS	D	A		C	A	D	C	A	A	D	C	C
Approach Vol, veh/h		25	A		134			1535			668	
Approach Delay, s/veh		39.8			35.2			18.5			25.3	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	45.5		6.4	25.5	25.1		10.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.6	41.0		18.0	26.5	19.5		18.0
Max Q Clear Time (g_c+I1), s	2.3	7.7		2.9	18.8	12.6		6.5
Green Ext Time (p_c), s	0.0	3.4		0.0	2.2	1.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	501	395	486	28	35	687
Future Volume (veh/h)	501	395	486	28	35	687
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1841	1752	1618	1767	1811	1885
Adj Flow Rate, veh/h	557	439	540	31	39	763
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	10	19	9	6	1
Cap, veh/h	555	1224	538	497	347	827
Arrive On Green	0.32	0.70	0.33	0.33	0.20	0.20
Sat Flow, veh/h	1753	1752	1618	1497	1725	1598
Grp Volume(v), veh/h	557	439	540	31	39	763
Grp Sat Flow(s),veh/h/ln	1753	1752	1618	1497	1725	1598
Q Serve(g_s), s	28.5	9.1	29.9	1.3	1.7	18.1
Cycle Q Clear(g_c), s	28.5	9.1	29.9	1.3	1.7	18.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	555	1224	538	497	347	827
V/C Ratio(X)	1.00	0.36	1.00	0.06	0.11	0.92
Avail Cap(c_a), veh/h	555	1224	538	497	347	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	5.4	30.0	20.5	29.4	20.0
Incr Delay (d2), s/veh	39.0	0.2	39.9	0.1	0.7	17.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	2.1	16.2	0.4	0.7	32.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	69.8	5.6	69.9	20.5	30.0	37.3
LnGrp LOS	F	A	F	C	C	D
Approach Vol, veh/h		996	571		802	
Approach Delay, s/veh		41.5	67.3		37.0	
Approach LOS		D	E		D	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		67.4		22.6	33.0	34.4
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		62.9		18.1	28.5	29.9
Max Q Clear Time (g_c+I1), s		11.1		20.1	30.5	31.9
Green Ext Time (p_c), s		2.5		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.2
HCM 6th LOS	D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	651	328	358	798	212	354
Future Volume (veh/h)	651	328	358	798	212	354
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	723	364	398	887	236	393
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	776	390	498	1047	499	444
Arrive On Green	0.34	0.34	0.15	0.56	0.28	0.28
Sat Flow, veh/h	2364	1142	3428	1856	1767	1572
Grp Volume(v), veh/h	561	526	398	887	236	393
Grp Sat Flow(s),veh/h/ln	1763	1650	1714	1856	1767	1572
Q Serve(g_s), s	18.0	18.0	6.6	23.4	6.5	14.0
Cycle Q Clear(g_c), s	18.0	18.0	6.6	23.4	6.5	14.0
Prop In Lane		0.69	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	603	564	498	1047	499	444
V/C Ratio(X)	0.93	0.93	0.80	0.85	0.47	0.89
Avail Cap(c_a), veh/h	603	564	498	1047	544	484
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	18.6	24.2	10.7	17.4	20.1
Incr Delay (d2), s/veh	21.3	22.6	9.0	6.6	0.7	16.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	8.7	2.8	7.2	2.3	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	39.9	41.2	33.1	17.3	18.1	36.8
LnGrp LOS	D	D	C	B	B	D
Approach Vol, veh/h	1087			1285	629	
Approach Delay, s/veh	40.5			22.2	29.8	
Approach LOS	D			C	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		37.5		21.0	13.0	24.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		33.0		18.0	8.5	20.0
Max Q Clear Time (g_c+I1), s		25.4		16.0	8.6	20.0
Green Ext Time (p_c), s		3.3		0.5	0.0	0.0

Intersection Summary						
HCM 6th Ctrl Delay			30.4			
HCM 6th LOS			C			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	291	708	514	465	718	368
Future Volume (veh/h)	291	708	514	465	718	368
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	313	761	553	500	772	396
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	308	274	558	473	729	1393
Arrive On Green	0.17	0.17	0.30	0.30	0.41	0.75
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	313	761	553	500	772	396
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	20.9	20.9	35.6	36.1	49.5	8.1
Cycle Q Clear(g_c), s	20.9	20.9	35.6	36.1	49.5	8.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	308	274	558	473	729	1393
V/C Ratio(X)	1.02	2.78	0.99	1.06	1.06	0.28
Avail Cap(c_a), veh/h	308	274	558	473	729	1393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	49.5	41.8	42.0	35.3	4.7
Incr Delay (d2), s/veh	55.7	810.5	35.9	57.2	50.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	69.7	20.8	20.6	29.4	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	105.2	860.1	77.7	99.2	85.3	5.2
LnGrp LOS	F	F	E	F	F	A
Approach Vol, veh/h	1074		1053			1168
Approach Delay, s/veh	640.1		87.9			58.2
Approach LOS	F		F			E

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	54.0	40.6				94.6	25.4
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	49.5	36.1				90.1	20.9
Max Q Clear Time (g_c+I1), s	51.5	38.1				10.1	22.9
Green Ext Time (p_c), s	0.0	0.0				2.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	257.3
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	982	92	470	5	417	0	0	657	358
Future Volume (veh/h)	0	0	0	982	92	470	5	417	0	0	657	358
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1648	1870	1737	1411	1589	0	0	1737	1900
Adj Flow Rate, veh/h				1116	105	534	6	474	0	0	747	0
Peak Hour Factor				0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %				17	2	11	33	21	0	0	11	0
Cap, veh/h				1171	110	1856	95	576	0	0	904	
Arrive On Green				0.72	0.72	0.72	0.19	0.19	0.00	0.00	0.19	0.00
Sat Flow, veh/h				1635	154	2591	539	3098	0	0	4898	1610
Grp Volume(v), veh/h				1221	0	534	6	474	0	0	747	0
Grp Sat Flow(s),veh/h/ln				1789	0	1295	539	1509	0	0	1581	1610
Q Serve(g_s), s				59.2	0.0	7.1	1.0	14.6	0.0	0.0	14.7	0.0
Cycle Q Clear(g_c), s				59.2	0.0	7.1	15.7	14.6	0.0	0.0	14.7	0.0
Prop In Lane				0.91		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1282	0	1856	95	576	0	0	904	
V/C Ratio(X)				0.95	0.00	0.29	0.06	0.82	0.00	0.00	0.83	
Avail Cap(c_a), veh/h				1337	0	1936	95	576	0	0	904	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.3	0.0	4.9	45.3	37.7	0.0	0.0	37.7	0.0
Incr Delay (d2), s/veh				14.5	0.0	0.1	1.3	12.6	0.0	0.0	8.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				20.8	0.0	1.4	0.2	6.1	0.0	0.0	6.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				26.8	0.0	5.0	46.5	50.3	0.0	0.0	46.2	0.0
LnGrp LOS				C	A	A	D	D	A	A	D	
Approach Vol, veh/h					1755			480			747	A
Approach Delay, s/veh					20.2			50.2			46.2	
Approach LOS					C			D			D	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	23.0		23.0		74.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	18.5		18.5		72.5			
Max Q Clear Time (g_c+I1), s	17.7		16.7		61.2			
Green Ext Time (p_c), s	0.2		0.9		8.4			

Intersection Summary		
HCM 6th Ctrl Delay	31.5	
HCM 6th LOS	C	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	4	48	0	0	0	0	279	264	0	1318	321
Future Volume (veh/h)	143	4	48	0	0	0	0	279	264	0	1318	321
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1159	1455				0	1352	1159	0	1693	1870
Adj Flow Rate, veh/h	154	0	51				0	294	278	0	1387	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	50	30				0	37	50	0	14	2
Cap, veh/h	347	0	123				0	1817	695	0	2275	
Arrive On Green	0.10	0.00	0.10				0.00	0.71	0.71	0.00	0.71	0.00
Sat Flow, veh/h	3478	0	1233				0	2636	982	0	3300	1585
Grp Volume(v), veh/h	154	0	51				0	294	278	0	1387	0
Grp Sat Flow(s),veh/h/ln	1739	0	1233				0	1284	982	0	1608	1585
Q Serve(g_s), s	1.9	0.0	1.8				0.0	1.8	5.4	0.0	10.4	0.0
Cycle Q Clear(g_c), s	1.9	0.0	1.8				0.0	1.8	5.4	0.0	10.4	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	347	0	123				0	1817	695	0	2275	
V/C Ratio(X)	0.44	0.00	0.41				0.00	0.16	0.40	0.00	0.61	
Avail Cap(c_a), veh/h	1342	0	476				0	1817	695	0	2275	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	19.7				0.0	2.3	2.8	0.0	3.5	0.0
Incr Delay (d2), s/veh	0.9	0.0	2.2				0.0	0.2	1.7	0.0	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.5				0.0	0.1	0.4	0.0	0.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.7	0.0	21.9				0.0	2.4	4.5	0.0	4.7	0.0
LnGrp LOS	C	A	C				A	A	A	A	A	
Approach Vol, veh/h		205						572			1387	A
Approach Delay, s/veh		21.0						3.4			4.7	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.5	9.1	37.5
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	33.0	18.0	33.0
Max Q Clear Time (g_c+I1), s	7.4	3.9	12.4
Green Ext Time (p_c), s	2.8	0.5	10.0

Intersection Summary	
HCM 6th Ctrl Delay	5.9
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	174	120	3	420	0	0	0	0	313	0	157
Future Volume (veh/h)	0	174	120	3	420	0	0	0	0	313	0	157
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1683	1683	1683	1683	0				1683	1683	1683
Adj Flow Rate, veh/h	0	189	130	3	457	0				340	0	171
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	413	270	7	1279	0				791	0	363
Arrive On Green	0.00	0.22	0.22	0.00	0.40	0.00				0.25	0.00	0.25
Sat Flow, veh/h	0	1938	1211	1603	3282	0				3110	0	1427
Grp Volume(v), veh/h	0	162	157	3	457	0				340	0	171
Grp Sat Flow(s),veh/h/ln	0	1599	1465	1603	1599	0				1555	0	1427
Q Serve(g_s), s	0.0	2.3	2.4	0.0	2.6	0.0				2.4	0.0	2.6
Cycle Q Clear(g_c), s	0.0	2.3	2.4	0.0	2.6	0.0				2.4	0.0	2.6
Prop In Lane	0.00		0.83	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	356	326	7	1279	0				791	0	363
V/C Ratio(X)	0.00	0.45	0.48	0.45	0.36	0.00				0.43	0.00	0.47
Avail Cap(c_a), veh/h	0	1199	1099	339	3628	0				2571	0	1179
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.7	8.8	12.9	5.5	0.0				8.1	0.0	8.2
Incr Delay (d2), s/veh	0.0	0.9	1.1	41.8	0.2	0.0				0.4	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.4	0.1	0.2	0.0				0.5	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.6	9.9	54.7	5.6	0.0				8.5	0.0	9.2
LnGrp LOS	A	A	A	D	A	A				A	A	A
Approach Vol, veh/h		319			460						511	
Approach Delay, s/veh		9.8			6.0						8.7	
Approach LOS		A			A						A	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		4.6	10.3		11.1		14.9					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		5.5	19.5		21.5		29.5					
Max Q Clear Time (g_c+I1), s		2.0	4.4		4.6		4.6					
Green Ext Time (p_c), s		0.0	1.4		2.1		2.7					

Intersection Summary	
HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	426	0	0	317	629	106	0	6	0	0	0
Future Volume (veh/h)	61	426	0	0	317	629	106	0	6	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	66	463	0	0	345	684	115	0	7			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	117	2391	0	0	1744	778	168	0	150			
Arrive On Green	0.07	0.67	0.00	0.00	0.49	0.49	0.09	0.00	0.09			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	66	463	0	0	345	684	115	0	7			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	1.4	1.9	0.0	0.0	2.1	14.9	2.4	0.0	0.2			
Cycle Q Clear(g_c), s	1.4	1.9	0.0	0.0	2.1	14.9	2.4	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	117	2391	0	0	1744	778	168	0	150			
V/C Ratio(X)	0.56	0.19	0.00	0.00	0.20	0.88	0.68	0.00	0.05			
Avail Cap(c_a), veh/h	253	2894	0	0	1976	881	898	0	799			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.5	2.4	0.0	0.0	5.6	8.8	17.0	0.0	15.9			
Incr Delay (d2), s/veh	4.2	0.0	0.0	0.0	0.1	9.3	4.8	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.0	0.3	4.0	1.1	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	2.4	0.0	0.0	5.6	18.1	21.8	0.0	16.1			
LnGrp LOS	C	A	A	A	A	B	C	A	B			
Approach Vol, veh/h		529			1029			122				
Approach Delay, s/veh		4.8			13.9			21.5				
Approach LOS		A			B			C				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	8.2	30.5	7.0	23.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	31.5	5.5	21.5
Max Q Clear Time (g_c+I1), s	4.4	3.9	3.4	16.9
Green Ext Time (p_c), s	0.3	2.8	0.0	2.0

Intersection Summary	
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	17	7	1526	982	1
Future Vol, veh/h	19	17	7	1526	982	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	9	0
Mvmt Flow	20	18	7	1590	1023	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2628	1024	1024	0	-	0
Stage 1	1024	-	-	-	-	-
Stage 2	1604	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	27	288	686	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	183	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	25	288	686	-	-	-
Mov Cap-2 Maneuver	25	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	183	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	233.8	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	686	-	44	-	-
HCM Lane V/C Ratio	0.011	-	0.852	-	-
HCM Control Delay (s)	10.3	0	233.8	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0	-	3.4	-	-

Intersection	
Int Delay, s/veh	25.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	42	0	0	1531	966	19
Future Vol, veh/h	42	0	0	1531	966	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	14	0	0	4	9	43
Mvmt Flow	49	0	0	1780	1123	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2914	1134	1145	0	-	0
Stage 1	1134	-	-	-	-	-
Stage 2	1780	-	-	-	-	-
Critical Hdwy	6.54	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 15	249	618	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	138	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 15	249	618	-	-	-
Mov Cap-2 Maneuver	~ 15	-	-	-	-	-
Stage 1	291	-	-	-	-	-
Stage 2	138	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $	1533.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	618	-	15	-	-
HCM Lane V/C Ratio	-	-	3.256	-	-
HCM Control Delay (s)	0	-	$ 1533.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	6.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	21	698	19	18	48	663	883	7	28	291	4
Future Volume (veh/h)	12	21	698	19	18	48	663	883	7	28	291	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	12	22	720	20	19	49	684	910	7	29	300	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	102	186	246	19	18	47	670	972	7	41	310	4
Arrive On Green	0.16	0.16	0.16	0.05	0.05	0.05	0.38	0.54	0.54	0.02	0.18	0.18
Sat Flow, veh/h	618	1133	1497	388	369	952	1767	1809	14	1767	1710	23
Grp Volume(v), veh/h	34	0	720	88	0	0	684	0	917	29	0	304
Grp Sat Flow(s),veh/h/ln	1751	0	1497	1709	0	0	1767	0	1823	1767	0	1733
Q Serve(g_s), s	1.5	0.0	14.8	4.4	0.0	0.0	34.1	0.0	42.2	1.5	0.0	15.7
Cycle Q Clear(g_c), s	1.5	0.0	14.8	4.4	0.0	0.0	34.1	0.0	42.2	1.5	0.0	15.7
Prop In Lane	0.35		1.00	0.23		0.56	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	288	0	246	84	0	0	670	0	979	41	0	314
V/C Ratio(X)	0.12	0.00	2.92	1.05	0.00	0.00	1.02	0.00	0.94	0.72	0.00	0.97
Avail Cap(c_a), veh/h	288	0	246	84	0	0	670	0	979	88	0	314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	37.6	42.8	0.0	0.0	27.9	0.0	19.4	43.7	0.0	36.6
Incr Delay (d2), s/veh	0.2	0.0	877.0	113.7	0.0	0.0	40.3	0.0	16.1	20.8	0.0	42.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	65.3	4.5	0.0	0.0	20.9	0.0	20.0	0.9	0.0	10.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	914.6	156.5	0.0	0.0	68.3	0.0	35.5	64.5	0.0	79.2
LnGrp LOS	C	A	F	F	A	A	F	A	D	E	A	E
Approach Vol, veh/h		754			88			1601			333	
Approach Delay, s/veh		874.8			156.5			49.5			77.9	
Approach LOS		F			F			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	53.4		19.9	39.2	21.4		9.5				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	4.5	45.9		14.8	34.1	16.3		4.4				
Max Q Clear Time (g_c+I1), s	3.5	44.2		16.8	36.1	17.7		6.4				
Green Ext Time (p_c), s	0.0	1.4		0.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		280.5	
HCM 6th LOS		F	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	69.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	274	731	0	5	637	13	0	6	0	21	4	95
Future Vol, veh/h	274	731	0	5	637	13	0	6	0	21	4	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	9	0	25	7	44	0	0	0	50	0	20
Mvmt Flow	301	803	0	5	700	14	0	7	0	23	4	104

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	714	0	0	803	0	0	2176	2129	803	2126	2122	707
Stage 1	-	-	-	-	-	-	1405	1405	-	717	717	-
Stage 2	-	-	-	-	-	-	771	724	-	1409	1405	-
Critical Hdwy	4.12	-	-	4.35	-	-	7.1	6.5	6.2	7.6	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.218	-	-	2.425	-	-	3.5	4	3.3	3.95	4	3.48
Pot Cap-1 Maneuver	886	-	-	728	-	-	34	50	387	26	51	406
Stage 1	-	-	-	-	-	-	174	208	-	354	437	-
Stage 2	-	-	-	-	-	-	396	433	-	135	208	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	886	-	-	728	-	-	11	19	387	~ 10	19	406
Mov Cap-2 Maneuver	-	-	-	-	-	-	11	19	-	~ 10	19	-
Stage 1	-	-	-	-	-	-	67	80	-	137	432	-
Stage 2	-	-	-	-	-	-	288	428	-	48	80	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3	0.1	273.8	$ 999.5
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	19	886	-	-	728	-	-	47
HCM Lane V/C Ratio	0.347	0.34	-	-	0.008	-	-	2.806
HCM Control Delay (s)	273.8	11.1	0	-	10	0	-	$ 999.5
HCM Lane LOS	F	B	A	-	A	A	-	F
HCM 95th %tile Q(veh)	1	1.5	-	-	0	-	-	14.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	74.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	281	15	3	918	327	0
Future Vol, veh/h	281	15	3	918	327	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	296	16	3	966	344	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1316	344	344	0	-	0
Stage 1	344	-	-	-	-	-
Stage 2	972	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 176	703	1226	-	-	0
Stage 1	722	-	-	-	-	0
Stage 2	370	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 175	703	1226	-	-	-
Mov Cap-2 Maneuver	~ 175	-	-	-	-	-
Stage 1	718	-	-	-	-	-
Stage 2	370	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 387.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1226	-	182	-
HCM Lane V/C Ratio	0.003	-	1.712	-
HCM Control Delay (s)	7.9	0	$ 387.2	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	21.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	912	384	146	683	866	370
Future Volume (veh/h)	912	384	146	683	866	370
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1693	1767	1841	1826	1885
Adj Flow Rate, veh/h	981	413	157	734	931	398
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	14	9	4	5	1
Cap, veh/h	1182	485	195	1860	1052	683
Arrive On Green	0.34	0.34	0.12	0.53	0.31	0.31
Sat Flow, veh/h	3589	1434	1682	3589	3374	1598
Grp Volume(v), veh/h	981	413	157	734	931	398
Grp Sat Flow(s),veh/h/ln	1749	1434	1682	1749	1687	1598
Q Serve(g_s), s	14.9	15.4	5.2	7.2	15.1	10.9
Cycle Q Clear(g_c), s	14.9	15.4	5.2	7.2	15.1	10.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1182	485	195	1860	1052	683
V/C Ratio(X)	0.83	0.85	0.81	0.39	0.89	0.58
Avail Cap(c_a), veh/h	1246	511	219	1975	1084	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	17.7	24.8	8.0	18.8	12.6
Incr Delay (d2), s/veh	4.7	12.6	17.8	0.1	8.8	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.2	5.5	2.7	1.6	6.5	3.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.2	30.3	42.6	8.1	27.6	13.8
LnGrp LOS	C	C	D	A	C	B
Approach Vol, veh/h	1394			891	1329	
Approach Delay, s/veh	24.6			14.2	23.5	
Approach LOS	C			B	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		35.1			11.2	24.0	22.4
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		32.5			7.5	20.5	18.5
Max Q Clear Time (g_c+I1), s		9.2			7.2	17.4	17.1
Green Ext Time (p_c), s		4.4			0.0	2.0	0.8

Intersection Summary		
HCM 6th Ctrl Delay		21.6
HCM 6th LOS		C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	95	5	53	46	588	17	1662	262	685	667	14
Future Volume (veh/h)	0	95	5	53	46	588	17	1662	262	685	667	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	99	5	52	53	612	18	1731	0	714	695	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	131	126	6	315	344	630	25	1190		360	1816	
Arrive On Green	0.00	0.07	0.07	0.19	0.19	0.19	0.01	0.33	0.00	0.21	0.53	0.00
Sat Flow, veh/h	1810	1737	88	1668	1826	1572	1697	3554	1560	1697	3503	0
Grp Volume(v), veh/h	0	0	104	52	53	612	18	1731	0	714	695	0
Grp Sat Flow(s),veh/h/ln	1810	0	1825	1668	1826	1572	1697	1777	1560	1697	1706	0
Q Serve(g_s), s	0.0	0.0	7.1	3.3	3.1	24.0	1.3	42.6	0.0	27.0	15.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.1	3.3	3.1	24.0	1.3	42.6	0.0	27.0	15.2	0.0
Prop In Lane	1.00		0.05	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	131	0	132	315	344	630	25	1190		360	1816	
V/C Ratio(X)	0.00	0.00	0.79	0.17	0.15	0.97	0.72	1.45		1.98	0.38	
Avail Cap(c_a), veh/h	384	0	387	315	344	630	80	1190		360	1816	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	58.0	43.2	43.1	37.4	62.4	42.3	0.0	50.1	17.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	9.7	0.2	0.2	28.6	31.5	209.4	0.0	452.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.5	1.3	1.4	22.2	0.8	52.0	0.0	56.1	5.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	67.8	43.5	43.3	66.0	93.9	251.7	0.0	502.4	17.7	0.0
LnGrp LOS	A	A	E	D	D	E	F	F		F	B	
Approach Vol, veh/h		104			717			1749	A		1409	A
Approach Delay, s/veh		67.8			62.7			250.1			263.3	
Approach LOS		E			E			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	49.6		15.4	6.9	74.7		30.2
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	27.0	42.6		27.0	6.0	63.6		24.0
Max Q Clear Time (g_c+I1), s	29.0	44.6		9.1	3.3	17.2		26.0
Green Ext Time (p_c), s	0.0	0.0		0.3	0.0	6.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	216.2
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1195	10	1	1438	804	81	375	48	135	15	10
Future Volume (veh/h)	24	1195	10	1	1438	804	81	375	48	135	15	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	24	1219	10	1	1467	820	83	383	49	138	15	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	38	2122	17	2	1088	1035	104	324	41	127	237	158
Arrive On Green	0.02	0.60	0.60	0.00	0.58	0.58	0.06	0.21	0.21	0.07	0.22	0.22
Sat Flow, veh/h	1810	3555	29	1810	1885	1598	1810	1548	198	1795	1063	709
Grp Volume(v), veh/h	24	600	629	1	1467	820	83	0	432	138	0	25
Grp Sat Flow(s),veh/h/ln	1810	1749	1835	1810	1885	1598	1810	0	1746	1795	0	1772
Q Serve(g_s), s	1.9	31.1	31.2	0.1	85.5	55.0	6.7	0.0	31.0	10.5	0.0	1.6
Cycle Q Clear(g_c), s	1.9	31.1	31.2	0.1	85.5	55.0	6.7	0.0	31.0	10.5	0.0	1.6
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.11	1.00		0.40
Lane Grp Cap(c), veh/h	38	1044	1096	2	1088	1035	104	0	365	127	0	395
V/C Ratio(X)	0.63	0.57	0.57	0.41	1.35	0.79	0.80	0.00	1.18	1.08	0.00	0.06
Avail Cap(c_a), veh/h	61	1044	1096	61	1088	1035	162	0	365	127	0	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	71.9	18.3	18.3	73.9	31.3	18.9	69.0	0.0	58.6	68.8	0.0	45.4
Incr Delay (d2), s/veh	15.6	0.8	0.7	82.5	162.9	4.3	14.1	0.0	106.7	104.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.7	12.3	0.1	83.7	18.9	3.5	0.0	24.2	8.4	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.5	19.1	19.0	156.4	194.2	23.1	83.1	0.0	165.3	173.0	0.0	45.7
LnGrp LOS	F	B	B	F	F	C	F	A	F	F	A	D
Approach Vol, veh/h		1253			2288			515			163	
Approach Delay, s/veh		20.4			132.9			152.0			153.5	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.5	4.7	92.9	13.0	37.5	7.6	90.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	31.0	5.0	85.5	13.3	28.2	5.0	85.5
Max Q Clear Time (g_c+I1), s	12.5	33.0	2.1	33.2	8.7	3.6	3.9	87.5
Green Ext Time (p_c), s	0.0	0.0	0.0	8.8	0.1	0.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	102.6
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	764	2	19	604	92	11	1039	157	66	155	22
Future Volume (veh/h)	84	764	2	19	604	92	11	1039	157	66	155	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	99	899	2	22	711	108	13	1222	185	78	182	26
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	88	818	2	35	603	92	25	929	141	77	1149	974
Arrive On Green	0.05	0.23	0.23	0.02	0.20	0.20	0.01	0.59	0.59	0.04	0.62	0.62
Sat Flow, veh/h	1767	3609	8	1767	3069	466	1767	1574	238	1767	1856	1572
Grp Volume(v), veh/h	99	439	462	22	408	411	13	0	1407	78	182	26
Grp Sat Flow(s),veh/h/ln	1767	1763	1854	1767	1763	1772	1767	0	1813	1767	1856	1572
Q Serve(g_s), s	7.5	34.0	34.0	1.9	29.5	29.5	1.1	0.0	88.5	6.5	6.2	1.0
Cycle Q Clear(g_c), s	7.5	34.0	34.0	1.9	29.5	29.5	1.1	0.0	88.5	6.5	6.2	1.0
Prop In Lane	1.00		0.00	1.00		0.26	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	88	400	420	35	347	348	25	0	1069	77	1149	974
V/C Ratio(X)	1.12	1.10	1.10	0.62	1.18	1.18	0.53	0.00	1.32	1.02	0.16	0.03
Avail Cap(c_a), veh/h	88	400	420	59	347	348	64	0	1069	77	1149	974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.2	58.0	58.0	72.9	60.2	60.3	73.5	0.0	30.8	71.8	12.0	11.0
Incr Delay (d2), s/veh	132.0	74.5	73.4	16.5	105.9	106.3	16.4	0.0	148.7	108.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	23.0	24.0	1.0	23.0	23.2	0.6	0.0	79.4	5.2	2.6	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	203.3	132.5	131.4	89.5	166.1	166.5	89.8	0.0	179.5	179.8	12.3	11.1
LnGrp LOS	F	F	F	F	F	F	F	A	F	F	B	B
Approach Vol, veh/h		1000			841			1420			286	
Approach Delay, s/veh		139.0			164.3			178.7			57.9	
Approach LOS		F			F			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	93.0	7.5	38.5	6.6	97.4	12.0	34.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	88.5	5.0	32.0	5.4	89.6	7.5	29.5
Max Q Clear Time (g_c+I1), s	8.5	90.5	3.9	36.0	3.1	8.2	9.5	31.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	154.3
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	98	797	11	60	14	705	823	21	22	488	4
Future Volume (veh/h)	28	98	797	11	60	14	705	823	21	22	488	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	30	107	0	12	65	15	766	895	23	24	530	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	41	146		112	92	21	910	1858	48	48	1043	8
Arrive On Green	0.10	0.10	0.00	0.06	0.06	0.06	0.27	0.53	0.53	0.03	0.29	0.29
Sat Flow, veh/h	402	1434	1572	1767	1458	337	3428	3512	90	1767	3586	27
Grp Volume(v), veh/h	137	0	0	12	0	80	766	449	469	24	260	274
Grp Sat Flow(s),veh/h/ln	1835	0	1572	1767	0	1795	1714	1763	1839	1767	1763	1851
Q Serve(g_s), s	4.7	0.0	0.0	0.4	0.0	2.8	13.7	10.4	10.4	0.9	7.9	8.0
Cycle Q Clear(g_c), s	4.7	0.0	0.0	0.4	0.0	2.8	13.7	10.4	10.4	0.9	7.9	8.0
Prop In Lane	0.22		1.00	1.00		0.19	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	187	0		112	0	114	910	933	973	48	513	538
V/C Ratio(X)	0.73	0.00		0.11	0.00	0.70	0.84	0.48	0.48	0.50	0.51	0.51
Avail Cap(c_a), veh/h	702	0		492	0	500	1125	933	973	139	513	538
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	0.0	28.5	0.0	29.7	22.4	9.6	9.6	31.0	19.1	19.1
Incr Delay (d2), s/veh	5.5	0.0	0.0	0.4	0.0	7.7	4.9	1.8	1.7	7.9	3.6	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.2	0.0	1.3	5.1	3.1	3.3	0.4	3.2	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	0.0	29.0	0.0	37.4	27.4	11.4	11.3	38.9	22.6	22.5
LnGrp LOS	C	A		C	A	D	C	B	B	D	C	C
Approach Vol, veh/h		137	A		92			1684			558	
Approach Delay, s/veh		33.6			36.3			18.6			23.3	
Approach LOS		C			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	38.7		11.1	21.7	23.3		8.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	34.2		24.7	21.2	18.1		18.0
Max Q Clear Time (g_c+I1), s	2.9	12.4		6.7	15.7	10.0		4.8
Green Ext Time (p_c), s	0.0	5.0		0.5	1.5	1.7		0.2

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	709	522	529	75	33	423
Future Volume (veh/h)	709	522	529	75	33	423
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1767	1811	1900	1752	1885
Adj Flow Rate, veh/h	754	555	563	80	35	450
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	9	6	0	10	1
Cap, veh/h	756	1362	566	503	257	919
Arrive On Green	0.42	0.77	0.31	0.31	0.15	0.15
Sat Flow, veh/h	1795	1767	1811	1610	1668	1598
Grp Volume(v), veh/h	754	555	563	80	35	450
Grp Sat Flow(s),veh/h/ln	1795	1767	1811	1610	1668	1598
Q Serve(g_s), s	50.3	12.6	37.2	4.3	2.2	18.5
Cycle Q Clear(g_c), s	50.3	12.6	37.2	4.3	2.2	18.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	756	1362	566	503	257	919
V/C Ratio(X)	1.00	0.41	0.99	0.16	0.14	0.49
Avail Cap(c_a), veh/h	756	1362	566	503	257	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	4.6	41.2	29.8	43.8	15.1
Incr Delay (d2), s/veh	32.2	0.2	36.4	0.1	1.1	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	26.6	3.0	21.2	1.6	1.0	21.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	66.9	4.8	77.6	30.0	44.9	17.0
LnGrp LOS	E	A	E	C	D	B
Approach Vol, veh/h		1309	643		485	
Approach Delay, s/veh		40.6	71.6		19.0	
Approach LOS		D	E		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			97.0		23.0	55.0	42.0
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			92.5		18.5	50.5	37.5
Max Q Clear Time (g_c+I1), s			14.6		20.5	52.3	39.2
Green Ext Time (p_c), s			3.4		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	44.5
HCM 6th LOS	D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	790	310	518	1283	362	793
Future Volume (veh/h)	790	310	518	1283	362	793
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	832	326	545	1351	381	835
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1066	417	612	1206	474	422
Arrive On Green	0.43	0.43	0.18	0.65	0.27	0.27
Sat Flow, veh/h	2569	968	3428	1856	1767	1572
Grp Volume(v), veh/h	592	566	545	1351	381	835
Grp Sat Flow(s),veh/h/ln	1763	1681	1714	1856	1767	1572
Q Serve(g_s), s	31.6	31.8	17.1	71.5	22.1	29.5
Cycle Q Clear(g_c), s	31.6	31.8	17.1	71.5	22.1	29.5
Prop In Lane		0.58	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	759	724	612	1206	474	422
V/C Ratio(X)	0.78	0.78	0.89	1.12	0.80	1.98
Avail Cap(c_a), veh/h	759	724	673	1206	474	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	26.9	44.1	19.2	37.6	40.2
Incr Delay (d2), s/veh	5.2	5.6	13.2	65.5	9.7	449.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	12.6	8.0	45.0	10.4	75.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.1	32.4	57.4	84.8	47.3	489.7
LnGrp LOS	C	C	E	F	D	F
Approach Vol, veh/h	1158			1896	1216	
Approach Delay, s/veh	32.2			76.9	351.1	
Approach LOS	C			E	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		76.0		34.0	24.1	51.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		71.5		29.5	21.6	45.4
Max Q Clear Time (g_c+I1), s		73.5		31.5	19.1	33.8
Green Ext Time (p_c), s		0.0		0.0	0.6	5.2

Intersection Summary		
HCM 6th Ctrl Delay	142.9	
HCM 6th LOS	F	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	651	1288	499	878	1025	568
Future Volume (veh/h)	651	1288	499	878	1025	568
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	664	1314	509	896	1046	580
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	493	439	518	439	582	1198
Arrive On Green	0.28	0.28	0.28	0.28	0.33	0.65
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	664	1314	509	896	1046	580
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	33.5	33.5	32.7	33.5	39.5	19.3
Cycle Q Clear(g_c), s	33.5	33.5	32.7	33.5	39.5	19.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	493	439	518	439	582	1198
V/C Ratio(X)	1.35	2.99	0.98	2.04	1.80	0.48
Avail Cap(c_a), veh/h	493	439	518	439	582	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	43.3	43.0	43.3	40.3	10.9
Incr Delay (d2), s/veh	168.8	903.1	35.5	476.4	366.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	67.3	122.7	19.1	70.3	75.1	7.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	212.0	946.3	78.4	519.6	406.3	12.3
LnGrp LOS	F	F	E	F	F	B
Approach Vol, veh/h	1978		1405			1626
Approach Delay, s/veh	699.8		359.8			265.8
Approach LOS	F		F			F

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	44.0	38.0				82.0	38.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	39.5	33.5				77.5	33.5
Max Q Clear Time (g_c+I1), s	41.5	35.5				21.3	35.5
Green Ext Time (p_c), s	0.0	0.0				3.5	0.0

Intersection Summary	
HCM 6th Ctrl Delay	463.5
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	491	2	651	24	745	0	0	846	181
Future Volume (veh/h)	0	0	0	491	2	651	24	745	0	0	846	181
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1589	1900	1900	1559	1870	0	0	1826	1885
Adj Flow Rate, veh/h				496	2	658	24	753	0	0	855	0
Peak Hour Factor				0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %				21	0	0	23	2	0	0	5	1
Cap, veh/h				702	3	1103	312	1530	0	0	2146	
Arrive On Green				0.39	0.39	0.39	0.43	0.43	0.00	0.00	0.43	0.00
Sat Flow, veh/h				1803	7	2834	538	3647	0	0	5149	1598
Grp Volume(v), veh/h				498	0	658	24	753	0	0	855	0
Grp Sat Flow(s),veh/h/ln				1810	0	1417	538	1777	0	0	1662	1598
Q Serve(g_s), s				11.6	0.0	9.2	1.6	7.6	0.0	0.0	5.9	0.0
Cycle Q Clear(g_c), s				11.6	0.0	9.2	7.5	7.6	0.0	0.0	5.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				705	0	1103	312	1530	0	0	2146	
V/C Ratio(X)				0.71	0.00	0.60	0.08	0.49	0.00	0.00	0.40	
Avail Cap(c_a), veh/h				1250	0	1958	312	1530	0	0	2146	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.8	0.0	12.1	12.3	10.3	0.0	0.0	9.8	0.0
Incr Delay (d2), s/veh				1.3	0.0	0.5	0.5	1.1	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	0.0	2.2	0.2	2.3	0.0	0.0	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.2	0.0	12.6	12.8	11.4	0.0	0.0	10.3	0.0
LnGrp LOS				B	A	B	B	B	A	A	B	
Approach Vol, veh/h					1156			777			855	A
Approach Delay, s/veh					13.3			11.5			10.3	
Approach LOS					B			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	26.0		26.0		23.9			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	21.5		21.5		34.5			
Max Q Clear Time (g_c+I1), s	9.6		7.9		13.6			
Green Ext Time (p_c), s	3.9		4.5		5.9			

Intersection Summary		
HCM 6th Ctrl Delay	11.9	
HCM 6th LOS	B	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	369	0	36	0	0	0	0	400	1096	0	759	579
Future Volume (veh/h)	369	0	36	0	0	0	0	400	1096	0	759	579
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1826	1781	0	1678	1885
Adj Flow Rate, veh/h	380	0	37				0	412	1130	0	782	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0				0	5	8	0	15	1
Cap, veh/h	561	0	250				0	2370	1031	0	2178	
Arrive On Green	0.16	0.00	0.16				0.00	0.68	0.68	0.00	0.68	0.00
Sat Flow, veh/h	3619	0	1610				0	3561	1510	0	3272	1598
Grp Volume(v), veh/h	380	0	37				0	412	1130	0	782	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1735	1510	0	1594	1598
Q Serve(g_s), s	5.5	0.0	1.1				0.0	2.4	38.0	0.0	5.7	0.0
Cycle Q Clear(g_c), s	5.5	0.0	1.1				0.0	2.4	38.0	0.0	5.7	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	561	0	250				0	2370	1031	0	2178	
V/C Ratio(X)	0.68	0.00	0.15				0.00	0.17	1.10	0.00	0.36	
Avail Cap(c_a), veh/h	1171	0	521				0	2370	1031	0	2178	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	22.2	0.0	20.3				0.0	3.2	8.8	0.0	3.7	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.3				0.0	0.2	57.9	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	0.4				0.0	0.4	21.0	0.0	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	0.0	20.6				0.0	3.3	66.7	0.0	4.2	0.0
LnGrp LOS	C	A	C				A	A	F	A	A	
Approach Vol, veh/h		417						1542			782	A
Approach Delay, s/veh		23.4						49.8			4.2	
Approach LOS		C						D			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	42.5	13.1	42.5
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	38.0	18.0	38.0
Max Q Clear Time (g_c+I1), s	40.0	7.5	7.7
Green Ext Time (p_c), s	0.0	1.1	5.5

Intersection Summary	
HCM 6th Ctrl Delay	32.7
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	129	58	2	291	0	0	0	0	759	0	117
Future Volume (veh/h)	0	129	58	2	291	0	0	0	0	759	0	117
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1670	1670	1670	1670	0				1670	1670	1670
Adj Flow Rate, veh/h	0	137	62	2	310	0				807	0	124
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	347	150	5	984	0				1224	0	561
Arrive On Green	0.00	0.16	0.16	0.00	0.31	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	2241	931	1590	3256	0				3086	0	1415
Grp Volume(v), veh/h	0	99	100	2	310	0				807	0	124
Grp Sat Flow(s),veh/h/ln	0	1586	1502	1590	1586	0				1543	0	1415
Q Serve(g_s), s	0.0	1.7	1.8	0.0	2.3	0.0				6.6	0.0	1.8
Cycle Q Clear(g_c), s	0.0	1.7	1.8	0.0	2.3	0.0				6.6	0.0	1.8
Prop In Lane	0.00		0.62	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	255	242	5	984	0				1224	0	561
V/C Ratio(X)	0.00	0.39	0.41	0.39	0.31	0.00				0.66	0.00	0.22
Avail Cap(c_a), veh/h	0	931	881	259	2843	0				2363	0	1084
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.5	11.6	15.3	8.1	0.0				7.6	0.0	6.1
Incr Delay (d2), s/veh	0.0	1.0	1.1	41.1	0.2	0.0				0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.4	0.1	0.4	0.0				1.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.5	12.7	56.3	8.3	0.0				8.2	0.0	6.3
LnGrp LOS	A	B	B	E	A	A				A	A	A
Approach Vol, veh/h		199			312						931	
Approach Delay, s/veh		12.6			8.6						7.9	
Approach LOS		B			A						A	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		4.6	9.4		16.7		14.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		5.0	18.0		23.5		27.5					
Max Q Clear Time (g_c+I1), s		2.0	3.8		8.6		4.3					
Green Ext Time (p_c), s		0.0	0.7		3.6		1.7					

Intersection Summary	
HCM 6th Ctrl Delay	8.7
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	843	0	0	156	484	137	0	9	0	0	0
Future Volume (veh/h)	45	843	0	0	156	484	137	0	9	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	48	897	0	0	166	515	146	0	10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	96	2136	0	0	1456	649	206	0	183			
Arrive On Green	0.05	0.61	0.00	0.00	0.41	0.41	0.12	0.00	0.12			
Sat Flow, veh/h	1767	3618	0	0	3618	1572	1767	0	1572			
Grp Volume(v), veh/h	48	897	0	0	166	515	146	0	10			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1572	1767	0	1572			
Q Serve(g_s), s	0.9	4.4	0.0	0.0	0.9	9.3	2.6	0.0	0.2			
Cycle Q Clear(g_c), s	0.9	4.4	0.0	0.0	0.9	9.3	2.6	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	96	2136	0	0	1456	649	206	0	183			
V/C Ratio(X)	0.50	0.42	0.00	0.00	0.11	0.79	0.71	0.00	0.05			
Avail Cap(c_a), veh/h	322	3470	0	0	2339	1043	1041	0	927			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	14.9	3.4	0.0	0.0	5.9	8.3	13.8	0.0	12.7			
Incr Delay (d2), s/veh	4.0	0.1	0.0	0.0	0.0	2.2	4.5	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.0	0.1	1.5	1.1	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	3.5	0.0	0.0	5.9	10.5	18.3	0.0	12.9			
LnGrp LOS	B	A	A	A	A	B	B	A	B			
Approach Vol, veh/h		945			681			156				
Approach Delay, s/veh		4.3			9.4			17.9				
Approach LOS		A			A			B				
Timer - Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		8.3		24.1			6.3	17.9				
Change Period (Y+Rc), s		4.5		4.5			4.5	4.5				
Max Green Setting (Gmax), s		19.1		31.9			5.9	21.5				
Max Q Clear Time (g_c+I1), s		4.6		6.4			2.9	11.3				
Green Ext Time (p_c), s		0.4		6.0			0.0	2.1				

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	53	121	782	836	45
Future Vol, veh/h	18	53	121	782	836	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	33	15	12	0
Mvmt Flow	20	58	132	850	909	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2048	934	958	0	-	0
Stage 1	934	-	-	-	-	-
Stage 2	1114	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.43	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.497	-	-	-
Pot Cap-1 Maneuver	62	325	607	-	-	-
Stage 1	386	-	-	-	-	-
Stage 2	317	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	36	325	607	-	-	-
Mov Cap-2 Maneuver	36	-	-	-	-	-
Stage 1	227	-	-	-	-	-
Stage 2	317	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	97.8	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	607	-	107	-	-
HCM Lane V/C Ratio	0.217	-	0.721	-	-
HCM Control Delay (s)	12.6	0	97.8	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.8	-	3.8	-	-

Intersection	
Int Delay, s/veh	293.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	224	74	4	808	797	210
Future Vol, veh/h	224	74	4	808	797	210
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	70	20	40	16	13	29
Mvmt Flow	249	82	4	898	886	233

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1909	1003	1119	0	-	0
Stage 1	1003	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Critical Hdwy	7.1	6.4	4.5	-	-	-
Critical Hdwy Stg 1	6.1	-	-	-	-	-
Critical Hdwy Stg 2	6.1	-	-	-	-	-
Follow-up Hdwy	4.13	3.48	2.56	-	-	-
Pot Cap-1 Maneuver	~ 50	272	503	-	-	-
Stage 1	268	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 49	272	503	-	-	-
Mov Cap-2 Maneuver	~ 49	-	-	-	-	-
Stage 1	264	-	-	-	-	-
Stage 2	302	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, $	2085.3	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	503	-	62	-	-
HCM Lane V/C Ratio	0.009	-	5.341	-	-
HCM Control Delay (s)	12.2	-	$ 2085.3	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0	-	37	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	39	444	11	15	36	430	521	7	28	632	8
Future Volume (veh/h)	37	39	444	11	15	36	430	521	7	28	632	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1707	1841	1707	1900	1900	1841	1500	1411	1781	1737	1900
Adj Flow Rate, veh/h	40	42	483	12	16	39	467	566	8	30	687	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	13	4	13	0	0	4	27	33	8	11	0
Cap, veh/h	82	86	156	15	20	48	446	885	13	40	631	8
Arrive On Green	0.10	0.10	0.10	0.05	0.05	0.05	0.25	0.60	0.60	0.02	0.37	0.37
Sat Flow, veh/h	813	854	1545	302	402	980	1753	1475	21	1697	1710	22
Grp Volume(v), veh/h	82	0	483	67	0	0	467	0	574	30	0	696
Grp Sat Flow(s),veh/h/ln	1667	0	1545	1684	0	0	1753	0	1496	1697	0	1733
Q Serve(g_s), s	4.2	0.0	9.1	3.5	0.0	0.0	22.9	0.0	22.4	1.6	0.0	33.2
Cycle Q Clear(g_c), s	4.2	0.0	9.1	3.5	0.0	0.0	22.9	0.0	22.4	1.6	0.0	33.2
Prop In Lane	0.49		1.00	0.18		0.58	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	169	0	156	82	0	0	446	0	897	40	0	639
V/C Ratio(X)	0.49	0.00	3.09	0.81	0.00	0.00	1.05	0.00	0.64	0.75	0.00	1.09
Avail Cap(c_a), veh/h	169	0	156	82	0	0	446	0	897	115	0	639
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.2	0.0	40.5	42.4	0.0	0.0	33.5	0.0	11.7	43.7	0.0	28.4
Incr Delay (d2), s/veh	2.2	0.0	958.5	48.4	0.0	0.0	55.4	0.0	2.2	24.5	0.0	62.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	45.0	2.6	0.0	0.0	16.1	0.0	7.0	0.9	0.0	23.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.4	0.0	999.0	90.8	0.0	0.0	89.0	0.0	13.8	68.2	0.0	90.6
LnGrp LOS	D	A	F	F	A	A	F	A	B	E	A	F
Approach Vol, veh/h		565			67			1041			726	
Approach Delay, s/veh		859.8			90.8			47.5			89.6	
Approach LOS		F			F			D			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	59.1		14.2	28.0	38.3		9.5				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	6.1	50.0		9.1	22.9	33.2		4.4				
Max Q Clear Time (g_c+I1), s	3.6	24.4		11.1	24.9	35.2		5.5				
Green Ext Time (p_c), s	0.0	7.6		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay		252.8
HCM 6th LOS		F

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	18.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	84	528	1	0	469	4	3	5	1	11	3	263
Future Vol, veh/h	84	528	1	0	469	4	3	5	1	11	3	263
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	74	74	74	74	74	74	74	74	74	74	74	74
Heavy Vehicles, %	2	11	0	0	6	0	0	0	0	0	0	4
Mvmt Flow	114	714	1	0	634	5	4	7	1	15	4	355

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	639	0	0	715	0	0	1759	1582	715	1584	1580	637
Stage 1	-	-	-	-	-	-	943	943	-	637	637	-
Stage 2	-	-	-	-	-	-	816	639	-	947	943	-
Critical Hdwy	4.12	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.218	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.336
Pot Cap-1 Maneuver	945	-	-	895	-	-	67	110	434	89	110	474
Stage 1	-	-	-	-	-	-	318	344	-	469	475	-
Stage 2	-	-	-	-	-	-	374	474	-	316	344	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	945	-	-	895	-	-	14	88	434	71	88	474
Mov Cap-2 Maneuver	-	-	-	-	-	-	14	88	-	71	88	-
Stage 1	-	-	-	-	-	-	254	275	-	375	475	-
Stage 2	-	-	-	-	-	-	93	474	-	246	275	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0	167.7	82.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	33	945	-	-	895	-	-	372
HCM Lane V/C Ratio	0.369	0.12	-	-	-	-	-	1.006
HCM Control Delay (s)	167.7	9.3	0	-	0	-	-	82.3
HCM Lane LOS	F	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	1.2	0.4	-	-	0	-	-	12

Intersection	
Int Delay, s/veh	17.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	97	3	4	602	700	0
Future Vol, veh/h	97	3	4	602	700	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	4	0	0	23	11	0
Mvmt Flow	124	4	5	772	897	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1679	897	897	0	-	0
Stage 1	897	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Critical Hdwy	6.44	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 103	341	765	-	-	0
Stage 1	395	-	-	-	-	0
Stage 2	447	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 102	341	765	-	-	-
Mov Cap-2 Maneuver	~ 102	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	240.1	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	765	-	104	-
HCM Lane V/C Ratio	0.007	-	1.233	-
HCM Control Delay (s)	9.7	0	240.1	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	8.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	542	528	410	795	636	161
Future Volume (veh/h)	542	528	410	795	636	161
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1648	1856	1856	1722	1707
Adj Flow Rate, veh/h	616	600	466	903	723	183
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	17	3	3	12	13
Cap, veh/h	935	373	498	2164	815	778
Arrive On Green	0.27	0.27	0.28	0.61	0.26	0.26
Sat Flow, veh/h	3589	1397	1767	3618	3182	1447
Grp Volume(v), veh/h	616	600	466	903	723	183
Grp Sat Flow(s),veh/h/ln	1749	1397	1767	1763	1591	1447
Q Serve(g_s), s	10.8	18.5	17.8	9.2	15.1	4.6
Cycle Q Clear(g_c), s	10.8	18.5	17.8	9.2	15.1	4.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	935	373	498	2164	815	778
V/C Ratio(X)	0.66	1.61	0.94	0.42	0.89	0.24
Avail Cap(c_a), veh/h	935	373	498	2164	850	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.6	25.4	24.3	6.9	24.8	8.5
Incr Delay (d2), s/veh	1.7	285.7	25.4	0.1	10.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	34.7	9.7	2.1	6.6	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	24.3	311.0	49.6	7.1	35.7	8.6
LnGrp LOS	C	F	D	A	D	A
Approach Vol, veh/h	1216			1369	906	
Approach Delay, s/veh	165.8			21.6	30.2	
Approach LOS	F			C	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		47.0			24.0	23.0	22.2
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		42.5			19.5	18.5	18.5
Max Q Clear Time (g_c+I1), s		11.2			19.8	20.5	17.1
Green Ext Time (p_c), s		6.1			0.0	0.0	0.6

Intersection Summary	
HCM 6th Ctrl Delay	74.0
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	104	3	195	107	413	10	567	134	416	1507	20
Future Volume (veh/h)	106	104	3	195	107	413	10	567	134	416	1507	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1796	1900	1885	1767	1796	1307	1722	1796	1841	1870	1900
Adj Flow Rate, veh/h	110	108	3	157	175	430	10	591	0	433	1570	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	7	0	1	9	7	40	12	7	4	2	0
Cap, veh/h	153	147	4	382	376	715	12	752		451	1696	
Arrive On Green	0.08	0.08	0.08	0.21	0.21	0.21	0.01	0.23	0.00	0.26	0.48	0.00
Sat Flow, veh/h	1810	1739	48	1795	1767	1522	1245	3272	1522	1753	3647	0
Grp Volume(v), veh/h	110	0	111	157	175	430	10	591	0	433	1570	0
Grp Sat Flow(s),veh/h/ln	1810	0	1788	1795	1767	1522	1245	1636	1522	1753	1777	0
Q Serve(g_s), s	6.7	0.0	6.8	8.5	9.8	23.6	0.9	19.2	0.0	27.5	46.7	0.0
Cycle Q Clear(g_c), s	6.7	0.0	6.8	8.5	9.8	23.6	0.9	19.2	0.0	27.5	46.7	0.0
Prop In Lane	1.00		0.03	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	153	0	151	382	376	715	12	752		451	1696	
V/C Ratio(X)	0.72	0.00	0.74	0.41	0.47	0.60	0.84	0.79		0.96	0.93	
Avail Cap(c_a), veh/h	433	0	428	382	376	715	50	887		451	1735	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.4	0.0	50.4	38.3	38.8	22.1	55.8	40.9	0.0	41.4	27.6	0.0
Incr Delay (d2), s/veh	6.3	0.0	6.8	0.7	0.9	1.4	81.4	4.4	0.0	32.5	9.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	3.2	3.6	4.1	7.8	0.5	7.7	0.0	15.1	19.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.6	0.0	57.3	39.0	39.7	23.5	137.2	45.3	0.0	73.8	36.6	0.0
LnGrp LOS	E	A	E	D	D	C	F	D		E	D	
Approach Vol, veh/h		221			762			601	A		2003	A
Approach Delay, s/veh		56.9			30.4			46.8			44.7	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	34.0	32.9		15.7	6.1	60.9		30.2
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	29.0	30.6		27.0	4.5	55.1		24.0
Max Q Clear Time (g_c+I1), s	29.5	21.2		8.8	2.9	48.7		25.6
Green Ext Time (p_c), s	0.0	3.0		0.7	0.0	5.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1476	16	3	878	209	11	174	0	457	53	1
Future Volume (veh/h)	1	1476	16	3	878	209	11	174	0	457	53	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1663	1900	1900	1900	1856	1767	1900
Adj Flow Rate, veh/h	1	1554	17	3	924	220	12	183	0	481	56	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	5	16	0	0	0	3	9	0
Cap, veh/h	2	1760	19	7	904	1057	24	237	0	450	634	11
Arrive On Green	0.00	0.49	0.49	0.00	0.50	0.50	0.01	0.12	0.00	0.25	0.37	0.37
Sat Flow, veh/h	1810	3572	39	1810	1826	1409	1810	1900	0	1767	1730	31
Grp Volume(v), veh/h	1	766	805	3	924	220	12	183	0	481	0	57
Grp Sat Flow(s),veh/h/ln	1810	1763	1849	1810	1826	1409	1810	1900	0	1767	0	1761
Q Serve(g_s), s	0.1	56.7	56.8	0.2	71.9	6.7	1.0	13.5	0.0	37.0	0.0	3.1
Cycle Q Clear(g_c), s	0.1	56.7	56.8	0.2	71.9	6.7	1.0	13.5	0.0	37.0	0.0	3.1
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	868	911	7	904	1057	24	237	0	450	0	645
V/C Ratio(X)	0.41	0.88	0.88	0.42	1.02	0.21	0.50	0.77	0.00	1.07	0.00	0.09
Avail Cap(c_a), veh/h	62	873	915	62	904	1057	65	237	0	450	0	645
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	72.4	33.1	33.1	72.1	36.6	5.4	71.2	61.6	0.0	54.1	0.0	30.1
Incr Delay (d2), s/veh	82.5	10.5	10.2	35.3	35.6	0.1	15.3	21.4	0.0	61.8	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	24.9	26.0	0.2	38.2	1.6	0.5	7.8	0.0	23.7	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	154.9	43.6	43.3	107.4	72.2	5.5	86.5	82.9	0.0	115.9	0.0	30.4
LnGrp LOS	F	D	D	F	F	A	F	F	A	F	A	C
Approach Vol, veh/h		1572			1147			195			538	
Approach Delay, s/veh		43.5			59.5			83.1			106.8	
Approach LOS		D			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	22.6	5.1	76.0	6.4	57.7	4.7	76.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	37.0	18.1	5.0	71.9	5.2	49.9	5.0	71.9
Max Q Clear Time (g_c+I1), s	39.0	15.5	2.2	58.8	3.0	5.1	2.1	73.9
Green Ext Time (p_c), s	0.0	0.2	0.0	7.7	0.0	0.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	60.9
HCM 6th LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	425	2	61	879	49	0	329	60	46	458	80
Future Volume (veh/h)	9	425	2	61	879	49	0	329	60	46	458	80
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	447	2	64	925	52	0	346	63	48	482	84
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	20	1003	4	92	1083	61	3	540	98	78	864	732
Arrive On Green	0.01	0.28	0.28	0.05	0.32	0.32	0.00	0.35	0.35	0.04	0.47	0.47
Sat Flow, veh/h	1767	3599	16	1767	3393	191	1767	1527	278	1767	1856	1572
Grp Volume(v), veh/h	9	219	230	64	481	496	0	0	409	48	482	84
Grp Sat Flow(s),veh/h/ln	1767	1763	1853	1767	1763	1821	1767	0	1805	1767	1856	1572
Q Serve(g_s), s	0.3	6.8	6.8	2.4	16.9	16.9	0.0	0.0	12.5	1.8	12.4	2.0
Cycle Q Clear(g_c), s	0.3	6.8	6.8	2.4	16.9	16.9	0.0	0.0	12.5	1.8	12.4	2.0
Prop In Lane	1.00		0.01	1.00		0.10	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	20	491	516	92	563	581	3	0	638	78	864	732
V/C Ratio(X)	0.44	0.45	0.45	0.69	0.85	0.85	0.00	0.00	0.64	0.61	0.56	0.11
Avail Cap(c_a), veh/h	133	575	604	184	625	646	133	0	638	136	864	732
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	19.7	19.7	30.9	21.1	21.1	0.0	0.0	17.9	31.1	12.8	10.0
Incr Delay (d2), s/veh	14.3	0.6	0.6	8.9	10.3	10.0	0.0	0.0	4.9	7.6	2.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.5	2.6	1.1	7.4	7.6	0.0	0.0	5.3	0.9	4.9	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.9	20.3	20.3	39.8	31.4	31.1	0.0	0.0	22.8	38.7	15.4	10.3
LnGrp LOS	D	C	C	D	C	C	A	A	C	D	B	B
Approach Vol, veh/h		458			1041			409			614	
Approach Delay, s/veh		20.8			31.8			22.8			16.5	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	27.9	8.0	23.0	0.0	35.3	5.3	25.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.1	23.4	6.9	21.6	5.0	23.5	5.0	23.5
Max Q Clear Time (g_c+I1), s	3.8	14.5	4.4	8.8	0.0	14.4	2.3	18.9
Green Ext Time (p_c), s	0.0	1.5	0.0	1.8	0.0	2.1	0.0	2.3

Intersection Summary	
HCM 6th Ctrl Delay	24.6
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	15	446	12	88	23	842	579	9	6	612	18
Future Volume (veh/h)	8	15	446	12	88	23	842	579	9	6	612	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	9	16	0	13	96	25	915	629	10	7	665	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	18	32		164	132	34	1072	2148	34	16	1053	32
Arrive On Green	0.03	0.03	0.00	0.09	0.09	0.09	0.31	0.60	0.60	0.01	0.30	0.30
Sat Flow, veh/h	656	1167	1572	1767	1419	370	3428	3552	56	1767	3494	105
Grp Volume(v), veh/h	25	0	0	13	0	121	915	312	327	7	335	350
Grp Sat Flow(s),veh/h/ln	1823	0	1572	1767	0	1789	1714	1763	1845	1767	1763	1837
Q Serve(g_s), s	0.9	0.0	0.0	0.5	0.0	4.5	17.0	5.8	5.8	0.3	11.1	11.1
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.5	0.0	4.5	17.0	5.8	5.8	0.3	11.1	11.1
Prop In Lane	0.36		1.00	1.00		0.21	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	50	0		164	0	166	1072	1066	1116	16	531	553
V/C Ratio(X)	0.50	0.00		0.08	0.00	0.73	0.85	0.29	0.29	0.43	0.63	0.63
Avail Cap(c_a), veh/h	484	0		469	0	475	1340	1066	1116	130	531	553
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.5	0.0	0.0	28.1	0.0	29.9	21.8	6.4	6.4	33.4	20.4	20.4
Incr Delay (d2), s/veh	7.3	0.0	0.0	0.2	0.0	6.0	4.6	0.7	0.7	17.4	5.6	5.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.0	0.2	0.0	2.0	6.3	1.5	1.6	0.2	4.6	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.8	0.0	0.0	28.3	0.0	35.9	26.4	7.1	7.1	50.8	26.1	25.8
LnGrp LOS	D	A		C	A	D	C	A	A	D	C	C
Approach Vol, veh/h		25	A		134			1554			692	
Approach Delay, s/veh		39.8			35.2			18.5			26.2	
Approach LOS		D			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	45.5		6.4	25.7	24.9		10.8
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.6	41.0		18.0	26.5	19.5		18.0
Max Q Clear Time (g_c+I1), s	2.3	7.8		2.9	19.0	13.1		6.5
Green Ext Time (p_c), s	0.0	3.4		0.0	2.2	1.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	21.9
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	506	407	517	28	35	700
Future Volume (veh/h)	506	407	517	28	35	700
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1841	1752	1618	1767	1811	1885
Adj Flow Rate, veh/h	562	452	574	31	39	778
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	10	19	9	6	1
Cap, veh/h	555	1224	538	497	347	827
Arrive On Green	0.32	0.70	0.33	0.33	0.20	0.20
Sat Flow, veh/h	1753	1752	1618	1497	1725	1598
Grp Volume(v), veh/h	562	452	574	31	39	778
Grp Sat Flow(s),veh/h/ln	1753	1752	1618	1497	1725	1598
Q Serve(g_s), s	28.5	9.4	29.9	1.3	1.7	18.1
Cycle Q Clear(g_c), s	28.5	9.4	29.9	1.3	1.7	18.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	555	1224	538	497	347	827
V/C Ratio(X)	1.01	0.37	1.07	0.06	0.11	0.94
Avail Cap(c_a), veh/h	555	1224	538	497	347	827
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.8	5.5	30.0	20.5	29.4	20.4
Incr Delay (d2), s/veh	41.3	0.2	58.1	0.1	0.7	19.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	2.2	18.9	0.4	0.7	33.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	72.1	5.7	88.1	20.5	30.0	40.2
LnGrp LOS	F	A	F	C	C	D
Approach Vol, veh/h		1014	605		817	
Approach Delay, s/veh		42.5	84.7		39.7	
Approach LOS		D	F		D	

Timer - Assigned Phs		4		6	7	8
Phs Duration (G+Y+Rc), s		67.4		22.6	33.0	34.4
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		62.9		18.1	28.5	29.9
Max Q Clear Time (g_c+I1), s		11.4		20.1	30.5	31.9
Green Ext Time (p_c), s		2.6		0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	52.0
HCM 6th LOS	D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	665	359	358	833	294	354
Future Volume (veh/h)	665	359	358	833	294	354
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	739	399	398	926	327	393
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	755	407	497	1045	500	445
Arrive On Green	0.34	0.34	0.15	0.56	0.28	0.28
Sat Flow, veh/h	2305	1191	3428	1856	1767	1572
Grp Volume(v), veh/h	588	550	398	926	327	393
Grp Sat Flow(s),veh/h/ln	1763	1641	1714	1856	1767	1572
Q Serve(g_s), s	19.3	19.4	6.6	25.5	9.5	14.0
Cycle Q Clear(g_c), s	19.3	19.4	6.6	25.5	9.5	14.0
Prop In Lane		0.73	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	602	560	497	1045	500	445
V/C Ratio(X)	0.98	0.98	0.80	0.89	0.65	0.88
Avail Cap(c_a), veh/h	602	560	497	1045	543	483
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	19.1	24.2	11.2	18.5	20.1
Incr Delay (d2), s/veh	31.0	33.1	9.0	9.3	2.5	16.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.1	10.7	2.9	8.4	3.6	13.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	50.1	52.2	33.3	20.5	21.0	36.5
LnGrp LOS	D	D	C	C	C	D
Approach Vol, veh/h	1138			1324	720	
Approach Delay, s/veh	51.1			24.3	29.4	
Approach LOS	D			C	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		37.5		21.1	13.0	24.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		33.0		18.0	8.5	20.0
Max Q Clear Time (g_c+I1), s		27.5		16.0	8.6	21.4
Green Ext Time (p_c), s		2.8		0.6	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		35.1
HCM 6th LOS		D



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	291	726	531	465	725	375
Future Volume (veh/h)	291	726	531	465	725	375
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	313	781	571	500	780	403
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	308	274	558	473	729	1393
Arrive On Green	0.17	0.17	0.30	0.30	0.41	0.75
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	313	781	571	500	780	403
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	20.9	20.9	36.1	36.1	49.5	8.3
Cycle Q Clear(g_c), s	20.9	20.9	36.1	36.1	49.5	8.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	308	274	558	473	729	1393
V/C Ratio(X)	1.02	2.85	1.02	1.06	1.07	0.29
Avail Cap(c_a), veh/h	308	274	558	473	729	1393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.6	49.5	42.0	42.0	35.3	4.8
Incr Delay (d2), s/veh	55.7	843.2	44.0	57.2	53.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.8	72.2	22.2	20.6	30.2	2.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	105.2	892.8	86.0	99.2	88.9	5.3
LnGrp LOS	F	F	F	F	F	A
Approach Vol, veh/h	1094		1071			1183
Approach Delay, s/veh	667.5		92.1			60.4
Approach LOS	F		F			E

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	54.0	40.6				94.6	25.4
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	49.5	36.1				90.1	20.9
Max Q Clear Time (g_c+I1), s	51.5	38.1				10.3	22.9
Green Ext Time (p_c), s	0.0	0.0				2.2	0.0

Intersection Summary	
HCM 6th Ctrl Delay	268.9
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	982	92	511	5	457	0	0	673	373
Future Volume (veh/h)	0	0	0	982	92	511	5	457	0	0	673	373
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1648	1870	1737	1411	1589	0	0	1737	1900
Adj Flow Rate, veh/h				1116	105	581	6	519	0	0	765	0
Peak Hour Factor				0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %				17	2	11	33	21	0	0	11	0
Cap, veh/h				1172	110	1857	93	575	0	0	903	
Arrive On Green				0.72	0.72	0.72	0.19	0.19	0.00	0.00	0.19	0.00
Sat Flow, veh/h				1635	154	2591	530	3098	0	0	4898	1610
Grp Volume(v), veh/h				1221	0	581	6	519	0	0	765	0
Grp Sat Flow(s),veh/h/ln				1789	0	1295	530	1509	0	0	1581	1610
Q Serve(g_s), s				59.2	0.0	7.9	1.1	16.3	0.0	0.0	15.1	0.0
Cycle Q Clear(g_c), s				59.2	0.0	7.9	16.2	16.3	0.0	0.0	15.1	0.0
Prop In Lane				0.91		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				1282	0	1857	93	575	0	0	903	
V/C Ratio(X)				0.95	0.00	0.31	0.06	0.90	0.00	0.00	0.85	
Avail Cap(c_a), veh/h				1335	0	1934	93	575	0	0	903	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.3	0.0	5.0	45.8	38.4	0.0	0.0	37.9	0.0
Incr Delay (d2), s/veh				14.5	0.0	0.1	1.3	19.9	0.0	0.0	9.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				20.8	0.0	1.5	0.2	7.3	0.0	0.0	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				26.8	0.0	5.1	47.1	58.4	0.0	0.0	47.6	0.0
LnGrp LOS				C	A	A	D	E	A	A	D	
Approach Vol, veh/h					1802			525			765	A
Approach Delay, s/veh					19.8			58.2			47.6	
Approach LOS					B			E			D	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	23.0		23.0		74.1			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	18.5		18.5		72.5			
Max Q Clear Time (g_c+I1), s	18.3		17.1		61.2			
Green Ext Time (p_c), s	0.1		0.7		8.5			

Intersection Summary		
HCM 6th Ctrl Delay	33.2	
HCM 6th LOS	C	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	4	48	0	0	0	0	279	264	0	1318	337
Future Volume (veh/h)	184	4	48	0	0	0	0	279	264	0	1318	337
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1159	1455				0	1352	1159	0	1693	1870
Adj Flow Rate, veh/h	197	0	51				0	294	278	0	1387	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	50	30				0	37	50	0	14	2
Cap, veh/h	370	0	131				0	1803	690	0	2258	
Arrive On Green	0.11	0.00	0.11				0.00	0.70	0.70	0.00	0.70	0.00
Sat Flow, veh/h	3478	0	1233				0	2636	982	0	3300	1585
Grp Volume(v), veh/h	197	0	51				0	294	278	0	1387	0
Grp Sat Flow(s),veh/h/ln	1739	0	1233				0	1284	982	0	1608	1585
Q Serve(g_s), s	2.5	0.0	1.8				0.0	1.8	5.5	0.0	10.6	0.0
Cycle Q Clear(g_c), s	2.5	0.0	1.8				0.0	1.8	5.5	0.0	10.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	370	0	131				0	1803	690	0	2258	
V/C Ratio(X)	0.53	0.00	0.39				0.00	0.16	0.40	0.00	0.61	
Avail Cap(c_a), veh/h	1332	0	472				0	1803	690	0	2258	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	19.9	0.0	19.6				0.0	2.4	2.9	0.0	3.7	0.0
Incr Delay (d2), s/veh	1.2	0.0	1.9				0.0	0.2	1.8	0.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	0.0	0.5				0.0	0.1	0.5	0.0	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.4				0.0	2.5	4.7	0.0	4.9	0.0
LnGrp LOS	C	A	C				A	A	A	A	A	
Approach Vol, veh/h		248						572			1387	A
Approach Delay, s/veh		21.2						3.6			4.9	
Approach LOS		C						A			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	37.5	9.5	37.5
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	33.0	18.0	33.0
Max Q Clear Time (g_c+I1), s	7.5	4.5	12.6
Green Ext Time (p_c), s	2.8	0.7	9.9

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	174	120	3	420	0	0	0	0	336	0	157
Future Volume (veh/h)	0	174	120	3	420	0	0	0	0	336	0	157
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1683	1683	1683	1683	0				1683	1683	1683
Adj Flow Rate, veh/h	0	189	130	3	457	0				365	0	171
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	412	269	7	1274	0				801	0	368
Arrive On Green	0.00	0.22	0.22	0.00	0.40	0.00				0.26	0.00	0.26
Sat Flow, veh/h	0	1938	1211	1603	3282	0				3110	0	1427
Grp Volume(v), veh/h	0	162	157	3	457	0				365	0	171
Grp Sat Flow(s),veh/h/ln	0	1599	1465	1603	1599	0				1555	0	1427
Q Serve(g_s), s	0.0	2.3	2.4	0.0	2.6	0.0				2.6	0.0	2.6
Cycle Q Clear(g_c), s	0.0	2.3	2.4	0.0	2.6	0.0				2.6	0.0	2.6
Prop In Lane	0.00		0.83	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	355	325	7	1274	0				801	0	368
V/C Ratio(X)	0.00	0.46	0.48	0.45	0.36	0.00				0.46	0.00	0.47
Avail Cap(c_a), veh/h	0	1192	1093	337	3608	0				2557	0	1173
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.8	8.9	13.0	5.5	0.0				8.2	0.0	8.2
Incr Delay (d2), s/veh	0.0	0.9	1.1	41.8	0.2	0.0				0.4	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.4	0.1	0.2	0.0				0.6	0.0	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.7	10.0	54.8	5.7	0.0				8.6	0.0	9.1
LnGrp LOS	A	A	A	D	A	A				A	A	A
Approach Vol, veh/h		319			460						536	
Approach Delay, s/veh		9.8			6.0						8.7	
Approach LOS		A			A						A	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		4.6	10.3		11.2		14.9					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		5.5	19.5		21.5		29.5					
Max Q Clear Time (g_c+I1), s		2.0	4.4		4.6		4.6					
Green Ext Time (p_c), s		0.0	1.4		2.2		2.7					

Intersection Summary	
HCM 6th Ctrl Delay	8.1
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	449	0	0	317	638	106	0	6	0	0	0
Future Volume (veh/h)	61	449	0	0	317	638	106	0	6	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	66	488	0	0	345	693	115	0	7			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	117	2398	0	0	1755	783	168	0	149			
Arrive On Green	0.07	0.67	0.00	0.00	0.49	0.49	0.09	0.00	0.09			
Sat Flow, veh/h	1781	3647	0	0	3647	1585	1781	0	1585			
Grp Volume(v), veh/h	66	488	0	0	345	693	115	0	7			
Grp Sat Flow(s),veh/h/ln	1781	1777	0	0	1777	1585	1781	0	1585			
Q Serve(g_s), s	1.4	2.0	0.0	0.0	2.1	15.3	2.4	0.0	0.2			
Cycle Q Clear(g_c), s	1.4	2.0	0.0	0.0	2.1	15.3	2.4	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	117	2398	0	0	1755	783	168	0	149			
V/C Ratio(X)	0.57	0.20	0.00	0.00	0.20	0.89	0.69	0.00	0.05			
Avail Cap(c_a), veh/h	251	2874	0	0	1961	875	892	0	793			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.7	2.4	0.0	0.0	5.5	8.9	17.1	0.0	16.1			
Incr Delay (d2), s/veh	4.2	0.0	0.0	0.0	0.1	10.0	4.9	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.0	0.0	0.3	4.3	1.1	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	2.4	0.0	0.0	5.6	18.9	22.0	0.0	16.2			
LnGrp LOS	C	A	A	A	A	B	C	A	B			
Approach Vol, veh/h		554			1038			122				
Approach Delay, s/veh		4.7			14.5			21.7				
Approach LOS		A			B			C				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	8.2	30.8	7.1	23.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	31.5	5.5	21.5
Max Q Clear Time (g_c+I1), s	4.4	4.0	3.4	17.3
Green Ext Time (p_c), s	0.3	2.9	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	11.8
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	80	182	112	1526	982	39
Future Vol, veh/h	80	182	112	1526	982	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	9	0
Mvmt Flow	83	190	117	1590	1023	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2868	1044	1064	0	-	0
Stage 1	1044	-	-	-	-	-
Stage 2	1824	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 19	281	662	-	-	-
Stage 1	342	-	-	-	-	-
Stage 2	142	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0	281	662	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	142	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	86.4	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	662	-	281	-	-
HCM Lane V/C Ratio	0.176	-	0.971	-	-
HCM Control Delay (s)	11.6	0	86.4	-	-
HCM Lane LOS	B	A	F	-	-
HCM 95th %tile Q(veh)	0.6	-	9.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1235.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	292	0	0	1592	987	176
Future Vol, veh/h	292	0	0	1592	987	176
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	14	0	0	4	9	43
Mvmt Flow	340	0	0	1851	1148	205

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3102	1251	1353	0	-	0
Stage 1	1251	-	-	-	-	-
Stage 2	1851	-	-	-	-	-
Critical Hdwy	6.54	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 12	213	515	-	-	-
Stage 1	~ 255	-	-	-	-	-
Stage 2	~ 127	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 12	213	515	-	-	-
Mov Cap-2 Maneuver	~ 12	-	-	-	-	-
Stage 1	~ 255	-	-	-	-	-
Stage 2	~ 127	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 12891.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	515	-	12	-	-
HCM Lane V/C Ratio	-	-	28.295	-	-
HCM Control Delay (s)	0	-	$ 12891.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	43.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	21	795	23	18	48	821	1004	10	28	368	4
Future Volume (veh/h)	12	21	795	23	18	48	821	1004	10	28	368	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	12	22	820	24	19	49	846	1035	10	29	379	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	102	186	246	22	17	45	670	970	9	41	311	3
Arrive On Green	0.16	0.16	0.16	0.05	0.05	0.05	0.38	0.54	0.54	0.02	0.18	0.18
Sat Flow, veh/h	618	1133	1497	447	354	913	1767	1805	17	1767	1716	18
Grp Volume(v), veh/h	34	0	820	92	0	0	846	0	1045	29	0	383
Grp Sat Flow(s),veh/h/ln	1751	0	1497	1713	0	0	1767	0	1823	1767	0	1734
Q Serve(g_s), s	1.5	0.0	14.8	4.4	0.0	0.0	34.1	0.0	48.3	1.5	0.0	16.3
Cycle Q Clear(g_c), s	1.5	0.0	14.8	4.4	0.0	0.0	34.1	0.0	48.3	1.5	0.0	16.3
Prop In Lane	0.35		1.00	0.26		0.53	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	288	0	246	84	0	0	670	0	979	41	0	314
V/C Ratio(X)	0.12	0.00	3.33	1.10	0.00	0.00	1.26	0.00	1.07	0.72	0.00	1.22
Avail Cap(c_a), veh/h	288	0	246	84	0	0	670	0	979	88	0	314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.0	0.0	37.6	42.8	0.0	0.0	27.9	0.0	20.8	43.7	0.0	36.9
Incr Delay (d2), s/veh	0.2	0.0	1059.2	127.5	0.0	0.0	130.3	0.0	48.5	20.8	0.0	124.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	77.8	4.8	0.0	0.0	37.6	0.0	31.1	0.9	0.0	17.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.2	0.0	1096.8	170.3	0.0	0.0	158.3	0.0	69.4	64.5	0.0	161.1
LnGrp LOS	C	A	F	F	A	A	F	A	F	E	A	F
Approach Vol, veh/h		854			92			1891			412	
Approach Delay, s/veh		1054.4			170.3			109.1			154.3	
Approach LOS		F			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	53.4		19.9	39.2	21.4		9.5				
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1				
Max Green Setting (Gmax), s	4.5	45.9		14.8	34.1	16.3		4.4				
Max Q Clear Time (g_c+I1), s	3.5	50.3		16.8	36.1	18.3		6.4				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		365.1	
HCM 6th LOS		F	

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	759.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	274	828	0	5	797	13	0	6	0	21	4	95
Future Vol, veh/h	274	828	0	5	797	13	0	6	0	21	4	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	9	0	25	7	44	0	0	0	50	0	20
Mvmt Flow	301	910	0	5	876	14	0	7	0	23	4	104

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	890	0	0	910	0	0	2459	2412	910	2409	2405	883
Stage 1	-	-	-	-	-	-	1512	1512	-	893	893	-
Stage 2	-	-	-	-	-	-	947	900	-	1516	1512	-
Critical Hdwy	4.12	-	-	4.35	-	-	7.1	6.5	6.2	7.6	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.6	5.5	-
Follow-up Hdwy	2.218	-	-	2.425	-	-	3.5	4	3.3	3.95	4	3.48
Pot Cap-1 Maneuver	761	-	-	661	-	-	21	33	336	~ 16	34	320
Stage 1	-	-	-	-	-	-	151	184	-	278	363	-
Stage 2	-	-	-	-	-	-	316	360	-	116	184	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	761	-	-	661	-	-	3	7	336	~ 1	7	320
Mov Cap-2 Maneuver	-	-	-	-	-	-	3	7	-	~ 1	7	-
Stage 1	-	-	-	-	-	-	30	37	-	56	358	-
Stage 2	-	-	-	-	-	-	207	355	-	~ 19	37	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.2	0.1	$ 973.3	$ 12848
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	7	761	-	-	661	-	-	5
HCM Lane V/C Ratio	0.942	0.396	-	-	0.008	-	-	26.374
HCM Control Delay (s)	$ 973.3	12.8	0	-	10.5	0	-	$ 12848
HCM Lane LOS	F	B	A	-	B	A	-	F
HCM 95th %tile Q(veh)	1.5	1.9	-	-	0	-	-	18.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	112.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	281	15	3	1039	404	0
Future Vol, veh/h	281	15	3	1039	404	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	296	16	3	1094	425	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1525	425	425	0	-	0
Stage 1	425	-	-	-	-	-
Stage 2	1100	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	~ 131	634	1145	-	-	0
Stage 1	664	-	-	-	-	0
Stage 2	322	-	-	-	-	0
Platoon blocked, %				-	-	
Mov Cap-1 Maneuver	~ 130	634	1145	-	-	-
Mov Cap-2 Maneuver	~ 130	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	322	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 664.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT
Capacity (veh/h)	1145	-	135	-
HCM Lane V/C Ratio	0.003	-	2.308	-
HCM Control Delay (s)	8.2	0	$ 664.1	-
HCM Lane LOS	A	A	F	-
HCM 95th %tile Q(veh)	0	-	26.5	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	912	423	184	683	927	430
Future Volume (veh/h)	912	423	184	683	927	430
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1693	1767	1841	1826	1885
Adj Flow Rate, veh/h	981	455	198	734	997	462
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	4	14	9	4	5	1
Cap, veh/h	1194	489	210	1893	1041	693
Arrive On Green	0.34	0.34	0.13	0.54	0.31	0.31
Sat Flow, veh/h	3589	1434	1682	3589	3374	1598
Grp Volume(v), veh/h	981	455	198	734	997	462
Grp Sat Flow(s),veh/h/ln	1749	1434	1682	1749	1687	1598
Q Serve(g_s), s	15.4	18.4	7.0	7.3	17.4	13.8
Cycle Q Clear(g_c), s	15.4	18.4	7.0	7.3	17.4	13.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1194	489	210	1893	1041	693
V/C Ratio(X)	0.82	0.93	0.94	0.39	0.96	0.67
Avail Cap(c_a), veh/h	1196	490	210	1896	1041	693
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	19.1	26.0	8.0	20.3	13.5
Incr Delay (d2), s/veh	4.7	24.3	45.5	0.1	18.6	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	7.9	5.0	1.7	8.8	4.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	22.8	43.4	71.6	8.1	38.9	16.0
LnGrp LOS	C	D	E	A	D	B
Approach Vol, veh/h	1436			932	1459	
Approach Delay, s/veh	29.3			21.6	31.6	
Approach LOS	C			C	C	

Timer - Assigned Phs		2			5	6	8
Phs Duration (G+Y+Rc), s		37.0			12.0	25.0	23.0
Change Period (Y+Rc), s		4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s		32.5			7.5	20.5	18.5
Max Q Clear Time (g_c+I1), s		9.3			9.0	20.4	19.4
Green Ext Time (p_c), s		4.4			0.0	0.1	0.0

Intersection Summary		
HCM 6th Ctrl Delay	28.3	
HCM 6th LOS	C	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	108	5	92	66	689	17	1662	282	749	667	14
Future Volume (veh/h)	0	108	5	92	66	689	17	1662	282	749	667	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	112	5	82	88	718	18	1731	0	780	695	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	145	140	6	312	342	625	25	1180		357	1801	
Arrive On Green	0.00	0.08	0.08	0.19	0.19	0.19	0.01	0.33	0.00	0.21	0.53	0.00
Sat Flow, veh/h	1810	1749	78	1668	1826	1572	1697	3554	1560	1697	3503	0
Grp Volume(v), veh/h	0	0	117	82	88	718	18	1731	0	780	695	0
Grp Sat Flow(s),veh/h/ln	1810	0	1827	1668	1826	1572	1697	1777	1560	1697	1706	0
Q Serve(g_s), s	0.0	0.0	8.1	5.4	5.3	24.0	1.4	42.6	0.0	27.0	15.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	8.1	5.4	5.3	24.0	1.4	42.6	0.0	27.0	15.5	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	145	0	147	312	342	625	25	1180		357	1801	
V/C Ratio(X)	0.00	0.00	0.80	0.26	0.26	1.15	0.72	1.47		2.18	0.39	
Avail Cap(c_a), veh/h	381	0	384	312	342	625	79	1180		357	1801	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	58.0	44.6	44.5	38.7	62.9	42.9	0.0	50.7	18.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	9.5	0.4	0.4	84.5	31.7	214.9	0.0	542.3	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	4.0	2.2	2.3	32.8	0.8	52.7	0.0	64.7	5.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	67.4	45.0	44.9	123.2	94.7	257.7	0.0	592.9	18.2	0.0
LnGrp LOS	A	A	E	D	D	F	F	F		F	B	
Approach Vol, veh/h		117			888			1749	A		1475	A
Approach Delay, s/veh		67.4			108.2			256.0			322.1	
Approach LOS		E			F			F			F	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	49.6		16.5	6.9	74.7		30.2
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	27.0	42.6		27.0	6.0	63.6		24.0
Max Q Clear Time (g_c+I1), s	29.0	44.6		10.1	3.4	17.5		26.0
Green Ext Time (p_c), s	0.0	0.0		0.4	0.0	6.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	242.8
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1227	10	1	1518	825	81	375	48	167	15	10
Future Volume (veh/h)	24	1227	10	1	1518	825	81	375	48	167	15	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	24	1252	10	1	1549	842	83	383	49	170	15	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	38	2123	17	2	1088	1035	104	324	41	127	237	158
Arrive On Green	0.02	0.60	0.60	0.00	0.58	0.58	0.06	0.21	0.21	0.07	0.22	0.22
Sat Flow, veh/h	1810	3556	28	1810	1885	1598	1810	1548	198	1795	1063	709
Grp Volume(v), veh/h	24	616	646	1	1549	842	83	0	432	170	0	25
Grp Sat Flow(s),veh/h/ln	1810	1749	1836	1810	1885	1598	1810	0	1746	1795	0	1772
Q Serve(g_s), s	1.9	32.4	32.4	0.1	85.5	58.1	6.7	0.0	31.0	10.5	0.0	1.6
Cycle Q Clear(g_c), s	1.9	32.4	32.4	0.1	85.5	58.1	6.7	0.0	31.0	10.5	0.0	1.6
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.11	1.00		0.40
Lane Grp Cap(c), veh/h	38	1044	1096	2	1088	1035	104	0	365	127	0	395
V/C Ratio(X)	0.63	0.59	0.59	0.41	1.42	0.81	0.80	0.00	1.18	1.34	0.00	0.06
Avail Cap(c_a), veh/h	61	1044	1096	61	1088	1035	162	0	365	127	0	395
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	71.9	18.6	18.6	73.9	31.3	19.4	69.0	0.0	58.6	68.8	0.0	45.4
Incr Delay (d2), s/veh	15.6	0.9	0.8	82.5	196.0	5.1	14.1	0.0	106.7	194.8	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	12.2	12.8	0.1	93.7	20.1	3.5	0.0	24.2	11.6	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.5	19.4	19.4	156.4	227.4	24.5	83.1	0.0	165.3	263.6	0.0	45.7
LnGrp LOS	F	B	B	F	F	C	F	A	F	F	A	D
Approach Vol, veh/h		1286			2392			515			195	
Approach Delay, s/veh		20.7			155.9			152.0			235.7	
Approach LOS		C			F			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	35.5	4.7	92.9	13.0	37.5	7.6	90.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.5	31.0	5.0	85.5	13.3	28.2	5.0	85.5
Max Q Clear Time (g_c+I1), s	12.5	33.0	2.1	34.4	8.7	3.6	3.9	87.5
Green Ext Time (p_c), s	0.0	0.0	0.0	9.2	0.1	0.1	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	119.4
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	784	2	19	635	92	11	1060	157	66	187	22
Future Volume (veh/h)	84	784	2	19	635	92	11	1060	157	66	187	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	99	922	2	22	747	108	13	1247	185	78	220	26
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	88	818	2	35	608	88	25	932	138	77	1149	974
Arrive On Green	0.05	0.23	0.23	0.02	0.20	0.20	0.01	0.59	0.59	0.04	0.62	0.62
Sat Flow, veh/h	1767	3609	8	1767	3091	447	1767	1579	234	1767	1856	1572
Grp Volume(v), veh/h	99	450	474	22	426	429	13	0	1432	78	220	26
Grp Sat Flow(s),veh/h/ln	1767	1763	1854	1767	1763	1775	1767	0	1813	1767	1856	1572
Q Serve(g_s), s	7.5	34.0	34.0	1.9	29.5	29.5	1.1	0.0	88.5	6.5	7.7	1.0
Cycle Q Clear(g_c), s	7.5	34.0	34.0	1.9	29.5	29.5	1.1	0.0	88.5	6.5	7.7	1.0
Prop In Lane	1.00		0.00	1.00		0.25	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	88	400	420	35	347	349	25	0	1070	77	1149	974
V/C Ratio(X)	1.12	1.13	1.13	0.62	1.23	1.23	0.53	0.00	1.34	1.02	0.19	0.03
Avail Cap(c_a), veh/h	88	400	420	59	347	349	64	0	1070	77	1149	974
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.2	58.0	58.0	72.9	60.2	60.3	73.5	0.0	30.8	71.8	12.3	11.0
Incr Delay (d2), s/veh	132.0	84.3	83.3	16.5	125.6	125.8	16.4	0.0	158.7	108.1	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	24.1	25.2	1.0	24.9	25.1	0.6	0.0	82.4	5.2	3.2	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	203.3	142.3	141.3	89.5	185.9	186.1	89.8	0.0	189.4	179.8	12.7	11.1
LnGrp LOS	F	F	F	F	F	F	F	A	F	F	B	B
Approach Vol, veh/h		1023			877			1445			324	
Approach Delay, s/veh		147.7			183.6			188.5			52.8	
Approach LOS		F			F			F			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	93.0	7.5	38.5	6.6	97.4	12.0	34.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.5	88.5	5.0	32.0	5.4	89.6	7.5	29.5
Max Q Clear Time (g_c+I1), s	9.5	90.5	3.9	36.0	3.1	9.7	9.5	31.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	164.0
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	98	817	11	60	14	736	853	21	22	507	4
Future Volume (veh/h)	28	98	817	11	60	14	736	853	21	22	507	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	30	107	0	12	65	15	800	927	23	24	551	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	41	146		112	92	21	941	1860	46	48	1011	7
Arrive On Green	0.10	0.10	0.00	0.06	0.06	0.06	0.27	0.53	0.53	0.03	0.28	0.28
Sat Flow, veh/h	402	1434	1572	1767	1458	337	3428	3515	87	1767	3588	26
Grp Volume(v), veh/h	137	0	0	12	0	80	800	465	485	24	271	284
Grp Sat Flow(s),veh/h/ln	1835	0	1572	1767	0	1795	1714	1763	1840	1767	1763	1851
Q Serve(g_s), s	4.7	0.0	0.0	0.4	0.0	2.8	14.3	10.9	10.9	0.9	8.4	8.4
Cycle Q Clear(g_c), s	4.7	0.0	0.0	0.4	0.0	2.8	14.3	10.9	10.9	0.9	8.4	8.4
Prop In Lane	0.22		1.00	1.00		0.19	1.00		0.05	1.00		0.01
Lane Grp Cap(c), veh/h	187	0		112	0	114	941	933	974	48	497	522
V/C Ratio(X)	0.73	0.00		0.11	0.00	0.70	0.85	0.50	0.50	0.50	0.54	0.54
Avail Cap(c_a), veh/h	702	0		492	0	500	1125	933	974	139	497	522
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	0.0	28.5	0.0	29.7	22.2	9.7	9.7	31.0	19.7	19.7
Incr Delay (d2), s/veh	5.5	0.0	0.0	0.4	0.0	7.7	5.5	1.9	1.8	7.9	4.2	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	0.0	0.2	0.0	1.3	5.4	3.3	3.4	0.4	3.4	3.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	0.0	29.0	0.0	37.4	27.7	11.6	11.5	38.9	23.9	23.7
LnGrp LOS	C	A		C	A	D	C	B	B	D	C	C
Approach Vol, veh/h		137	A		92			1750			579	
Approach Delay, s/veh		33.6			36.3			19.0			24.5	
Approach LOS		C			D			B			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	38.7		11.1	22.2	22.7		8.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.1	34.2		24.7	21.2	18.1		18.0
Max Q Clear Time (g_c+I1), s	2.9	12.9		6.7	16.3	10.4		4.8
Green Ext Time (p_c), s	0.0	5.2		0.5	1.5	1.7		0.2

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	727	564	556	75	33	434
Future Volume (veh/h)	727	564	556	75	33	434
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1885	1767	1811	1900	1752	1885
Adj Flow Rate, veh/h	773	600	591	80	35	462
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	9	6	0	10	1
Cap, veh/h	756	1362	566	503	257	919
Arrive On Green	0.42	0.77	0.31	0.31	0.15	0.15
Sat Flow, veh/h	1795	1767	1811	1610	1668	1598
Grp Volume(v), veh/h	773	600	591	80	35	462
Grp Sat Flow(s),veh/h/ln	1795	1767	1811	1610	1668	1598
Q Serve(g_s), s	50.5	14.1	37.5	4.3	2.2	18.5
Cycle Q Clear(g_c), s	50.5	14.1	37.5	4.3	2.2	18.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	756	1362	566	503	257	919
V/C Ratio(X)	1.02	0.44	1.04	0.16	0.14	0.50
Avail Cap(c_a), veh/h	756	1362	566	503	257	919
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	4.8	41.3	29.8	43.8	15.2
Incr Delay (d2), s/veh	38.7	0.2	49.9	0.1	1.1	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.1	3.4	23.4	1.6	1.0	22.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	73.5	5.0	91.1	30.0	44.9	17.2
LnGrp LOS	F	A	F	C	D	B
Approach Vol, veh/h		1373	671		497	
Approach Delay, s/veh		43.5	83.8		19.2	
Approach LOS		D	F		B	

Timer - Assigned Phs			4		6	7	8
Phs Duration (G+Y+Rc), s			97.0		23.0	55.0	42.0
Change Period (Y+Rc), s			4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s			92.5		18.5	50.5	37.5
Max Q Clear Time (g_c+I1), s			16.1		20.5	52.5	39.5
Green Ext Time (p_c), s			3.8		0.0	0.0	0.0

Intersection Summary		
HCM 6th Ctrl Delay		49.4
HCM 6th LOS		D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	840	425	518	1315	436	793
Future Volume (veh/h)	840	425	518	1315	436	793
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	884	447	545	1384	459	835
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	980	490	612	1206	474	422
Arrive On Green	0.43	0.43	0.18	0.65	0.27	0.27
Sat Flow, veh/h	2369	1138	3428	1856	1767	1572
Grp Volume(v), veh/h	682	649	545	1384	459	835
Grp Sat Flow(s),veh/h/ln	1763	1651	1714	1856	1767	1572
Q Serve(g_s), s	39.6	40.5	17.1	71.5	28.2	29.5
Cycle Q Clear(g_c), s	39.6	40.5	17.1	71.5	28.2	29.5
Prop In Lane		0.69	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	759	711	612	1206	474	422
V/C Ratio(X)	0.90	0.91	0.89	1.15	0.97	1.98
Avail Cap(c_a), veh/h	759	711	673	1206	474	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	29.4	44.1	19.2	39.8	40.2
Incr Delay (d2), s/veh	13.6	16.2	13.2	76.5	33.2	449.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.8	17.5	8.0	48.7	16.0	75.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	42.7	45.5	57.4	95.7	73.0	489.7
LnGrp LOS	D	D	E	F	E	F
Approach Vol, veh/h	1331			1929	1294	
Approach Delay, s/veh	44.1			84.9	341.9	
Approach LOS	D			F	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		76.0		34.0	24.1	51.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		71.5		29.5	21.6	45.4
Max Q Clear Time (g_c+I1), s		73.5		31.5	19.1	42.5
Green Ext Time (p_c), s		0.0		0.0	0.6	2.0

Intersection Summary		
HCM 6th Ctrl Delay		146.0
HCM 6th LOS		F



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	651	1305	514	878	1050	593
Future Volume (veh/h)	651	1305	514	878	1050	593
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	664	1332	524	896	1071	605
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	493	439	518	439	582	1198
Arrive On Green	0.28	0.28	0.28	0.28	0.33	0.65
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	664	1332	524	896	1071	605
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	33.5	33.5	33.5	33.5	39.5	20.6
Cycle Q Clear(g_c), s	33.5	33.5	33.5	33.5	39.5	20.6
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	493	439	518	439	582	1198
V/C Ratio(X)	1.35	3.03	1.01	2.04	1.84	0.50
Avail Cap(c_a), veh/h	493	439	518	439	582	1198
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.3	43.3	43.3	43.3	40.3	11.2
Incr Delay (d2), s/veh	168.8	921.5	42.5	476.4	385.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	37.3	125.0	20.5	70.3	78.2	7.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	212.0	964.7	85.7	519.6	425.4	12.7
LnGrp LOS	F	F	F	F	F	B
Approach Vol, veh/h	1996		1420			1676
Approach Delay, s/veh	714.3		359.5			276.4
Approach LOS	F		F			F

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	44.0	38.0				82.0	38.0
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	39.5	33.5				77.5	33.5
Max Q Clear Time (g_c+I1), s	41.5	35.5				22.6	35.5
Green Ext Time (p_c), s	0.0	0.0				3.7	0.0

Intersection Summary	
HCM 6th Ctrl Delay	471.3
HCM 6th LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	491	2	688	24	782	0	0	904	238
Future Volume (veh/h)	0	0	0	491	2	688	24	782	0	0	904	238
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1589	1900	1900	1559	1870	0	0	1826	1885
Adj Flow Rate, veh/h				496	2	695	24	790	0	0	913	0
Peak Hour Factor				0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %				21	0	0	23	2	0	0	5	1
Cap, veh/h				706	3	1110	297	1524	0	0	2138	
Arrive On Green				0.39	0.39	0.39	0.43	0.43	0.00	0.00	0.43	0.00
Sat Flow, veh/h				1803	7	2834	510	3647	0	0	5149	1598
Grp Volume(v), veh/h				498	0	695	24	790	0	0	913	0
Grp Sat Flow(s),veh/h/ln				1810	0	1417	510	1777	0	0	1662	1598
Q Serve(g_s), s				11.6	0.0	9.9	1.7	8.2	0.0	0.0	6.4	0.0
Cycle Q Clear(g_c), s				11.6	0.0	9.9	8.2	8.2	0.0	0.0	6.4	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				709	0	1110	297	1524	0	0	2138	
V/C Ratio(X)				0.70	0.00	0.63	0.08	0.52	0.00	0.00	0.43	
Avail Cap(c_a), veh/h				1245	0	1950	297	1524	0	0	2138	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				12.8	0.0	12.3	12.9	10.5	0.0	0.0	10.0	0.0
Incr Delay (d2), s/veh				1.3	0.0	0.6	0.5	1.3	0.0	0.0	0.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				3.6	0.0	2.3	0.2	2.5	0.0	0.0	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				14.1	0.0	12.9	13.4	11.8	0.0	0.0	10.6	0.0
LnGrp LOS				B	A	B	B	B	A	A	B	
Approach Vol, veh/h					1193			814			913	A
Approach Delay, s/veh					13.4			11.8			10.6	
Approach LOS					B			B			B	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	26.0		26.0		24.1			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	21.5		21.5		34.5			
Max Q Clear Time (g_c+I1), s	10.2		8.4		13.6			
Green Ext Time (p_c), s	4.0		4.8		6.1			

Intersection Summary		
HCM 6th Ctrl Delay	12.1	
HCM 6th LOS	B	

Notes

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	406	0	36	0	0	0	0	400	1096	0	759	637
Future Volume (veh/h)	406	0	36	0	0	0	0	400	1096	0	759	637
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900				0	1826	1781	0	1678	1885
Adj Flow Rate, veh/h	419	0	37				0	412	1130	0	782	0
Peak Hour Factor	0.97	0.97	0.97				0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	0	0				0	5	8	0	15	1
Cap, veh/h	601	0	267				0	2339	1018	0	2149	
Arrive On Green	0.17	0.00	0.17				0.00	0.67	0.67	0.00	0.67	0.00
Sat Flow, veh/h	3619	0	1610				0	3561	1510	0	3272	1598
Grp Volume(v), veh/h	419	0	37				0	412	1130	0	782	0
Grp Sat Flow(s),veh/h/ln	1810	0	1610				0	1735	1510	0	1594	1598
Q Serve(g_s), s	6.2	0.0	1.1				0.0	2.5	38.0	0.0	6.0	0.0
Cycle Q Clear(g_c), s	6.2	0.0	1.1				0.0	2.5	38.0	0.0	6.0	0.0
Prop In Lane	1.00		1.00				0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	601	0	267				0	2339	1018	0	2149	
V/C Ratio(X)	0.70	0.00	0.14				0.00	0.18	1.11	0.00	0.36	
Avail Cap(c_a), veh/h	1156	0	514				0	2339	1018	0	2149	
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	22.2	0.0	20.1				0.0	3.4	9.2	0.0	4.0	0.0
Incr Delay (d2), s/veh	1.5	0.0	0.2				0.0	0.2	63.5	0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	0.4				0.0	0.4	22.8	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.6	0.0	20.3				0.0	3.6	72.7	0.0	4.4	0.0
LnGrp LOS	C	A	C				A	A	F	A	A	
Approach Vol, veh/h		456						1542			782	A
Approach Delay, s/veh		23.4						54.2			4.4	
Approach LOS		C						D			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	42.5	13.9	42.5
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	38.0	18.0	38.0
Max Q Clear Time (g_c+I1), s	40.0	8.2	8.0
Green Ext Time (p_c), s	0.0	1.2	5.5

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	129	58	2	292	0	0	0	0	779	0	117
Future Volume (veh/h)	0	129	58	2	292	0	0	0	0	779	0	117
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1670	1670	1670	1670	0				1670	1670	1670
Adj Flow Rate, veh/h	0	137	62	2	311	0				829	0	124
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94				0.94	0.94	0.94
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	344	148	5	974	0				1242	0	570
Arrive On Green	0.00	0.16	0.16	0.00	0.31	0.00				0.40	0.00	0.40
Sat Flow, veh/h	0	2241	931	1590	3256	0				3086	0	1415
Grp Volume(v), veh/h	0	99	100	2	311	0				829	0	124
Grp Sat Flow(s),veh/h/ln	0	1586	1502	1590	1586	0				1543	0	1415
Q Serve(g_s), s	0.0	1.7	1.9	0.0	2.3	0.0				6.8	0.0	1.8
Cycle Q Clear(g_c), s	0.0	1.7	1.9	0.0	2.3	0.0				6.8	0.0	1.8
Prop In Lane	0.00		0.62	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	253	239	5	974	0				1242	0	570
V/C Ratio(X)	0.00	0.39	0.42	0.39	0.32	0.00				0.67	0.00	0.22
Avail Cap(c_a), veh/h	0	921	872	256	2814	0				2338	0	1072
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.7	11.7	15.4	8.3	0.0				7.6	0.0	6.1
Incr Delay (d2), s/veh	0.0	1.0	1.2	42.0	0.2	0.0				0.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.4	0.4	0.1	0.4	0.0				1.4	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	12.7	12.9	57.5	8.4	0.0				8.2	0.0	6.3
LnGrp LOS	A	B	B	E	A	A				A	A	A
Approach Vol, veh/h		199			313						953	
Approach Delay, s/veh		12.8			8.8						7.9	
Approach LOS		B			A						A	

Timer - Assigned Phs		3	4		6		8					
Phs Duration (G+Y+Rc), s		4.6	9.4		17.0		14.0					
Change Period (Y+Rc), s		4.5	4.5		4.5		4.5					
Max Green Setting (Gmax), s		5.0	18.0		23.5		27.5					
Max Q Clear Time (g_c+I1), s		2.0	3.9		8.8		4.3					
Green Ext Time (p_c), s		0.0	0.7		3.7		1.7					

Intersection Summary	
HCM 6th Ctrl Delay	8.8
HCM 6th LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	863	0	0	156	515	138	0	9	0	0	0
Future Volume (veh/h)	45	863	0	0	156	515	138	0	9	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	48	918	0	0	166	548	147	0	10			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	95	2173	0	0	1510	674	204	0	182			
Arrive On Green	0.05	0.62	0.00	0.00	0.43	0.43	0.12	0.00	0.12			
Sat Flow, veh/h	1767	3618	0	0	3618	1572	1767	0	1572			
Grp Volume(v), veh/h	48	918	0	0	166	548	147	0	10			
Grp Sat Flow(s),veh/h/ln	1767	1763	0	0	1763	1572	1767	0	1572			
Q Serve(g_s), s	0.9	4.5	0.0	0.0	0.9	10.3	2.7	0.0	0.2			
Cycle Q Clear(g_c), s	0.9	4.5	0.0	0.0	0.9	10.3	2.7	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	95	2173	0	0	1510	674	204	0	182			
V/C Ratio(X)	0.51	0.42	0.00	0.00	0.11	0.81	0.72	0.00	0.05			
Avail Cap(c_a), veh/h	311	3350	0	0	2258	1007	1006	0	895			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	15.4	3.3	0.0	0.0	5.8	8.4	14.3	0.0	13.2			
Incr Delay (d2), s/veh	4.1	0.1	0.0	0.0	0.0	3.2	4.7	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	0.0	0.1	1.9	1.1	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.6	3.5	0.0	0.0	5.8	11.6	19.0	0.0	13.3			
LnGrp LOS	B	A	A	A	A	B	B	A	B			
Approach Vol, veh/h		966			714			157				
Approach Delay, s/veh		4.3			10.3			18.7				
Approach LOS		A			B			B				

Timer - Assigned Phs	2	4	7	8
Phs Duration (G+Y+Rc), s	8.4	25.2	6.3	18.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.1	31.9	5.9	21.5
Max Q Clear Time (g_c+I1), s	4.7	6.5	2.9	12.3
Green Ext Time (p_c), s	0.4	6.2	0.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A



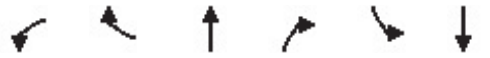
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	85	5	5	465	580	208
Future Volume (veh/h)	85	5	5	465	580	208
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	863	1604	1307	1663	1707	1470
Adj Flow Rate, veh/h	94	6	6	517	644	231
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	70	20	40	16	13	29
Cap, veh/h	83	5	102	1068	776	278
Arrive On Green	0.11	0.11	0.65	0.65	0.65	0.65
Sat Flow, veh/h	759	48	4	1651	1200	430
Grp Volume(v), veh/h	101	0	523	0	0	875
Grp Sat Flow(s),veh/h/ln	816	0	1655	0	0	1630
Q Serve(g_s), s	4.0	0.0	0.0	0.0	0.0	15.1
Cycle Q Clear(g_c), s	4.0	0.0	6.0	0.0	0.0	15.1
Prop In Lane	0.93	0.06	0.01			0.26
Lane Grp Cap(c), veh/h	89	0	1169	0	0	1054
V/C Ratio(X)	1.14	0.00	0.45	0.00	0.00	0.83
Avail Cap(c_a), veh/h	399	0	2237	0	0	2124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	0.0	3.4	0.0	0.0	5.0
Incr Delay (d2), s/veh	87.2	0.0	0.3	0.0	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.1	0.0	0.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	103.7	0.0	3.6	0.0	0.0	6.7
LnGrp LOS	F	A	A	A	A	A
Approach Vol, veh/h	101			523	875	
Approach Delay, s/veh	103.7			3.6	6.7	
Approach LOS	F			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		28.3		8.5		28.3
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		48.0		18.0		48.0
Max Q Clear Time (g_c+I1), s		8.0		6.0		17.1
Green Ext Time (p_c), s		3.2		0.2		6.7

Intersection Summary	
HCM 6th Ctrl Delay	12.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	155	491	247	248	400	174
Future Volume (veh/h)	155	491	247	248	400	174
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	167	528	266	267	430	187
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	454	826	523	443	474	1140
Arrive On Green	0.26	0.26	0.28	0.28	0.27	0.61
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	167	528	266	267	430	187
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	5.4	16.8	8.4	10.3	16.5	3.0
Cycle Q Clear(g_c), s	5.4	16.8	8.4	10.3	16.5	3.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	454	826	523	443	474	1140
V/C Ratio(X)	0.37	0.64	0.51	0.60	0.91	0.16
Avail Cap(c_a), veh/h	454	826	523	443	518	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	11.9	21.1	21.7	24.8	5.8
Incr Delay (d2), s/veh	0.5	1.7	3.5	6.0	18.8	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	5.1	3.6	3.9	8.3	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.8	13.5	24.6	27.7	43.6	6.1
LnGrp LOS	C	B	C	C	D	A
Approach Vol, veh/h	695		533			617
Approach Delay, s/veh	15.5		26.1			32.2
Approach LOS	B		C			C

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	23.3	24.2			47.5	22.5
Change Period (Y+Rc), s	4.5	4.5			4.5	4.5
Max Green Setting (Gmax), s	20.5	18.0			43.0	18.0
Max Q Clear Time (g_c+I1), s	18.5	12.3			5.0	18.8
Green Ext Time (p_c), s	0.3	1.1			0.9	0.0

Intersection Summary		
HCM 6th Ctrl Delay		24.2
HCM 6th LOS		C

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	67	170	109	812	570	39
Future Vol, veh/h	67	170	109	812	570	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	4	9	0
Mvmt Flow	70	177	114	846	594	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1689	615	635	0	-	0
Stage 1	615	-	-	-	-	-
Stage 2	1074	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	104	495	958	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	331	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	81	495	958	-	-	-
Mov Cap-2 Maneuver	258	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	331	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.4	1.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	958	-	393	-	-
HCM Lane V/C Ratio	0.119	-	0.628	-	-
HCM Control Delay (s)	9.3	0	28.4	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.4	-	4.1	-	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	271	1	1	913	636	178
Future Volume (veh/h)	271	1	1	913	636	178
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1693	1900	1900	1841	1767	1263
Adj Flow Rate, veh/h	315	1	1	1062	740	207
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Percent Heavy Veh, %	14	0	0	4	9	43
Cap, veh/h	361	1	53	1182	853	239
Arrive On Green	0.23	0.23	0.64	0.64	0.64	0.64
Sat Flow, veh/h	1601	5	0	1840	1328	372
Grp Volume(v), veh/h	317	0	1063	0	0	947
Grp Sat Flow(s),veh/h/ln	1612	0	1840	0	0	1700
Q Serve(g_s), s	12.9	0.0	0.0	0.0	0.0	30.7
Cycle Q Clear(g_c), s	12.9	0.0	33.4	0.0	0.0	30.7
Prop In Lane	0.99	0.00	0.00			0.22
Lane Grp Cap(c), veh/h	364	0	1235	0	0	1092
V/C Ratio(X)	0.87	0.00	0.86	0.00	0.00	0.87
Avail Cap(c_a), veh/h	484	0	1683	0	0	1506
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	0.0	10.3	0.0	0.0	9.9
Incr Delay (d2), s/veh	12.7	0.0	3.6	0.0	0.0	4.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.9	0.0	8.3	0.0	0.0	7.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	38.2	0.0	13.9	0.0	0.0	14.0
LnGrp LOS	D	A	B	A	A	B
Approach Vol, veh/h	317			1063	947	
Approach Delay, s/veh	38.2			13.9	14.0	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		48.4		19.9		48.4
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		60.5		20.5		60.5
Max Q Clear Time (g_c+I1), s		35.4		14.9		32.7
Green Ext Time (p_c), s		8.5		0.5		7.4

Intersection Summary		
HCM 6th Ctrl Delay		17.3
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	24	428	16	11	31	456	695	8	30	294	4
Future Volume (veh/h)	14	24	428	16	11	31	456	695	8	30	294	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	14	25	441	16	11	32	470	716	8	31	303	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	61	110	591	20	14	39	525	892	10	47	384	5
Arrive On Green	0.10	0.10	0.10	0.04	0.04	0.04	0.30	0.50	0.50	0.03	0.22	0.22
Sat Flow, veh/h	628	1122	1497	464	319	927	1767	1802	20	1767	1710	23
Grp Volume(v), veh/h	39	0	441	59	0	0	470	0	724	31	0	307
Grp Sat Flow(s),veh/h/ln	1750	0	1497	1710	0	0	1767	0	1822	1767	0	1733
Q Serve(g_s), s	1.2	0.0	5.9	2.1	0.0	0.0	15.4	0.0	20.1	1.0	0.0	10.1
Cycle Q Clear(g_c), s	1.2	0.0	5.9	2.1	0.0	0.0	15.4	0.0	20.1	1.0	0.0	10.1
Prop In Lane	0.36		1.00	0.27		0.54	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	171	0	591	73	0	0	525	0	902	47	0	389
V/C Ratio(X)	0.23	0.00	0.75	0.81	0.00	0.00	0.89	0.00	0.80	0.65	0.00	0.79
Avail Cap(c_a), veh/h	171	0	591	125	0	0	612	0	1051	132	0	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.1	0.0	15.7	28.7	0.0	0.0	20.3	0.0	12.8	29.1	0.0	22.1
Incr Delay (d2), s/veh	0.7	0.0	5.1	35.3	0.0	0.0	14.2	0.0	5.1	14.1	0.0	8.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	5.5	1.5	0.0	0.0	7.6	0.0	7.7	0.6	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.8	0.0	20.8	63.9	0.0	0.0	34.5	0.0	17.9	43.2	0.0	30.8
LnGrp LOS	C	A	C	E	A	A	C	A	B	D	A	C
Approach Vol, veh/h		480			59			1194			338	
Approach Delay, s/veh		21.2			63.9			24.4			31.9	
Approach LOS		C			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	35.0		11.0	23.0	18.7		7.7
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1
Max Green Setting (Gmax), s	4.5	34.8		5.9	20.9	18.4		4.4
Max Q Clear Time (g_c+I1), s	3.0	22.1		7.9	17.4	12.1		4.1
Green Ext Time (p_c), s	0.0	6.6		0.0	0.6	1.5		0.0

Intersection Summary		
HCM 6th Ctrl Delay		26.0
HCM 6th LOS		C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	251	14	2	739	332	0
Future Volume (veh/h)	251	14	2	739	332	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1826	1767	0
Adj Flow Rate, veh/h	264	15	2	778	349	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	5	9	0
Cap, veh/h	348	20	99	1004	972	0
Arrive On Green	0.21	0.21	0.55	0.55	0.55	0.00
Sat Flow, veh/h	1695	96	1	1824	1767	0
Grp Volume(v), veh/h	280	0	780	0	349	0
Grp Sat Flow(s),veh/h/ln	1798	0	1825	0	1767	0
Q Serve(g_s), s	5.4	0.0	0.0	0.0	4.1	0.0
Cycle Q Clear(g_c), s	5.4	0.0	12.3	0.0	4.1	0.0
Prop In Lane	0.94	0.05	0.00			0.00
Lane Grp Cap(c), veh/h	369	0	1102	0	972	0
V/C Ratio(X)	0.76	0.00	0.71	0.00	0.36	0.00
Avail Cap(c_a), veh/h	879	0	1734	0	1584	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	13.8	0.0	6.5	0.0	4.6	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.8	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	2.9	0.0	0.9	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.0	0.0	7.3	0.0	4.9	0.0
LnGrp LOS	B	A	A	A	A	A
Approach Vol, veh/h	280			780	349	
Approach Delay, s/veh	17.0			7.3	4.9	
Approach LOS	B			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		24.8		12.1		24.8
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0
Max Q Clear Time (g_c+I1), s		14.3		7.4		6.1
Green Ext Time (p_c), s		5.9		0.6		2.3

Intersection Summary		
HCM 6th Ctrl Delay		8.6
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	167	8	87	63	353	13	1198	229	287	339	9
Future Volume (veh/h)	0	167	8	87	63	353	13	1198	229	287	339	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	174	8	91	0	412	14	1248	0	299	353	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	214	207	9	217	0	990	21	1317		314	1854	
Arrive On Green	0.00	0.12	0.12	0.13	0.00	0.13	0.01	0.37	0.00	0.18	0.54	0.00
Sat Flow, veh/h	1810	1746	80	1668	0	3145	1697	3554	1560	1697	3503	0
Grp Volume(v), veh/h	0	0	182	91	0	412	14	1248	0	299	353	0
Grp Sat Flow(s),veh/h/ln	1810	0	1826	1668	0	1572	1697	1777	1560	1697	1706	0
Q Serve(g_s), s	0.0	0.0	12.1	6.2	0.0	12.8	1.0	42.4	0.0	21.7	6.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	12.1	6.2	0.0	12.8	1.0	42.4	0.0	21.7	6.6	0.0
Prop In Lane	1.00		0.04	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	214	0	216	217	0	990	21	1317		314	1854	
V/C Ratio(X)	0.00	0.00	0.84	0.42	0.00	0.42	0.67	0.95		0.95	0.19	
Avail Cap(c_a), veh/h	393	0	397	322	0	1189	78	1332		314	1854	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	53.7	49.8	0.0	33.6	61.1	38.0	0.0	50.1	14.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	8.6	1.3	0.0	0.3	31.1	14.1	0.0	38.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	5.9	2.6	0.0	4.7	0.6	19.6	0.0	12.1	2.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	62.2	51.1	0.0	33.9	92.2	52.1	0.0	88.3	14.5	0.0
LnGrp LOS	A	A	E	D	A	C	F	D		F	B	
Approach Vol, veh/h		182			503			1262	A		652	A
Approach Delay, s/veh		62.2			37.0			52.5			48.4	
Approach LOS		E			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	28.0	53.1		20.9	6.5	74.5		22.3
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	23.0	46.6		27.0	5.7	63.9		24.0
Max Q Clear Time (g_c+I1), s	23.7	44.4		14.1	3.0	8.6		14.8
Green Ext Time (p_c), s	0.0	1.7		0.6	0.0	2.9		1.3

Intersection Summary	
HCM 6th Ctrl Delay	49.1
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	430	0	1	944	650	5	14	3	189	6	0
Future Volume (veh/h)	1	430	0	1	944	650	5	14	3	189	6	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	1	439	0	1	963	663	5	14	3	193	6	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	2	1746	0	2	941	905	12	314	67	505	534	0
Arrive On Green	0.00	0.50	0.00	0.00	0.50	0.50	0.01	0.22	0.22	0.07	0.28	0.00
Sat Flow, veh/h	1810	3589	0	1810	1885	1598	1810	1422	305	1795	1900	0
Grp Volume(v), veh/h	1	439	0	1	963	663	5	0	17	193	6	0
Grp Sat Flow(s),veh/h/ln	1810	1749	0	1810	1885	1598	1810	0	1727	1795	1900	0
Q Serve(g_s), s	0.0	6.1	0.0	0.0	42.5	26.2	0.2	0.0	0.7	5.7	0.2	0.0
Cycle Q Clear(g_c), s	0.0	6.1	0.0	0.0	42.5	26.2	0.2	0.0	0.7	5.7	0.2	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.18	1.00		0.00
Lane Grp Cap(c), veh/h	2	1746	0	2	941	905	12	0	381	505	534	0
V/C Ratio(X)	0.40	0.25	0.00	0.40	1.02	0.73	0.42	0.00	0.04	0.38	0.01	0.00
Avail Cap(c_a), veh/h	106	1746	0	106	941	905	106	0	381	505	534	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	42.5	12.2	0.0	42.5	21.3	13.7	42.1	0.0	26.1	23.1	22.1	0.0
Incr Delay (d2), s/veh	81.1	0.1	0.0	81.1	35.3	3.1	22.1	0.0	0.2	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.0	0.0	0.1	24.0	7.9	0.2	0.0	0.3	2.8	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	123.5	12.3	0.0	123.5	56.6	16.8	64.2	0.0	26.3	23.6	22.1	0.0
LnGrp LOS	F	B	A	F	F	B	E	A	C	C	C	A
Approach Vol, veh/h		440			1627			22			199	
Approach Delay, s/veh		12.5			40.4			34.9			23.5	
Approach LOS		B			D			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	23.3	4.6	47.0	5.1	28.4	4.6	47.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.7	18.8	5.0	42.5	5.0	19.5	5.0	42.5
Max Q Clear Time (g_c+I1), s	7.7	2.7	2.0	8.1	2.2	2.2	2.0	44.5
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	567	2	15	305	74	6	590	86	59	171	19
Future Volume (veh/h)	89	567	2	15	305	74	6	590	86	59	171	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	105	667	2	18	359	87	7	694	101	69	201	22
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	129	1086	3	35	358	87	16	710	103	88	908	770
Arrive On Green	0.07	0.30	0.30	0.02	0.25	0.25	0.01	0.45	0.45	0.05	0.49	0.49
Sat Flow, veh/h	1767	3606	11	1767	1443	350	1767	1584	230	1767	1856	1572
Grp Volume(v), veh/h	105	326	343	18	0	446	7	0	795	69	201	22
Grp Sat Flow(s),veh/h/ln	1767	1763	1854	1767	0	1793	1767	0	1814	1767	1856	1572
Q Serve(g_s), s	5.8	15.8	15.8	1.0	0.0	24.7	0.4	0.0	42.9	3.8	6.2	0.7
Cycle Q Clear(g_c), s	5.8	15.8	15.8	1.0	0.0	24.7	0.4	0.0	42.9	3.8	6.2	0.7
Prop In Lane	1.00		0.01	1.00		0.20	1.00		0.13	1.00		1.00
Lane Grp Cap(c), veh/h	129	531	559	35	0	444	16	0	813	88	908	770
V/C Ratio(X)	0.81	0.61	0.61	0.52	0.00	1.00	0.45	0.00	0.98	0.78	0.22	0.03
Avail Cap(c_a), veh/h	129	531	559	90	0	444	89	0	813	94	908	770
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	29.9	29.9	48.4	0.0	37.5	49.2	0.0	27.0	46.8	14.6	13.2
Incr Delay (d2), s/veh	30.9	2.1	2.0	11.4	0.0	43.7	18.8	0.0	26.5	32.0	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	6.5	6.9	0.5	0.0	15.5	0.2	0.0	22.6	2.4	2.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.4	32.0	31.9	59.8	0.0	81.2	68.0	0.0	53.5	78.8	15.1	13.2
LnGrp LOS	E	C	C	E	A	F	E	A	D	E	B	B
Approach Vol, veh/h		774			464			802			292	
Approach Delay, s/veh		37.9			80.4			53.6			30.0	
Approach LOS		D			F			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	49.2	6.5	34.5	5.4	53.3	11.8	29.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.3	44.7	5.1	26.9	5.0	45.0	7.3	24.7
Max Q Clear Time (g_c+I1), s	5.8	44.9	3.0	17.8	2.4	8.2	7.8	26.7
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	1.2	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.8
HCM 6th LOS	D



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	342	568	169	461	536	249
Future Volume (veh/h)	342	568	169	461	536	249
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	349	580	172	470	547	254
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	460	925	555	470	580	1233
Arrive On Green	0.26	0.26	0.30	0.30	0.33	0.66
Sat Flow, veh/h	1767	1572	1856	1572	1767	1856
Grp Volume(v), veh/h	349	580	172	470	547	254
Grp Sat Flow(s),veh/h/ln	1767	1572	1856	1572	1767	1856
Q Serve(g_s), s	21.8	28.8	8.6	35.7	36.0	6.4
Cycle Q Clear(g_c), s	21.8	28.8	8.6	35.7	36.0	6.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	460	925	555	470	580	1233
V/C Ratio(X)	0.76	0.63	0.31	1.00	0.94	0.21
Avail Cap(c_a), veh/h	465	930	555	470	687	1233
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.8	16.1	32.4	41.9	39.1	7.8
Incr Delay (d2), s/veh	7.1	1.3	1.4	41.3	19.9	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	9.8	3.9	18.3	17.7	2.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	47.9	17.4	33.8	83.2	59.0	8.2
LnGrp LOS	D	B	C	F	E	A
Approach Vol, veh/h	929		642			801
Approach Delay, s/veh	28.8		70.0			42.9
Approach LOS	C		E			D

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	43.7	40.3				84.0	35.6
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	46.5	28.5				79.5	31.5
Max Q Clear Time (g_c+I1), s	38.0	37.7				8.4	30.8
Green Ext Time (p_c), s	1.2	0.0				1.3	0.3

Intersection Summary	
HCM 6th Ctrl Delay	44.7
HCM 6th LOS	D



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	53	121	782	836	45
Future Volume (veh/h)	18	53	121	782	836	45
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1411	1678	1722	1900
Adj Flow Rate, veh/h	38	39	132	850	909	49
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	33	15	12	0
Cap, veh/h	126	112	329	1213	1171	63
Arrive On Green	0.07	0.07	0.72	0.72	0.72	0.72
Sat Flow, veh/h	1810	1610	442	1678	1619	87
Grp Volume(v), veh/h	38	39	132	850	0	958
Grp Sat Flow(s),veh/h/ln	1810	1610	442	1678	0	1706
Q Serve(g_s), s	0.9	1.0	11.7	12.3	0.0	15.4
Cycle Q Clear(g_c), s	0.9	1.0	27.1	12.3	0.0	15.4
Prop In Lane	1.00	1.00	1.00			0.05
Lane Grp Cap(c), veh/h	126	112	329	1213	0	1234
V/C Ratio(X)	0.30	0.35	0.40	0.70	0.00	0.78
Avail Cap(c_a), veh/h	750	667	345	1274	0	1296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.2	19.3	12.3	3.4	0.0	3.8
Incr Delay (d2), s/veh	1.3	1.8	0.8	1.6	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.4	0.8	0.6	0.0	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.5	21.1	13.1	5.0	0.0	6.7
LnGrp LOS	C	C	B	A	A	A
Approach Vol, veh/h	77			982	958	
Approach Delay, s/veh	20.8			6.1	6.7	
Approach LOS	C			A	A	

Timer - Assigned Phs		2		4		6
Phs Duration (G+Y+Rc), s		35.9		7.5		35.9
Change Period (Y+Rc), s		4.5		4.5		4.5
Max Green Setting (Gmax), s		33.0		18.0		33.0
Max Q Clear Time (g_c+I1), s		29.1		3.0		17.4
Green Ext Time (p_c), s		2.4		0.1		5.9

Intersection Summary	
HCM 6th Ctrl Delay	6.9
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	224	74	4	808	797	210
Future Volume (veh/h)	224	74	4	808	797	210
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	863	1604	1307	1663	1707	1470
Adj Flow Rate, veh/h	249	82	4	898	886	233
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	70	20	40	16	13	29
Cap, veh/h	242	80	76	1262	1038	273
Arrive On Green	0.40	0.40	0.41	0.41	0.41	0.41
Sat Flow, veh/h	598	197	3	3166	2627	668
Grp Volume(v), veh/h	332	0	483	419	565	554
Grp Sat Flow(s),veh/h/ln	797	0	1655	1438	1622	1587
Q Serve(g_s), s	19.5	0.0	0.0	11.7	15.2	15.3
Cycle Q Clear(g_c), s	19.5	0.0	11.7	11.7	15.2	15.3
Prop In Lane	0.75	0.25	0.01			0.42
Lane Grp Cap(c), veh/h	323	0	751	587	662	648
V/C Ratio(X)	1.03	0.00	0.64	0.71	0.85	0.85
Avail Cap(c_a), veh/h	323	0	813	642	724	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	11.9	11.9	12.9	13.0
Incr Delay (d2), s/veh	57.6	0.0	1.6	3.4	9.1	9.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.9	0.0	3.0	2.9	5.1	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	71.9	0.0	13.4	15.3	22.1	22.4
LnGrp LOS	F	A	B	B	C	C
Approach Vol, veh/h	332			902	1119	
Approach Delay, s/veh	71.9			14.3	22.2	
Approach LOS	E			B	C	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	24.2		24.0		24.2
Change Period (Y+Rc), s	4.5		4.5		4.5
Max Green Setting (Gmax), s	21.5		19.5		21.5
Max Q Clear Time (g_c+I1), s	13.7		21.5		17.3
Green Ext Time (p_c), s	3.0		0.0		2.4

Intersection Summary	
HCM 6th Ctrl Delay	26.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	37	39	444	11	15	36	430	521	7	28	632	8
Future Volume (veh/h)	37	39	444	11	15	36	430	521	7	28	632	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1707	1841	1707	1900	1900	1841	1500	1411	1781	1737	1900
Adj Flow Rate, veh/h	40	42	483	12	16	39	467	566	8	30	687	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	13	4	13	0	0	4	27	33	8	11	0
Cap, veh/h	47	50	524	14	18	44	489	989	14	38	708	9
Arrive On Green	0.06	0.06	0.06	0.05	0.05	0.05	0.28	0.67	0.67	0.02	0.41	0.41
Sat Flow, veh/h	813	854	1533	301	402	979	1753	1475	21	1697	1710	22
Grp Volume(v), veh/h	82	0	483	67	0	0	467	0	574	30	0	696
Grp Sat Flow(s),veh/h/ln	1667	0	1533	1682	0	0	1753	0	1496	1697	0	1733
Q Serve(g_s), s	4.9	0.0	5.8	4.0	0.0	0.0	26.2	0.0	20.5	1.8	0.0	39.3
Cycle Q Clear(g_c), s	4.9	0.0	5.8	4.0	0.0	0.0	26.2	0.0	20.5	1.8	0.0	39.3
Prop In Lane	0.49		1.00	0.18		0.58	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	97	0	524	76	0	0	489	0	1003	38	0	717
V/C Ratio(X)	0.85	0.00	0.92	0.88	0.00	0.00	0.95	0.00	0.57	0.78	0.00	0.97
Avail Cap(c_a), veh/h	97	0	524	76	0	0	489	0	1003	107	0	718
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.7	0.0	31.9	47.5	0.0	0.0	35.4	0.0	8.8	48.6	0.0	28.7
Incr Delay (d2), s/veh	46.9	0.0	21.8	68.8	0.0	0.0	29.4	0.0	1.3	28.2	0.0	26.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	14.2	3.1	0.0	0.0	14.8	0.0	6.0	1.0	0.0	20.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.6	0.0	53.7	116.2	0.0	0.0	64.9	0.0	10.1	76.8	0.0	55.3
LnGrp LOS	F	A	D	F	A	A	E	A	B	E	A	E
Approach Vol, veh/h		565			67			1041			726	
Approach Delay, s/veh		59.5			116.2			34.7			56.2	
Approach LOS		E			F			C			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	72.1		10.9	33.0	46.5		9.6
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1
Max Green Setting (Gmax), s	6.3	63.0		5.8	27.9	41.4		4.5
Max Q Clear Time (g_c+I1), s	3.8	22.5		7.8	28.2	41.3		6.0
Green Ext Time (p_c), s	0.0	8.9		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	49.3
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	528	1	0	469	4	3	5	1	11	3	263
Future Volume (veh/h)	84	528	1	0	469	4	3	5	1	11	3	263
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1737	1900	1900	1811	1900	1900	1900	1900	1900	1900	1841
Adj Flow Rate, veh/h	114	714	1	0	634	5	4	7	1	15	4	355
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Percent Heavy Veh, %	2	11	0	0	6	0	0	0	0	0	0	4
Cap, veh/h	146	973	1	0	715	6	182	286	35	75	15	424
Arrive On Green	0.08	0.56	0.56	0.00	0.40	0.40	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1781	1734	2	0	1794	14	346	1032	125	27	55	1533
Grp Volume(v), veh/h	114	0	715	0	0	639	12	0	0	374	0	0
Grp Sat Flow(s),veh/h/ln	1781	0	1737	0	0	1809	1503	0	0	1615	0	0
Q Serve(g_s), s	3.5	0.0	17.1	0.0	0.0	18.3	0.0	0.0	0.0	3.2	0.0	0.0
Cycle Q Clear(g_c), s	3.5	0.0	17.1	0.0	0.0	18.3	0.3	0.0	0.0	12.1	0.0	0.0
Prop In Lane	1.00		0.00	0.00		0.01	0.33		0.08	0.04		0.95
Lane Grp Cap(c), veh/h	146	0	975	0	0	721	502	0	0	514	0	0
V/C Ratio(X)	0.78	0.00	0.73	0.00	0.00	0.89	0.02	0.00	0.00	0.73	0.00	0.00
Avail Cap(c_a), veh/h	176	0	1109	0	0	830	638	0	0	662	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	25.0	0.0	9.1	0.0	0.0	15.5	14.6	0.0	0.0	18.9	0.0	0.0
Incr Delay (d2), s/veh	16.9	0.0	2.2	0.0	0.0	10.4	0.0	0.0	0.0	2.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.0	5.0	0.0	0.0	8.2	0.1	0.0	0.0	4.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	42.0	0.0	11.3	0.0	0.0	25.9	14.7	0.0	0.0	21.8	0.0	0.0
LnGrp LOS	D	A	B	A	A	C	B	A	A	C	A	A
Approach Vol, veh/h		829			639			12			374	
Approach Delay, s/veh		15.5			25.9			14.7			21.8	
Approach LOS		B			C			B			C	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	19.9	35.7	19.9	9.0	26.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	20.5	35.5	20.5	5.5	25.5
Max Q Clear Time (g_c+I1), s	2.3	19.1	14.1	5.5	20.3
Green Ext Time (p_c), s	0.0	4.5	1.3	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	20.4
HCM 6th LOS	C



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	97	3	4	602	700	0
Future Volume (veh/h)	97	3	4	602	700	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1900	1900	1559	1737	0
Adj Flow Rate, veh/h	124	4	5	772	897	0
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Percent Heavy Veh, %	4	0	0	23	11	0
Cap, veh/h	169	5	102	1009	1129	0
Arrive On Green	0.10	0.10	0.65	0.65	0.65	0.00
Sat Flow, veh/h	1679	54	2	1553	1737	0
Grp Volume(v), veh/h	129	0	777	0	897	0
Grp Sat Flow(s),veh/h/ln	1747	0	1555	0	1737	0
Q Serve(g_s), s	2.6	0.0	0.0	0.0	13.5	0.0
Cycle Q Clear(g_c), s	2.6	0.0	12.5	0.0	13.5	0.0
Prop In Lane	0.96	0.03	0.01			0.00
Lane Grp Cap(c), veh/h	176	0	1111	0	1129	0
V/C Ratio(X)	0.73	0.00	0.70	0.00	0.79	0.00
Avail Cap(c_a), veh/h	872	0	1732	0	1830	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	15.8	0.0	4.4	0.0	4.6	0.0
Incr Delay (d2), s/veh	5.8	0.0	0.8	0.0	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.6	0.0	2.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	21.6	0.0	5.2	0.0	5.9	0.0
LnGrp LOS	C	A	A	A	A	A
Approach Vol, veh/h	129			777	897	
Approach Delay, s/veh	21.6			5.2	5.9	
Approach LOS	C			A	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	27.9		8.1		27.9
Change Period (Y+Rc), s	4.5		4.5		4.5
Max Green Setting (Gmax), s	38.0		18.0		38.0
Max Q Clear Time (g_c+I1), s	14.5		4.6		15.5
Green Ext Time (p_c), s	6.7		0.3		8.0

Intersection Summary		
HCM 6th Ctrl Delay		6.7
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	542	528	410	795	636	161
Future Volume (veh/h)	542	528	410	795	636	161
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1841	1648	1856	1856	1722	1707
Adj Flow Rate, veh/h	616	600	466	903	723	183
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	4	17	3	3	12	13
Cap, veh/h	943	734	508	2183	815	787
Arrive On Green	0.27	0.27	0.29	0.62	0.26	0.26
Sat Flow, veh/h	3589	1397	1767	3618	3182	1447
Grp Volume(v), veh/h	616	600	466	903	723	183
Grp Sat Flow(s),veh/h/ln	1749	1397	1767	1763	1591	1447
Q Serve(g_s), s	11.3	19.5	18.5	9.5	15.8	4.8
Cycle Q Clear(g_c), s	11.3	19.5	18.5	9.5	15.8	4.8
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	943	734	508	2183	815	787
V/C Ratio(X)	0.65	0.82	0.92	0.41	0.89	0.23
Avail Cap(c_a), veh/h	943	734	550	2266	858	806
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.4	12.8	24.9	7.0	25.9	8.6
Incr Delay (d2), s/veh	1.6	7.2	19.6	0.1	10.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	11.1	9.3	2.2	6.9	1.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	25.0	19.9	44.5	7.2	36.6	8.8
LnGrp LOS	C	B	D	A	D	A
Approach Vol, veh/h	1216			1369	906	
Approach Delay, s/veh	22.5			19.9	31.0	
Approach LOS	C			B	C	

Timer - Assigned Phs	2			5	6	8
Phs Duration (G+Y+Rc), s	49.3			25.3	24.0	23.0
Change Period (Y+Rc), s	4.5			4.5	4.5	4.5
Max Green Setting (Gmax), s	46.5			22.5	19.5	19.5
Max Q Clear Time (g_c+I1), s	11.5			20.5	21.5	17.8
Green Ext Time (p_c), s	6.2			0.3	0.0	0.7

Intersection Summary	
HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	1476	16	3	878	209	11	174	0	457	53	1
Future Volume (veh/h)	1	1476	16	3	878	209	11	174	0	457	53	1
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1856	1900	1900	1826	1663	1900	1900	1900	1856	1767	1900
Adj Flow Rate, veh/h	1	1554	17	3	924	0	12	183	0	481	56	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	3	0	0	5	16	0	0	0	3	9	0
Cap, veh/h	2	1543	17	7	1508		25	341	0	555	656	12
Arrive On Green	0.00	0.43	0.43	0.00	0.43	0.00	0.01	0.18	0.00	0.21	0.38	0.38
Sat Flow, veh/h	1810	3572	39	1810	3469	1409	1810	1900	0	1767	1730	31
Grp Volume(v), veh/h	1	766	805	3	924	0	12	183	0	481	0	57
Grp Sat Flow(s),veh/h/ln	1810	1763	1849	1810	1735	1409	1810	1900	0	1767	0	1761
Q Serve(g_s), s	0.1	45.5	45.5	0.2	21.6	0.0	0.7	9.2	0.0	22.5	0.0	2.2
Cycle Q Clear(g_c), s	0.1	45.5	45.5	0.2	21.6	0.0	0.7	9.2	0.0	22.5	0.0	2.2
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.00	1.00		0.02
Lane Grp Cap(c), veh/h	2	762	799	7	1508		25	341	0	555	0	667
V/C Ratio(X)	0.40	1.01	1.01	0.42	0.61		0.47	0.54	0.00	0.87	0.00	0.09
Avail Cap(c_a), veh/h	88	762	799	88	1508		88	341	0	555	0	667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.5	29.9	29.9	52.3	22.9	0.0	51.5	39.2	0.0	26.3	0.0	21.0
Incr Delay (d2), s/veh	81.5	34.1	33.7	33.9	0.7	0.0	13.0	5.9	0.0	13.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	24.1	25.2	0.1	8.0	0.0	0.4	4.7	0.0	11.1	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	134.1	64.1	63.7	86.3	23.7	0.0	64.5	45.2	0.0	39.8	0.0	21.2
LnGrp LOS	F	F	F	F	C		E	D	A	D	A	C
Approach Vol, veh/h		1572			927	A		195			538	
Approach Delay, s/veh		63.9			23.9			46.4			37.9	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	23.4	4.9	50.0	6.0	44.4	4.6	50.3
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	22.5	18.9	5.1	45.5	5.1	36.3	5.1	45.5
Max Q Clear Time (g_c+I1), s	24.5	11.2	2.2	47.5	2.7	4.2	2.1	23.6
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.2	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	47.0
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	291	726	531	465	725	375
Future Volume (veh/h)	291	726	531	465	725	375
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	313	781	571	500	780	403
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	430	1381	565	861	877	1161
Arrive On Green	0.24	0.24	0.30	0.30	0.26	0.63
Sat Flow, veh/h	1767	2768	1856	1572	3428	1856
Grp Volume(v), veh/h	313	781	571	500	780	403
Grp Sat Flow(s),veh/h/ln	1767	1384	1856	1572	1714	1856
Q Serve(g_s), s	11.2	13.5	20.9	14.5	15.1	7.1
Cycle Q Clear(g_c), s	11.2	13.5	20.9	14.5	15.1	7.1
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	430	1381	565	861	877	1161
V/C Ratio(X)	0.73	0.57	1.01	0.58	0.89	0.35
Avail Cap(c_a), veh/h	463	1433	565	861	923	1161
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	12.0	23.9	10.3	24.6	6.2
Incr Delay (d2), s/veh	5.3	0.5	40.6	2.8	10.4	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	3.5	13.9	7.5	6.4	1.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.2	12.5	64.5	13.1	35.0	7.0
LnGrp LOS	C	B	F	B	D	A
Approach Vol, veh/h	1094		1071			1183
Approach Delay, s/veh	17.3		40.5			25.5
Approach LOS	B		D			C

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	22.1	25.4				47.5	21.2
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	18.5	20.0				43.0	18.0
Max Q Clear Time (g_c+I1), s	17.1	22.9				9.1	15.5
Green Ext Time (p_c), s	0.5	0.0				2.2	1.2

Intersection Summary	
HCM 6th Ctrl Delay	27.6
HCM 6th LOS	C



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	182	112	1526	982	39
Future Volume (veh/h)	80	182	112	1526	982	39
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1841	1767	1900
Adj Flow Rate, veh/h	133	136	117	1590	1023	41
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	0	0	4	9	0
Cap, veh/h	188	168	145	1504	1176	47
Arrive On Green	0.10	0.10	0.08	0.82	0.70	0.70
Sat Flow, veh/h	1810	1610	1810	1841	1687	68
Grp Volume(v), veh/h	133	136	117	1590	0	1064
Grp Sat Flow(s),veh/h/ln	1810	1610	1810	1841	0	1754
Q Serve(g_s), s	8.1	9.4	7.2	93.0	0.0	53.1
Cycle Q Clear(g_c), s	8.1	9.4	7.2	93.0	0.0	53.1
Prop In Lane	1.00	1.00	1.00			0.04
Lane Grp Cap(c), veh/h	188	168	145	1504	0	1223
V/C Ratio(X)	0.71	0.81	0.81	1.06	0.00	0.87
Avail Cap(c_a), veh/h	286	255	242	1504	0	1223
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	49.3	49.9	51.5	10.4	0.0	13.3
Incr Delay (d2), s/veh	4.8	11.0	10.1	40.1	0.0	7.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	8.7	3.5	31.5	0.0	17.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.1	60.9	61.6	50.5	0.0	20.3
LnGrp LOS	D	E	E	F	A	C
Approach Vol, veh/h	269			1707	1064	
Approach Delay, s/veh	57.5			51.3	20.3	
Approach LOS	E			D	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		97.5		16.4	13.6	83.9
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		93.0		18.0	15.2	73.3
Max Q Clear Time (g_c+I1), s		95.0		11.4	9.2	55.1
Green Ext Time (p_c), s		0.0		0.4	0.1	7.4

Intersection Summary	
HCM 6th Ctrl Delay	41.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	292	0	0	0	0	0	0	1592	0	0	987	176
Future Volume (veh/h)	292	0	0	0	0	0	0	1592	0	0	987	176
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1693	1870	1900				1900	1841	0	0	1767	1263
Adj Flow Rate, veh/h	340	0	0				0	1851	0	0	1148	205
Peak Hour Factor	0.86	0.92	0.86				0.86	0.86	0.92	0.92	0.86	0.86
Percent Heavy Veh, %	14	2	0				0	4	0	0	9	43
Cap, veh/h	413	0	0				0	2140	0	0	1743	310
Arrive On Green	0.23	0.00	0.00				0.00	0.61	0.00	0.00	0.61	0.61
Sat Flow, veh/h	1781	0	0				0	3681	0	0	2936	506
Grp Volume(v), veh/h	340	0	0				0	1851	0	0	674	679
Grp Sat Flow(s),veh/h/ln	1781	0	0				0	1749	0	0	1678	1676
Q Serve(g_s), s	10.4	0.0	0.0				0.0	25.1	0.0	0.0	15.0	15.2
Cycle Q Clear(g_c), s	10.4	0.0	0.0				0.0	25.1	0.0	0.0	15.0	15.2
Prop In Lane	1.00		0.00				0.00		0.00	0.00		0.30
Lane Grp Cap(c), veh/h	413	0	0				0	2140	0	0	1027	1025
V/C Ratio(X)	0.82	0.00	0.00				0.00	0.86	0.00	0.00	0.66	0.66
Avail Cap(c_a), veh/h	557	0	0				0	2307	0	0	1107	1105
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00				0.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	0.0	0.0				0.0	9.2	0.0	0.0	7.2	7.3
Incr Delay (d2), s/veh	7.3	0.0	0.0				0.0	3.5	0.0	0.0	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	0.0				0.0	5.4	0.0	0.0	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.3	0.0	0.0				0.0	12.7	0.0	0.0	8.5	8.6
LnGrp LOS	C	A	A				A	B	A	A	A	A
Approach Vol, veh/h		340						1851			1353	
Approach Delay, s/veh		28.3						12.7			8.6	
Approach LOS		C						B			A	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	39.8	17.8	39.8
Change Period (Y+Rc), s	4.5	4.5	4.5
Max Green Setting (Gmax), s	38.0	18.0	38.0
Max Q Clear Time (g_c+I1), s	27.1	12.4	17.2
Green Ext Time (p_c), s	8.1	1.0	8.5

Intersection Summary	
HCM 6th Ctrl Delay	12.6
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	21	795	23	18	48	821	1004	10	28	368	4
Future Volume (veh/h)	12	21	795	23	18	48	821	1004	10	28	368	4
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1781	1767	1781	1900	1856	1856	1826	1604	1856	1737	1900
Adj Flow Rate, veh/h	12	22	820	24	19	49	846	1035	10	29	379	4
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	8	9	8	0	3	3	5	20	3	11	0
Cap, veh/h	27	50	783	20	16	40	846	1238	12	39	393	4
Arrive On Green	0.04	0.04	0.04	0.04	0.04	0.04	0.48	0.69	0.69	0.02	0.23	0.23
Sat Flow, veh/h	618	1133	1497	447	354	913	1767	1805	17	1767	1716	18
Grp Volume(v), veh/h	34	0	820	92	0	0	846	0	1045	29	0	383
Grp Sat Flow(s),veh/h/ln	1751	0	1497	1713	0	0	1767	0	1823	1767	0	1734
Q Serve(g_s), s	1.9	0.0	4.4	4.4	0.0	0.0	47.8	0.0	42.2	1.6	0.0	21.9
Cycle Q Clear(g_c), s	1.9	0.0	4.4	4.4	0.0	0.0	47.8	0.0	42.2	1.6	0.0	21.9
Prop In Lane	0.35		1.00	0.26		0.53	1.00		0.01	1.00		0.01
Lane Grp Cap(c), veh/h	77	0	783	75	0	0	846	0	1250	39	0	397
V/C Ratio(X)	0.44	0.00	1.05	1.22	0.00	0.00	1.00	0.00	0.84	0.74	0.00	0.96
Avail Cap(c_a), veh/h	77	0	783	75	0	0	846	0	1250	80	0	397
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	46.6	0.0	23.9	47.8	0.0	0.0	26.0	0.0	11.6	48.6	0.0	38.1
Incr Delay (d2), s/veh	3.9	0.0	45.2	174.4	0.0	0.0	30.8	0.0	5.6	23.7	0.0	36.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	27.2	5.5	0.0	0.0	25.7	0.0	15.7	1.0	0.0	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	0.0	69.1	222.2	0.0	0.0	56.8	0.0	17.2	72.3	0.0	74.4
LnGrp LOS	D	A	F	F	A	A	E	A	B	E	A	E
Approach Vol, veh/h		854			92			1891			412	
Approach Delay, s/veh		68.3			222.2			34.9			74.3	
Approach LOS		E			F			C			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.3	73.7		9.5	53.0	28.0		9.5
Change Period (Y+Rc), s	5.1	5.1		5.1	5.1	5.1		5.1
Max Green Setting (Gmax), s	4.5	66.3		4.4	47.9	22.9		4.4
Max Q Clear Time (g_c+I1), s	3.6	44.2		6.4	49.8	23.9		6.4
Green Ext Time (p_c), s	0.0	14.9		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 6th Ctrl Delay	54.0
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	274	828	0	5	797	13	0	6	0	21	4	95
Future Volume (veh/h)	274	828	0	5	797	13	0	6	0	21	4	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1767	1900	1530	1796	1248	1900	1900	1900	1159	1900	1604
Adj Flow Rate, veh/h	301	910	0	5	876	14	0	7	0	23	4	104
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	9	0	25	7	44	0	0	0	50	0	20
Cap, veh/h	338	1385	0	45	948	15	0	205	0	71	16	138
Arrive On Green	0.19	0.78	0.00	0.54	0.54	0.54	0.00	0.11	0.00	0.11	0.11	0.11
Sat Flow, veh/h	1781	1767	0	2	1756	28	0	1900	0	184	148	1278
Grp Volume(v), veh/h	301	910	0	895	0	0	0	7	0	131	0	0
Grp Sat Flow(s),veh/h/ln	1781	1767	0	1786	0	0	0	1900	0	1610	0	0
Q Serve(g_s), s	13.7	19.1	0.0	4.3	0.0	0.0	0.0	0.3	0.0	3.5	0.0	0.0
Cycle Q Clear(g_c), s	13.7	19.1	0.0	38.4	0.0	0.0	0.0	0.3	0.0	6.5	0.0	0.0
Prop In Lane	1.00		0.00	0.01		0.02	0.00		0.00	0.18		0.79
Lane Grp Cap(c), veh/h	338	1385	0	1008	0	0	0	205	0	225	0	0
V/C Ratio(X)	0.89	0.66	0.00	0.89	0.00	0.00	0.00	0.03	0.00	0.58	0.00	0.00
Avail Cap(c_a), veh/h	361	1524	0	1125	0	0	0	435	0	416	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	32.9	4.0	0.0	17.6	0.0	0.0	0.0	33.3	0.0	36.0	0.0	0.0
Incr Delay (d2), s/veh	22.0	0.9	0.0	8.2	0.0	0.0	0.0	0.1	0.0	2.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	3.9	0.0	15.8	0.0	0.0	0.0	0.1	0.0	2.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	4.9	0.0	25.9	0.0	0.0	0.0	33.4	0.0	38.4	0.0	0.0
LnGrp LOS	D	A	A	C	A	A	A	C	A	D	A	A
Approach Vol, veh/h		1211			895			7			131	
Approach Delay, s/veh		17.3			25.9			33.4			38.4	
Approach LOS		B			C			C			D	

Timer - Assigned Phs	2	4	6	7	8
Phs Duration (G+Y+Rc), s	13.5	69.9	13.5	20.3	49.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.1	71.9	19.1	16.9	50.5
Max Q Clear Time (g_c+I1), s	2.3	21.1	8.5	15.7	40.4
Green Ext Time (p_c), s	0.0	9.0	0.5	0.1	4.6

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	281	15	3	1039	404	0
Future Volume (veh/h)	281	15	3	1039	404	0
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1826	1767	0
Adj Flow Rate, veh/h	296	16	3	1094	425	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	0	5	9	0
Cap, veh/h	351	19	59	1183	1145	0
Arrive On Green	0.21	0.21	0.65	0.65	0.65	0.00
Sat Flow, veh/h	1701	92	1	1824	1767	0
Grp Volume(v), veh/h	313	0	1097	0	425	0
Grp Sat Flow(s),veh/h/ln	1798	0	1825	0	1767	0
Q Serve(g_s), s	10.4	0.0	0.0	0.0	6.9	0.0
Cycle Q Clear(g_c), s	10.4	0.0	32.8	0.0	6.9	0.0
Prop In Lane	0.95	0.05	0.00			0.00
Lane Grp Cap(c), veh/h	371	0	1242	0	1145	0
V/C Ratio(X)	0.84	0.00	0.88	0.00	0.37	0.00
Avail Cap(c_a), veh/h	523	0	1325	0	1226	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	23.6	0.0	9.6	0.0	5.0	0.0
Incr Delay (d2), s/veh	8.6	0.0	7.1	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	11.7	0.0	2.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.3	0.0	16.7	0.0	5.2	0.0
LnGrp LOS	C	A	B	A	A	A
Approach Vol, veh/h	313			1097	425	
Approach Delay, s/veh	32.3			16.7	5.2	
Approach LOS	C			B	A	

Timer - Assigned Phs	2		4		6
Phs Duration (G+Y+Rc), s	44.7		17.3		44.7
Change Period (Y+Rc), s	4.5		4.5		4.5
Max Green Setting (Gmax), s	43.0		18.0		43.0
Max Q Clear Time (g_c+I1), s	34.8		12.4		8.9
Green Ext Time (p_c), s	5.4		0.5		3.1

Intersection Summary	
HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	108	5	92	66	689	17	1662	282	749	667	14
Future Volume (veh/h)	0	108	5	92	66	689	17	1662	282	749	667	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1707	1752	1826	1856	1781	1870	1841	1781	1796	1737
Adj Flow Rate, veh/h	0	112	5	96	69	0	18	1731	0	780	695	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	0	4	13	10	5	3	8	2	4	8	7	11
Cap, veh/h	148	143	6	116	83		26	1858		765	1983	
Arrive On Green	0.00	0.08	0.08	0.11	0.11	0.00	0.02	0.36	0.00	0.23	0.58	0.00
Sat Flow, veh/h	1810	1749	78	1032	742	1572	1697	5106	1560	3291	3503	0
Grp Volume(v), veh/h	0	0	117	165	0	0	18	1731	0	780	695	0
Grp Sat Flow(s),veh/h/ln	1810	0	1827	1774	0	1572	1697	1702	1560	1646	1706	0
Q Serve(g_s), s	0.0	0.0	7.3	10.6	0.0	0.0	1.2	37.9	0.0	27.0	12.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	7.3	10.6	0.0	0.0	1.2	37.9	0.0	27.0	12.4	0.0
Prop In Lane	1.00		0.04	0.58		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	148	0	149	199	0		26	1858		765	1983	
V/C Ratio(X)	0.00	0.00	0.78	0.83	0.00		0.70	0.93		1.02	0.35	
Avail Cap(c_a), veh/h	421	0	425	367	0		88	1873		765	1983	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	52.3	50.5	0.0	0.0	56.9	35.6	0.0	44.6	12.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	8.7	8.6	0.0	0.0	29.0	9.1	0.0	37.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	3.6	5.0	0.0	0.0	0.7	16.0	0.0	14.3	4.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	61.1	59.1	0.0	0.0	85.9	44.7	0.0	82.1	12.9	0.0
LnGrp LOS	A	A	E	E	A		F	D		F	B	
Approach Vol, veh/h		117			165	A		1749	A		1475	A
Approach Delay, s/veh		61.1			59.1			45.1			49.5	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	49.3		15.7	6.8	74.5		19.2
Change Period (Y+Rc), s	5.0	7.0		6.2	5.0	7.0		6.2
Max Green Setting (Gmax), s	7.0	42.6		27.0	6.0	63.6		24.0
Max Q Clear Time (g_c+I1), s	29.0	39.9		9.3	3.2	14.4		12.6
Green Ext Time (p_c), s	0.0	2.4		0.4	0.0	6.5		0.5

Intersection Summary	
HCM 6th Ctrl Delay	48.1
HCM 6th LOS	D

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	1227	10	1	1518	825	81	375	48	167	15	10
Future Volume (veh/h)	24	1227	10	1	1518	825	81	375	48	167	15	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1900	1900	1885	1885	1900	1781	1900	1885	1900	1900
Adj Flow Rate, veh/h	24	1252	10	1	1549	0	83	383	49	170	15	10
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	4	0	0	1	1	0	8	0	1	0	0
Cap, veh/h	46	1655	13	2	1581		108	408	52	217	284	190
Arrive On Green	0.03	0.47	0.47	0.00	0.44	0.00	0.06	0.26	0.26	0.06	0.27	0.27
Sat Flow, veh/h	1810	3556	28	1810	3582	1598	1810	1548	198	1795	1063	709
Grp Volume(v), veh/h	24	616	646	1	1549	0	83	0	432	170	0	25
Grp Sat Flow(s),veh/h/ln	1810	1749	1836	1810	1791	1598	1810	0	1746	1795	0	1772
Q Serve(g_s), s	1.1	25.3	25.3	0.0	37.1	0.0	3.9	0.0	21.1	5.5	0.0	0.9
Cycle Q Clear(g_c), s	1.1	25.3	25.3	0.0	37.1	0.0	3.9	0.0	21.1	5.5	0.0	0.9
Prop In Lane	1.00		0.02	1.00		1.00	1.00		0.11	1.00		0.40
Lane Grp Cap(c), veh/h	46	814	854	2	1581		108	0	460	217	0	474
V/C Ratio(X)	0.52	0.76	0.76	0.40	0.98		0.77	0.00	0.94	0.78	0.00	0.05
Avail Cap(c_a), veh/h	104	814	854	104	1581		199	0	460	217	0	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.0	19.2	19.2	43.5	24.0	0.0	40.4	0.0	31.4	26.3	0.0	23.7
Incr Delay (d2), s/veh	9.0	4.1	3.9	81.1	17.9	0.0	11.0	0.0	29.0	17.0	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	9.4	9.9	0.1	16.9	0.0	2.0	0.0	11.9	3.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.0	23.3	23.1	124.6	41.9	0.0	51.4	0.0	60.4	43.4	0.0	24.0
LnGrp LOS	D	C	C	F	D		D	A	E	D	A	C
Approach Vol, veh/h		1286			1550	A		515			195	
Approach Delay, s/veh		23.8			41.9			59.0			40.9	
Approach LOS		C			D			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	27.5	4.6	45.1	9.7	27.8	6.7	43.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	23.0	5.0	38.5	9.6	18.9	5.0	38.5
Max Q Clear Time (g_c+I1), s	7.5	23.1	2.0	27.3	5.9	2.9	3.1	39.1
Green Ext Time (p_c), s	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.8
HCM 6th LOS	D

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	84	784	2	19	635	92	11	1060	157	66	187	22
Future Volume (veh/h)	84	784	2	19	635	92	11	1060	157	66	187	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	99	922	2	22	747	108	13	1247	185	78	220	26
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	120	1081	2	42	789	114	27	1294	191	100	855	725
Arrive On Green	0.07	0.30	0.30	0.02	0.26	0.26	0.02	0.42	0.42	0.06	0.46	0.46
Sat Flow, veh/h	1767	3609	8	1767	3091	447	1767	3082	455	1767	1856	1572
Grp Volume(v), veh/h	99	450	474	22	426	429	13	710	722	78	220	26
Grp Sat Flow(s),veh/h/ln	1767	1763	1854	1767	1763	1775	1767	1763	1774	1767	1856	1572
Q Serve(g_s), s	5.0	21.6	21.6	1.1	21.3	21.3	0.7	35.1	35.7	3.9	6.5	0.8
Cycle Q Clear(g_c), s	5.0	21.6	21.6	1.1	21.3	21.3	0.7	35.1	35.7	3.9	6.5	0.8
Prop In Lane	1.00		0.00	1.00		0.25	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	120	528	555	42	450	453	27	740	745	100	855	725
V/C Ratio(X)	0.82	0.85	0.85	0.53	0.95	0.95	0.48	0.96	0.97	0.78	0.26	0.04
Avail Cap(c_a), veh/h	120	528	555	98	450	453	98	740	745	104	855	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	29.6	29.6	43.3	32.8	32.8	43.8	25.3	25.5	41.8	14.8	13.3
Incr Delay (d2), s/veh	35.3	12.7	12.2	10.0	29.4	29.4	12.4	24.5	26.2	30.0	0.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	10.1	10.6	0.6	12.0	12.1	0.4	18.0	18.7	2.5	2.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	76.6	42.3	41.8	53.4	62.2	62.2	56.2	49.8	51.7	71.8	15.5	13.4
LnGrp LOS	E	D	D	D	E	E	E	D	D	E	B	B
Approach Vol, veh/h		1023			877			1445			324	
Approach Delay, s/veh		45.4			62.0			50.8			28.9	
Approach LOS		D			E			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	42.2	6.6	31.4	5.9	45.9	10.6	27.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.3	37.7	5.0	24.0	5.0	38.0	6.1	22.9
Max Q Clear Time (g_c+I1), s	5.9	37.7	3.1	23.6	2.7	8.5	7.0	23.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.0	1.3	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	50.0
HCM 6th LOS	D



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	840	425	518	1315	436	793
Future Volume (veh/h)	840	425	518	1315	436	793
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	884	447	545	1384	459	835
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	890	445	646	2229	464	709
Arrive On Green	0.39	0.39	0.19	0.63	0.26	0.26
Sat Flow, veh/h	2369	1138	3428	3618	1767	1572
Grp Volume(v), veh/h	682	649	545	1384	459	835
Grp Sat Flow(s),veh/h/ln	1763	1651	1714	1763	1767	1572
Q Serve(g_s), s	32.9	33.5	13.1	20.4	22.1	22.5
Cycle Q Clear(g_c), s	32.9	33.5	13.1	20.4	22.1	22.5
Prop In Lane		0.69	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	690	646	646	2229	464	709
V/C Ratio(X)	0.99	1.00	0.84	0.62	0.99	1.18
Avail Cap(c_a), veh/h	690	646	821	2409	464	709
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.9	26.1	33.5	9.5	31.4	23.5
Incr Delay (d2), s/veh	31.5	36.5	6.5	0.4	38.6	94.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.7	17.7	5.5	5.6	13.6	18.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	57.4	62.5	40.1	10.0	70.1	117.5
LnGrp LOS	E	F	D	A	E	F
Approach Vol, veh/h	1331			1929	1294	
Approach Delay, s/veh	59.9			18.5	100.7	
Approach LOS	E			B	F	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		58.6		27.0	20.6	38.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		58.5		22.5	20.5	33.5
Max Q Clear Time (g_c+I1), s		22.4		24.5	15.1	35.5
Green Ext Time (p_c), s		11.6		0.0	1.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	53.9
HCM 6th LOS	D



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	651	1305	514	878	1050	593
Future Volume (veh/h)	651	1305	514	878	1050	593
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	664	1332	524	896	1071	605
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	654	1879	656	1539	1059	1002
Arrive On Green	0.37	0.37	0.19	0.19	0.31	0.54
Sat Flow, veh/h	1767	2768	3618	2768	3428	1856
Grp Volume(v), veh/h	664	1332	524	896	1071	605
Grp Sat Flow(s),veh/h/ln	1767	1384	1763	1384	1714	1856
Q Serve(g_s), s	37.0	29.8	14.2	18.6	30.9	22.3
Cycle Q Clear(g_c), s	37.0	29.8	14.2	18.6	30.9	22.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	654	1879	656	1539	1059	1002
V/C Ratio(X)	1.02	0.71	0.80	0.58	1.01	0.60
Avail Cap(c_a), veh/h	654	1879	656	1539	1059	1002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.5	9.9	38.9	14.0	34.5	15.7
Incr Delay (d2), s/veh	39.1	1.3	9.8	1.6	30.4	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.8	7.5	6.6	11.0	16.1	8.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	70.6	11.2	48.8	15.6	64.9	18.4
LnGrp LOS	F	B	D	B	F	B
Approach Vol, veh/h	1996		1420			1676
Approach Delay, s/veh	31.0		27.8			48.1
Approach LOS	C		C			D

Timer - Assigned Phs	1	2				6	8
Phs Duration (G+Y+Rc), s	35.4	23.1				58.5	41.5
Change Period (Y+Rc), s	4.5	4.5				4.5	4.5
Max Green Setting (Gmax), s	30.9	18.6				54.0	37.0
Max Q Clear Time (g_c+I1), s	32.9	20.6				24.3	39.0
Green Ext Time (p_c), s	0.0	0.0				3.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.7
HCM 6th LOS	D

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXAM_SR-4.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	SR-4, Vasco Road to Discovery Bay Boulevard
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.04	mi
Facility Average Followers Density, FD	7.7	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	4752	ft
Segment Length Used in Calculation	0.90	mi
Demand Flow Rate in Analysis Direction, vd	527	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	56.7	mi/h
Speed, S	54.1	mi/h
Percent Followers, PF	56.0	%
Followers Density, FD	5.5	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	501	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	527	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.31	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	4752	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	56.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	527	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.62533	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	54.1	mi/h

Average Speed, with consideration of horizontal curves, S	54.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	527	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.3	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32874	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75238	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	56.0	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	56.0	%
Demand Flow Rate in Analysis Direction, vd	527	veh/h
Average Speed, with consideration of horizontal curves, S	54.1	mi/h
Follower Density, FD	5.5	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	56.0	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	527	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	54.1	mi/h
Adjusted Follower Density, FDadj	5.5	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	5.5	followers/mi/ln
Level of Service, LOS	C	

Segment 2Walnut Boulevard to Byron Highway

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	15832	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	514	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.9	mi/h
Speed, S	53.4	mi/h
Percent Followers, PF	59.2	%
Followers Density, FD	5.7	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	483	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	514	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.30	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	15832	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	4.0	access points/mi
Adjustment for Access-Point Density, fA	1.0	mi/h
Free-Flow Speed, FFS	55.9	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	514	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.66524	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	53.4	mi/h
Average Speed, with consideration of horizontal curves, S	53.4	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	514	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.5	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.6	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.40106	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67143	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	59.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	59.2	%
Demand Flow Rate in Analysis Direction, vd	514	veh/h
Average Speed, with consideration of horizontal curves, S	53.4	mi/h
Follower Density, FD	5.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	59.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	514	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.4	mi/h
Adjusted Follower Density, FDadj	5.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	5.7	followers/mi/ln
Level of Service, LOS	C	

Segment 3Byron Highway to Bixler Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5277	ft
Segment Length Used in Calculation	1.00	mi
Demand Flow Rate in Analysis Direction, vd	978	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	58.6	mi/h
Percent Followers, PF	71.5	%
Followers Density, FD	11.9	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	870	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.89	

Demand Flow Rate in Analysis Direction, vd	978	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.58	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5277	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	978	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.93591	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.6	mi/h

Average Speed, with consideration of horizontal curves, S	58.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	978	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	5.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27719	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76709	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	71.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	71.5	%
Demand Flow Rate in Analysis Direction, vd	978	veh/h
Average Speed, with consideration of horizontal curves, S	58.6	mi/h
Follower Density, FD	11.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	4.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	71.5	%

Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	978	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.6	mi/h
Adjusted Follower Density, FDadj	11.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.9	followers/mi/ln
Level of Service, LOS	D	

Segment 4Bixler Road to Discovery Bay Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6050	ft
Segment Length Used in Calculation	1.15	mi
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.0	mi/h
Speed, S	58.4	mi/h
Percent Followers, PF	69.8	%
Followers Density, FD	11.0	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	829	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.90	
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.54	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6050	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h

Access-Point Density, APD	2.0	access points/mi
Adjustment for Access-Point Density, fA	0.5	mi/h
Free-Flow Speed, FFS	62.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.0	mi/h
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580
Coeff. for Speed-Flow Slope Model, b1	0.05420
Coeff. for Speed-Flow Slope Model, b2	0.32780
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000
Coeff. for Speed-Flow Slope Model, b3	0.10290
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000
Coeff. for Speed-Flow Slope Model, b4	0.00000
Coeff. for Speed-Flow Slope Model, b5	0.00000
Slope Coefficient, m	3.92963

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576
Coeff. for Speed-Flow Slope Model, f1	0.00000
Coeff. for Speed-Flow Slope Model, f2	0.00000
Coeff. for Speed-Flow Slope Model, f3	0.12060
Coeff. for Speed-Flow Slope Model, f4	-0.35919
Coeff. for Speed-Flow Slope Model, f5	0.00000
Coeff. for Speed-Flow Slope Model, f6	0.00000
Coeff. for Speed-Flow Slope Model, f7	0.00000
Coeff. for Speed-Flow Slope Model, f8	0.00000
Power Coefficient, p	0.41674

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.4	mi/h

Average Speed, with consideration of horizontal curves, S	58.4	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.0	mi/h
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27530	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76491	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	69.8	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	69.8	%
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Average Speed, with consideration of horizontal curves, S	58.4	mi/h
Follower Density, FD	11.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.04	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	69.8	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	921	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.4	mi/h
Adjusted Follower Density, FDadj	11.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.0	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXAM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Marsh Creek Road to Camino Diable Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	3.35	mi
Facility Average Followers Density, FD	13.7	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Marsh Creek Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5835	ft
Segment Length Used in Calculation	1.11	mi
Demand Flow Rate in Analysis Direction, vd	783	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	59.3	mi/h
Percent Followers, PF	65.1	%
Followers Density, FD	8.6	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	744	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	783	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.46	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5835	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	783	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.96017	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	59.3	mi/h

Average Speed, with consideration of horizontal curves, S	59.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	783	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27119	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76657	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	65.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	65.1	%
Demand Flow Rate in Analysis Direction, vd	783	veh/h
Average Speed, with consideration of horizontal curves, S	59.3	mi/h
Follower Density, FD	8.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.11	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	65.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	783	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	59.3	mi/h
Adjusted Follower Density, FDadj	8.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	8.6	followers/mi/ln
Level of Service, LOS	D	

Segment 2Walnut Boulevard to Camino Diablo Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	1215	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	58.2	mi/h
Percent Followers, PF	77.5	%
Followers Density, FD	16.2	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1166	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	1215	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.71	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1215	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580
Coeff. for Speed-Flow Slope Model, b1	0.05420
Coeff. for Speed-Flow Slope Model, b2	0.32780
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.99254	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.2	mi/h
Average Speed, with consideration of horizontal curves, S	58.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1215	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.2	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29570	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72767	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	77.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	77.5	%
Demand Flow Rate in Analysis Direction, vd	1215	veh/h
Average Speed, with consideration of horizontal curves, S	58.2	mi/h
Follower Density, FD	16.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.35	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	77.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1215	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.2	mi/h
Adjusted Follower Density, FDadj	16.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	16.2	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXAM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	8.1	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	651	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.0	mi/h
Speed, S	35.9	mi/h
Percent Followers, PF	64.7	%
Followers Density, FD	11.7	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	560	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.86	
Demand Flow Rate in Analysis Direction, vd	651	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.38	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	6.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	651	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.64602	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.9	mi/h

Average Speed, with consideration of horizontal curves, S	35.9	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	651	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39163	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	64.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	64.7	%
Demand Flow Rate in Analysis Direction, vd	651	veh/h
Average Speed, with consideration of horizontal curves, S	35.9	mi/h
Follower Density, FD	11.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	64.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	651	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.9	mi/h
Adjusted Follower Density, FDadj	11.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	11.7	followers/mi/ln
Level of Service, LOS	D	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	646	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.2	mi/h
Speed, S	59.1	mi/h
Percent Followers, PF	63.1	%
Followers Density, FD	6.9	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	588	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	646	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.38	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	8.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.2	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	646	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580
Coeff. for Speed-Flow Slope Model, b1	0.05420
Coeff. for Speed-Flow Slope Model, b2	0.32780
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00585	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	59.1	mi/h
Average Speed, with consideration of horizontal curves, S	59.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	646	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34624	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68736	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	63.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	63.1	%
Demand Flow Rate in Analysis Direction, vd	646	veh/h
Average Speed, with consideration of horizontal curves, S	59.1	mi/h
Follower Density, FD	6.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	63.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	646	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	59.1	mi/h
Adjusted Follower Density, FDadj	6.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	6.9	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXAM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	4.1	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8630	ft
Segment Length Used in Calculation	1.63	mi
Demand Flow Rate in Analysis Direction, vd	468	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	61.4	mi/h
Speed, S	58.8	mi/h
Percent Followers, PF	51.6	%
Followers Density, FD	4.1	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	407	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	468	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.28	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8630	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	61.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	61.4	mi/h
Demand Flow Rate in Analysis Direction, vd	468	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.91400	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.8	mi/h

Average Speed, with consideration of horizontal curves, S	58.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	61.4	mi/h
Demand Flow Rate in Analysis Direction, vd	468	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	49.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.28249	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75053	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	51.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	51.6	%
Demand Flow Rate in Analysis Direction, vd	468	veh/h
Average Speed, with consideration of horizontal curves, S	58.8	mi/h
Follower Density, FD	4.1	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	51.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	468	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.8	mi/h
Adjusted Follower Density, FDadj	4.1	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	4.1	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXAM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	5.9	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	501	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.4	mi/h
Speed, S	48.2	mi/h
Percent Followers, PF	56.9	%
Followers Density, FD	5.9	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	476	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	501	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.29	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	501	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27053	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	48.2	mi/h

Average Speed, with consideration of horizontal curves, S	48.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	501	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39401	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73202	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	56.9	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	56.9	%
Demand Flow Rate in Analysis Direction, vd	501	veh/h
Average Speed, with consideration of horizontal curves, S	48.2	mi/h
Follower Density, FD	5.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	56.9	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	501	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	48.2	mi/h
Adjusted Follower Density, FDadj	5.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	5.9	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXPM_SR-4.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	PM Peak Hour
Project Description:	SR-4, Vasco Road to Discovery Bay Boulevard
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.04	mi
Facility Average Followers Density, FD	9.3	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1Vasco Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	4752	ft
Segment Length Used in Calculation	0.90	mi
Demand Flow Rate in Analysis Direction, vd	740	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	56.7	mi/h
Speed, S	53.6	mi/h
Percent Followers, PF	65.3	%
Followers Density, FD	9.0	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	659	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.89	
Demand Flow Rate in Analysis Direction, vd	740	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.44	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	4752	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	56.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	740	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.62533	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	53.6	mi/h

Average Speed, with consideration of horizontal curves, S	53.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	740	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.3	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32874	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75238	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	65.3	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	65.3	%
Demand Flow Rate in Analysis Direction, vd	740	veh/h
Average Speed, with consideration of horizontal curves, S	53.6	mi/h
Follower Density, FD	9.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	65.3	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	740	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.6	mi/h
Adjusted Follower Density, FDadj	9.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	9.0	followers/mi/ln
Level of Service, LOS	C	

Segment 2Walnut Boulevard to Byron Highway

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	15832	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	632	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.9	mi/h
Speed, S	53.1	mi/h
Percent Followers, PF	64.3	%
Followers Density, FD	7.7	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	594	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	632	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.37	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	15832	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	4.0	access points/mi
Adjustment for Access-Point Density, fA	1.0	mi/h
Free-Flow Speed, FFS	55.9	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	632	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.66524	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	53.1	mi/h
Average Speed, with consideration of horizontal curves, S	53.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	632	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.5	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.40106	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67143	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	64.3	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	64.3	%
Demand Flow Rate in Analysis Direction, vd	632	veh/h
Average Speed, with consideration of horizontal curves, S	53.1	mi/h
Follower Density, FD	7.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	64.3	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	632	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.1	mi/h
Adjusted Follower Density, FDadj	7.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	7.7	followers/mi/ln
Level of Service, LOS	C	

Segment 3Byron Highway to Bixler Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5277	ft
Segment Length Used in Calculation	1.00	mi
Demand Flow Rate in Analysis Direction, vd	956	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	58.7	mi/h
Percent Followers, PF	70.9	%
Followers Density, FD	11.6	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	899	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	

Demand Flow Rate in Analysis Direction, vd	956	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.56	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5277	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	956	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.93952	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.7	mi/h

Average Speed, with consideration of horizontal curves, S	58.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	956	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27682	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76697	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	70.9	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	70.9	%
Demand Flow Rate in Analysis Direction, vd	956	veh/h
Average Speed, with consideration of horizontal curves, S	58.7	mi/h
Follower Density, FD	11.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	4.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	70.9	%

Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	956	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.7	mi/h
Adjusted Follower Density, FDadj	11.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.6	followers/mi/ln
Level of Service, LOS	D	

Segment 4Bixler Road to Discovery Bay Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6050	ft
Segment Length Used in Calculation	1.15	mi
Demand Flow Rate in Analysis Direction, vd	957	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.1	mi/h
Speed, S	58.4	mi/h
Percent Followers, PF	70.9	%
Followers Density, FD	11.6	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	900	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	957	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.56	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6050	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h

Access-Point Density, APD	2.0	access points/mi
Adjustment for Access-Point Density, fA	0.5	mi/h
Free-Flow Speed, FFS	62.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.1	mi/h
Demand Flow Rate in Analysis Direction, vd	957	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580
Coeff. for Speed-Flow Slope Model, b1	0.05420
Coeff. for Speed-Flow Slope Model, b2	0.32780
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000
Coeff. for Speed-Flow Slope Model, b3	0.10290
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000
Coeff. for Speed-Flow Slope Model, b4	0.00000
Coeff. for Speed-Flow Slope Model, b5	0.00000
Slope Coefficient, m	3.93324

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576
Coeff. for Speed-Flow Slope Model, f1	0.00000
Coeff. for Speed-Flow Slope Model, f2	0.00000
Coeff. for Speed-Flow Slope Model, f3	0.12060
Coeff. for Speed-Flow Slope Model, f4	-0.35919
Coeff. for Speed-Flow Slope Model, f5	0.00000
Coeff. for Speed-Flow Slope Model, f6	0.00000
Coeff. for Speed-Flow Slope Model, f7	0.00000
Coeff. for Speed-Flow Slope Model, f8	0.00000
Power Coefficient, p	0.41674

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.4	mi/h

Average Speed, with consideration of horizontal curves, S	58.4	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.1	mi/h
Demand Flow Rate in Analysis Direction, vd	957	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27495	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76479	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	70.9	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	70.9	%
Demand Flow Rate in Analysis Direction, vd	957	veh/h
Average Speed, with consideration of horizontal curves, S	58.4	mi/h
Follower Density, FD	11.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.04	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	70.9	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	957	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.4	mi/h
Adjusted Follower Density, FDadj	11.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.6	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXPM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Marsh Creek Road to Camino Diable Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	3.35	mi
Facility Average Followers Density, FD	18.1	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Marsh Creek Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5835	ft
Segment Length Used in Calculation	1.11	mi
Demand Flow Rate in Analysis Direction, vd	905	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	59.0	mi/h
Percent Followers, PF	69.2	%
Followers Density, FD	10.6	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	869	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	905	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.53	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5835	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	905	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.95837	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	59.0	mi/h

Average Speed, with consideration of horizontal curves, S	59.0	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	905	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27137	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76663	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	69.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	69.2	%
Demand Flow Rate in Analysis Direction, vd	905	veh/h
Average Speed, with consideration of horizontal curves, S	59.0	mi/h
Follower Density, FD	10.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.11	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	69.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	905	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	59.0	mi/h
Adjusted Follower Density, FDadj	10.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	10.6	followers/mi/ln
Level of Service, LOS	D	

Segment 2Walnut Boulevard to Camino Diablo Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	1519	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	57.8	mi/h
Percent Followers, PF	82.7	%
Followers Density, FD	21.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1473	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.97	
Demand Flow Rate in Analysis Direction, vd	1519	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.89	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	1.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1519	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.99435	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	57.8	mi/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1519	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.2	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29552	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72761	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	82.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	82.7	%
Demand Flow Rate in Analysis Direction, vd	1519	veh/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h
Follower Density, FD	21.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.35	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	82.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1519	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.8	mi/h
Adjusted Follower Density, FDadj	21.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	21.7	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXPM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	PM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	12.2	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	793	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.1	mi/h
Speed, S	35.8	mi/h
Percent Followers, PF	69.6	%
Followers Density, FD	15.4	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	753	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	793	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.47	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	793	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.65323	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.8	mi/h

Average Speed, with consideration of horizontal curves, S	35.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	793	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39228	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	69.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	69.6	%
Demand Flow Rate in Analysis Direction, vd	793	veh/h
Average Speed, with consideration of horizontal curves, S	35.8	mi/h
Follower Density, FD	15.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	69.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	793	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.8	mi/h
Adjusted Follower Density, FDadj	15.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	15.4	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	912	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	58.6	mi/h
Percent Followers, PF	71.7	%
Followers Density, FD	11.2	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	848	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.93	
Demand Flow Rate in Analysis Direction, vd	912	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.54	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	912	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.01307	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.6	mi/h
Average Speed, with consideration of horizontal curves, S	58.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	912	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34549	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68711	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	71.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	71.7	%
Demand Flow Rate in Analysis Direction, vd	912	veh/h
Average Speed, with consideration of horizontal curves, S	58.6	mi/h
Follower Density, FD	11.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	71.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	912	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.6	mi/h
Adjusted Follower Density, FDadj	11.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.2	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXPM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	PM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	5.2	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8630	ft
Segment Length Used in Calculation	1.63	mi
Demand Flow Rate in Analysis Direction, vd	545	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	61.3	mi/h
Speed, S	58.5	mi/h
Percent Followers, PF	55.7	%
Followers Density, FD	5.2	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	518	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	545	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.32	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8630	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	61.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	61.3	mi/h
Demand Flow Rate in Analysis Direction, vd	545	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.91039	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.5	mi/h

Average Speed, with consideration of horizontal curves, S	58.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	61.3	mi/h
Demand Flow Rate in Analysis Direction, vd	545	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	49.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.28283	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75065	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	55.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	55.7	%
Demand Flow Rate in Analysis Direction, vd	545	veh/h
Average Speed, with consideration of horizontal curves, S	58.5	mi/h
Follower Density, FD	5.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	55.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	545	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.5	mi/h
Adjusted Follower Density, FDadj	5.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	5.2	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EXPM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing)
Time Period Analyzed:	PM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	10.0	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	718	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.5	mi/h
Speed, S	47.8	mi/h
Percent Followers, PF	66.5	%
Followers Density, FD	10.0	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	653	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	718	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.42	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	718	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27234	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	47.8	mi/h

Average Speed, with consideration of horizontal curves, S	47.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	718	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39396	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73198	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	66.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	66.5	%
Demand Flow Rate in Analysis Direction, vd	718	veh/h
Average Speed, with consideration of horizontal curves, S	47.8	mi/h
Follower Density, FD	10.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	66.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	718	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	47.8	mi/h
Adjusted Follower Density, FDadj	10.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	10.0	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_AM_SR-4.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	SR-4, Vasco Road to Discovery Bay Boulevard
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.04	mi
Facility Average Followers Density, FD	8.1	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1Vasco Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	4752	ft
Segment Length Used in Calculation	0.90	mi
Demand Flow Rate in Analysis Direction, vd	537	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	56.7	mi/h
Speed, S	54.1	mi/h
Percent Followers, PF	56.5	%
Followers Density, FD	5.6	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	510	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	537	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.32	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	4752	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	56.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	537	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.62533	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	54.1	mi/h

Average Speed, with consideration of horizontal curves, S	54.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	537	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.3	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32874	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75238	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	56.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	56.5	%
Demand Flow Rate in Analysis Direction, vd	537	veh/h
Average Speed, with consideration of horizontal curves, S	54.1	mi/h
Follower Density, FD	5.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	56.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	537	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	54.1	mi/h
Adjusted Follower Density, FDadj	5.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	5.6	followers/mi/ln
Level of Service, LOS	C	

Segment 2Walnut Boulevard to Byron Highway

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	15832	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	523	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.9	mi/h
Speed, S	53.3	mi/h
Percent Followers, PF	59.6	%
Followers Density, FD	5.9	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	492	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	523	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.31	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	15832	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	4.0	access points/mi
Adjustment for Access-Point Density, fA	1.0	mi/h
Free-Flow Speed, FFS	55.9	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	523	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.66524	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	53.3	mi/h
Average Speed, with consideration of horizontal curves, S	53.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	523	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.5	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.6	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.40106	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67143	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	59.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	59.6	%
Demand Flow Rate in Analysis Direction, vd	523	veh/h
Average Speed, with consideration of horizontal curves, S	53.3	mi/h
Follower Density, FD	5.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	59.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	523	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.3	mi/h
Adjusted Follower Density, FDadj	5.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	5.9	followers/mi/ln
Level of Service, LOS	C	

Segment 3Byron Highway to Bixler Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5277	ft
Segment Length Used in Calculation	1.00	mi
Demand Flow Rate in Analysis Direction, vd	1027	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	58.5	mi/h
Percent Followers, PF	72.8	%
Followers Density, FD	12.8	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	914	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.89	

Demand Flow Rate in Analysis Direction, vd	1027	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.60	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5277	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1027	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.93591	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.5	mi/h

Average Speed, with consideration of horizontal curves, S	58.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1027	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	5.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27719	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76709	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	72.8	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	72.8	%
Demand Flow Rate in Analysis Direction, vd	1027	veh/h
Average Speed, with consideration of horizontal curves, S	58.5	mi/h
Follower Density, FD	12.8	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	4.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	72.8	%

Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1027	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.5	mi/h
Adjusted Follower Density, FDadj	12.8	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	12.8	followers/mi/ln
Level of Service, LOS	E	

Segment 4Bixler Road to Discovery Bay Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6050	ft
Segment Length Used in Calculation	1.15	mi
Demand Flow Rate in Analysis Direction, vd	970	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.0	mi/h
Speed, S	58.3	mi/h
Percent Followers, PF	71.2	%
Followers Density, FD	11.8	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	873	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.90	
Demand Flow Rate in Analysis Direction, vd	970	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.57	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6050	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h

Access-Point Density, APD	2.0	access points/mi
Adjustment for Access-Point Density, fA	0.5	mi/h
Free-Flow Speed, FFS	62.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.0	mi/h
Demand Flow Rate in Analysis Direction, vd	970	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.92963	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.3	mi/h

Average Speed, with consideration of horizontal curves, S	58.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.0	mi/h
Demand Flow Rate in Analysis Direction, vd	970	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27530	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76491	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	71.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	71.2	%
Demand Flow Rate in Analysis Direction, vd	970	veh/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h
Follower Density, FD	11.8	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.04	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	71.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	970	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.3	mi/h
Adjusted Follower Density, FDadj	11.8	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.8	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_AM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Marsh Creek Road to Camino Diable Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	3.35	mi
Facility Average Followers Density, FD	14.8	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Marsh Creek Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5835	ft
Segment Length Used in Calculation	1.11	mi
Demand Flow Rate in Analysis Direction, vd	822	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	59.2	mi/h
Percent Followers, PF	66.5	%
Followers Density, FD	9.2	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	781	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	822	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.48	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5835	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	822	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.96017	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	59.2	mi/h

Average Speed, with consideration of horizontal curves, S	59.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	822	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27119	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76657	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	66.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	66.5	%
Demand Flow Rate in Analysis Direction, vd	822	veh/h
Average Speed, with consideration of horizontal curves, S	59.2	mi/h
Follower Density, FD	9.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.11	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	66.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	822	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	59.2	mi/h
Adjusted Follower Density, FDadj	9.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	9.2	followers/mi/ln
Level of Service, LOS	D	

Segment 2Walnut Boulevard to Camino Diablo Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	1292	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	58.1	mi/h
Percent Followers, PF	79.0	%
Followers Density, FD	17.6	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1240	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	1292	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.76	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1292	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580
Coeff. for Speed-Flow Slope Model, b1	0.05420
Coeff. for Speed-Flow Slope Model, b2	0.32780
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.99254	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.1	mi/h
Average Speed, with consideration of horizontal curves, S	58.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1292	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.2	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29570	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72767	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	79.0	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	79.0	%
Demand Flow Rate in Analysis Direction, vd	1292	veh/h
Average Speed, with consideration of horizontal curves, S	58.1	mi/h
Follower Density, FD	17.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.35	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	79.0	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1292	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.1	mi/h
Adjusted Follower Density, FDadj	17.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	17.6	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_AM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	9.9	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	755	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.0	mi/h
Speed, S	35.7	mi/h
Percent Followers, PF	68.4	%
Followers Density, FD	14.4	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	649	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.86	
Demand Flow Rate in Analysis Direction, vd	755	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.44	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	6.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	755	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.64602	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.7	mi/h

Average Speed, with consideration of horizontal curves, S	35.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	755	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39163	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	68.4	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	68.4	%
Demand Flow Rate in Analysis Direction, vd	755	veh/h
Average Speed, with consideration of horizontal curves, S	35.7	mi/h
Follower Density, FD	14.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	68.4	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	755	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.7	mi/h
Adjusted Follower Density, FDadj	14.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	14.4	followers/mi/ln
Level of Service, LOS	D	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	746	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.2	mi/h
Speed, S	58.8	mi/h
Percent Followers, PF	66.7	%
Followers Density, FD	8.5	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	679	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	746	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.44	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	8.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.2	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	746	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00585	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.8	mi/h
Average Speed, with consideration of horizontal curves, S	58.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	746	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34624	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68736	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	66.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	66.7	%
Demand Flow Rate in Analysis Direction, vd	746	veh/h
Average Speed, with consideration of horizontal curves, S	58.8	mi/h
Follower Density, FD	8.5	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	66.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	746	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.8	mi/h
Adjusted Follower Density, FDadj	8.5	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	8.5	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_AM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	4.8	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8630	ft
Segment Length Used in Calculation	1.63	mi
Demand Flow Rate in Analysis Direction, vd	521	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	61.4	mi/h
Speed, S	58.6	mi/h
Percent Followers, PF	54.4	%
Followers Density, FD	4.8	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	453	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	521	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.31	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8630	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	61.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	61.4	mi/h
Demand Flow Rate in Analysis Direction, vd	521	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.91400	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.6	mi/h

Average Speed, with consideration of horizontal curves, S	58.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	61.4	mi/h
Demand Flow Rate in Analysis Direction, vd	521	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	49.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.28249	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75053	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	54.4	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	54.4	%
Demand Flow Rate in Analysis Direction, vd	521	veh/h
Average Speed, with consideration of horizontal curves, S	58.6	mi/h
Follower Density, FD	4.8	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	54.4	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	521	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.6	mi/h
Adjusted Follower Density, FDadj	4.8	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	4.8	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_AM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	6.6	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	540	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.4	mi/h
Speed, S	48.1	mi/h
Percent Followers, PF	58.8	%
Followers Density, FD	6.6	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	513	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	540	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.32	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	540	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27053	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	48.1	mi/h

Average Speed, with consideration of horizontal curves, S	48.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	540	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39401	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73202	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	58.8	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	58.8	%
Demand Flow Rate in Analysis Direction, vd	540	veh/h
Average Speed, with consideration of horizontal curves, S	48.1	mi/h
Follower Density, FD	6.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	58.8	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	540	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	48.1	mi/h
Adjusted Follower Density, FDadj	6.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	6.6	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_PM_SR-4.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	SR-4, Vasco Road to Discovery Bay Boulevard
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.04	mi
Facility Average Followers Density, FD	9.9	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1Vasco Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	4752	ft
Segment Length Used in Calculation	0.90	mi
Demand Flow Rate in Analysis Direction, vd	763	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	56.7	mi/h
Speed, S	53.6	mi/h
Percent Followers, PF	66.2	%
Followers Density, FD	9.4	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	679	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.89	
Demand Flow Rate in Analysis Direction, vd	763	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.45	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	4752	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	56.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	763	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.62533	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	53.6	mi/h

Average Speed, with consideration of horizontal curves, S	53.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	56.7	mi/h
Demand Flow Rate in Analysis Direction, vd	763	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.90	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.3	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32874	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75238	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	66.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	66.2	%
Demand Flow Rate in Analysis Direction, vd	763	veh/h
Average Speed, with consideration of horizontal curves, S	53.6	mi/h
Follower Density, FD	9.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	66.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	763	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.6	mi/h
Adjusted Follower Density, FDadj	9.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	9.4	followers/mi/ln
Level of Service, LOS	C	

Segment 2Walnut Boulevard to Byron Highway

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	15832	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	653	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.9	mi/h
Speed, S	53.0	mi/h
Percent Followers, PF	65.1	%
Followers Density, FD	8.0	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	614	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	653	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.38	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	15832	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	4.0	access points/mi
Adjustment for Access-Point Density, fA	1.0	mi/h
Free-Flow Speed, FFS	55.9	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	653	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.66524	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	53.0	mi/h
Average Speed, with consideration of horizontal curves, S	53.0	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.9	mi/h
Demand Flow Rate in Analysis Direction, vd	653	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.5	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.40106	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67143	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	65.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	65.1	%
Demand Flow Rate in Analysis Direction, vd	653	veh/h
Average Speed, with consideration of horizontal curves, S	53.0	mi/h
Follower Density, FD	8.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	65.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	653	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	53.0	mi/h
Adjusted Follower Density, FDadj	8.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	8.0	followers/mi/ln
Level of Service, LOS	C	

Segment 3Byron Highway to Bixler Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5277	ft
Segment Length Used in Calculation	1.00	mi
Demand Flow Rate in Analysis Direction, vd	1020	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	58.5	mi/h
Percent Followers, PF	72.7	%
Followers Density, FD	12.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	959	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	

Demand Flow Rate in Analysis Direction, vd	1020	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.60	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5277	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1020	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.93952	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.5	mi/h

Average Speed, with consideration of horizontal curves, S	58.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1020	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.00	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27682	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76697	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	72.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	72.7	%
Demand Flow Rate in Analysis Direction, vd	1020	veh/h
Average Speed, with consideration of horizontal curves, S	58.5	mi/h
Follower Density, FD	12.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	4.90	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	72.7	%

Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1020	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.5	mi/h
Adjusted Follower Density, FDadj	12.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	12.7	followers/mi/ln
Level of Service, LOS	E	

Segment 4Bixler Road to Discovery Bay Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6050	ft
Segment Length Used in Calculation	1.15	mi
Demand Flow Rate in Analysis Direction, vd	1021	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.1	mi/h
Speed, S	58.3	mi/h
Percent Followers, PF	72.6	%
Followers Density, FD	12.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	960	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.94	
Demand Flow Rate in Analysis Direction, vd	1021	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.60	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6050	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h

Access-Point Density, APD	2.0	access points/mi
Adjustment for Access-Point Density, fA	0.5	mi/h
Free-Flow Speed, FFS	62.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1021	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.93324	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.3	mi/h

Average Speed, with consideration of horizontal curves, S	58.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1021	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.15	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.5	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27495	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76479	
Step 6e: Calculate Percent Followers for the Segment		
Percent Followers, PF	72.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	72.6	%
Demand Flow Rate in Analysis Direction, vd	1021	veh/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h
Follower Density, FD	12.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.04	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	72.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1021	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.3	mi/h
Adjusted Follower Density, FDadj	12.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	12.7	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_PM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Marsh Creek Road to Camino Diable Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	3.35	mi
Facility Average Followers Density, FD	19.8	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Marsh Creek Road to Walnut Boulevard

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	5835	ft
Segment Length Used in Calculation	1.11	mi
Demand Flow Rate in Analysis Direction, vd	989	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	58.8	mi/h
Percent Followers, PF	71.6	%
Followers Density, FD	12.0	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	949	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	989	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.58	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	5835	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	989	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.95837	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.8	mi/h

Average Speed, with consideration of horizontal curves, S	58.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	989	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.11	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	48.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.27137	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.76663	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	71.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	71.6	%
Demand Flow Rate in Analysis Direction, vd	989	veh/h
Average Speed, with consideration of horizontal curves, S	58.8	mi/h
Follower Density, FD	12.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.11	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	71.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	989	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.8	mi/h
Adjusted Follower Density, FDadj	12.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	12.0	followers/mi/ln
Level of Service, LOS	E	

Segment 2Walnut Boulevard to Camino Diablo Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	1623	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.4	mi/h
Speed, S	57.7	mi/h
Percent Followers, PF	84.2	%
Followers Density, FD	23.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1574	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.97	
Demand Flow Rate in Analysis Direction, vd	1623	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.95	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	1.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1623	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.99435	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	57.7	mi/h
Average Speed, with consideration of horizontal curves, S	57.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.4	mi/h
Demand Flow Rate in Analysis Direction, vd	1623	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.2	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29552	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72761	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	84.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	84.2	%
Demand Flow Rate in Analysis Direction, vd	1623	veh/h
Average Speed, with consideration of horizontal curves, S	57.7	mi/h
Follower Density, FD	23.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	3.35	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	84.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1623	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.7	mi/h
Adjusted Follower Density, FDadj	23.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	23.7	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_PM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	15.1	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.1	mi/h
Speed, S	35.6	mi/h
Percent Followers, PF	73.2	%
Followers Density, FD	18.9	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	875	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.54	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.65323	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.6	mi/h

Average Speed, with consideration of horizontal curves, S	35.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39228	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	73.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	73.2	%
Demand Flow Rate in Analysis Direction, vd	921	veh/h
Average Speed, with consideration of horizontal curves, S	35.6	mi/h
Follower Density, FD	18.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	73.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	921	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.6	mi/h
Adjusted Follower Density, FDadj	18.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	18.9	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	1073	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	58.3	mi/h
Percent Followers, PF	75.6	%
Followers Density, FD	13.9	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	998	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.93	
Demand Flow Rate in Analysis Direction, vd	1073	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.63	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1073	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.01307	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.3	mi/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1073	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34549	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68711	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	75.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	75.6	%
Demand Flow Rate in Analysis Direction, vd	1073	veh/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h
Follower Density, FD	13.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	75.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1073	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.3	mi/h
Adjusted Follower Density, FDadj	13.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	13.9	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_PM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	6.7	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8630	ft
Segment Length Used in Calculation	1.63	mi
Demand Flow Rate in Analysis Direction, vd	647	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	61.3	mi/h
Speed, S	58.2	mi/h
Percent Followers, PF	60.4	%
Followers Density, FD	6.7	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	615	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	647	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.38	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8630	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	61.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	61.3	mi/h
Demand Flow Rate in Analysis Direction, vd	647	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.91039	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	58.2	mi/h

Average Speed, with consideration of horizontal curves, S	58.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	61.3	mi/h
Demand Flow Rate in Analysis Direction, vd	647	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.63	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.2	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	49.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.28283	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.75065	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	60.4	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	60.4	%
Demand Flow Rate in Analysis Direction, vd	647	veh/h
Average Speed, with consideration of horizontal curves, S	58.2	mi/h
Follower Density, FD	6.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	60.4	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	647	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.2	mi/h
Adjusted Follower Density, FDadj	6.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	6.7	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	EX_PROJ_PM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2015 (Existing plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	10.4	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	741	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.5	mi/h
Speed, S	47.7	mi/h
Percent Followers, PF	67.3	%
Followers Density, FD	10.4	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	674	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	741	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.44	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	741	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27234	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	47.7	mi/h

Average Speed, with consideration of horizontal curves, S	47.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	741	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39396	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73198	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	67.3	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	67.3	%
Demand Flow Rate in Analysis Direction, vd	741	veh/h
Average Speed, with consideration of horizontal curves, S	47.7	mi/h
Follower Density, FD	10.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	67.3	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	741	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	47.7	mi/h
Adjusted Follower Density, FDadj	10.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	10.4	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040AM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Walnut Boulevard to Camino Diablo Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	2.24	mi
Facility Average Followers Density, FD	24.4	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Walnut Boulevard to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	1943	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	57.8	mi/h
Percent Followers, PF	84.7	%
Followers Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1865	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	1943	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
d/c Ratio	1.14	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1943	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00609	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.8	mi/h

Average Speed, with consideration of horizontal curves, S	57.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1943	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29343	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72830	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	84.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	84.7	%
Demand Flow Rate in Analysis Direction, vd	1943	veh/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h
Follower Density, FD	24.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	2.24	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	84.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1943	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.8	mi/h
Adjusted Follower Density, FDadj	24.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040AM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	AM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	12.6	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	791	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.0	mi/h
Speed, S	35.7	mi/h
Percent Followers, PF	69.5	%
Followers Density, FD	15.4	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	680	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.86	
Demand Flow Rate in Analysis Direction, vd	791	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.47	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	6.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	791	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.64602	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.7	mi/h

Average Speed, with consideration of horizontal curves, S	35.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	791	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39163	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	69.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	69.5	%
Demand Flow Rate in Analysis Direction, vd	791	veh/h
Average Speed, with consideration of horizontal curves, S	35.7	mi/h
Follower Density, FD	15.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	69.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	791	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.7	mi/h
Adjusted Follower Density, FDadj	15.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	15.4	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	944	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.2	mi/h
Speed, S	58.5	mi/h
Percent Followers, PF	72.6	%
Followers Density, FD	11.7	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	859	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	944	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.56	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	8.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.2	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	944	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00585	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.5	mi/h
Average Speed, with consideration of horizontal curves, S	58.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	944	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34624	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68736	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	72.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	72.6	%
Demand Flow Rate in Analysis Direction, vd	944	veh/h
Average Speed, with consideration of horizontal curves, S	58.5	mi/h
Follower Density, FD	11.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	72.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	944	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.5	mi/h
Adjusted Follower Density, FDadj	11.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	11.7	followers/mi/ln
Level of Service, LOS	D	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040AM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	01/11/2021
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	AM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	9.3	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to St Anne Church Dwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6377	ft
Segment Length Used in Calculation	1.21	mi
Demand Flow Rate in Analysis Direction, vd	780	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.7	mi/h
Speed, S	52.6	mi/h
Percent Followers, PF	66.8	%
Followers Density, FD	9.9	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	679	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	780	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.46	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6377	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	55.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.7	mi/h
Demand Flow Rate in Analysis Direction, vd	780	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.58659	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	52.6	mi/h

Average Speed, with consideration of horizontal curves, S	52.6	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.7	mi/h
Demand Flow Rate in Analysis Direction, vd	780	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32612	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.74659	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	66.8	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	66.8	%
Demand Flow Rate in Analysis Direction, vd	780	veh/h
Average Speed, with consideration of horizontal curves, S	52.6	mi/h
Follower Density, FD	9.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.21	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	66.8	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	780	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	52.6	mi/h
Adjusted Follower Density, FDadj	9.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	9.9	followers/mi/ln
Level of Service, LOS	C	

Segment 2St Anne Church Dwy to Byron Hwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	2253	ft
Segment Length Used in Calculation	0.43	mi
Demand Flow Rate in Analysis Direction, vd	480	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.6	mi/h
Speed, S	36.8	mi/h
Percent Followers, PF	58.6	%
Followers Density, FD	7.7	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	418	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	480	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.28	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	2253	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	38.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.6	mi/h
Demand Flow Rate in Analysis Direction, vd	480	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.61390	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	36.8	mi/h
Average Speed, with consideration of horizontal curves, S	36.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.6	mi/h
Demand Flow Rate in Analysis Direction, vd	480	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	55.6	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.45583	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68320	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	58.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	58.6	%
Demand Flow Rate in Analysis Direction, vd	480	veh/h
Average Speed, with consideration of horizontal curves, S	36.8	mi/h
Follower Density, FD	7.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	58.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	480	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	36.8	mi/h
Adjusted Follower Density, FDadj	7.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	7.7	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040AM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	AM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	6.0	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	505	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.4	mi/h
Speed, S	48.2	mi/h
Percent Followers, PF	57.1	%
Followers Density, FD	6.0	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	480	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	505	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.30	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	505	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27053	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	48.2	mi/h

Average Speed, with consideration of horizontal curves, S	48.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	505	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39401	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73202	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	57.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	57.1	%
Demand Flow Rate in Analysis Direction, vd	505	veh/h
Average Speed, with consideration of horizontal curves, S	48.2	mi/h
Follower Density, FD	6.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	57.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	505	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	48.2	mi/h
Adjusted Follower Density, FDadj	6.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	6.0	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040PM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	PM Peak Hour
Project Description:	Vasco Road, Walnut Boulevard to Camino Diablo Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	2.24	mi
Facility Average Followers Density, FD	24.4	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Walnut Boulevard to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	2341	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.7	mi/h
Speed, S	57.8	mi/h
Percent Followers, PF	84.7	%
Followers Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	2247	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	2341	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
d/c Ratio	1.38	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	1.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.7	mi/h
Demand Flow Rate in Analysis Direction, vd	2341	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00790	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.8	mi/h

Average Speed, with consideration of horizontal curves, S	57.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.7	mi/h
Demand Flow Rate in Analysis Direction, vd	2341	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29324	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72824	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	84.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	84.7	%
Demand Flow Rate in Analysis Direction, vd	2341	veh/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h
Follower Density, FD	24.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	2.24	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	84.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	2341	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.8	mi/h
Adjusted Follower Density, FDadj	24.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040PM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	PM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	25.0	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	1186	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.1	mi/h
Speed, S	35.3	mi/h
Percent Followers, PF	79.0	%
Followers Density, FD	26.5	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1127	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	1186	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.70	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1186	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.65323	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.3	mi/h

Average Speed, with consideration of horizontal curves, S	35.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1186	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39228	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	79.0	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	79.0	%
Demand Flow Rate in Analysis Direction, vd	1186	veh/h
Average Speed, with consideration of horizontal curves, S	35.3	mi/h
Follower Density, FD	26.5	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	79.0	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1186	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.3	mi/h
Adjusted Follower Density, FDadj	26.5	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	26.5	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	1655	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	57.5	mi/h
Percent Followers, PF	85.1	%
Followers Density, FD	24.5	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1539	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.93	
Demand Flow Rate in Analysis Direction, vd	1655	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.97	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1655	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.01307	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.5	mi/h
Average Speed, with consideration of horizontal curves, S	57.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1655	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34549	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68711	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	85.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	85.1	%
Demand Flow Rate in Analysis Direction, vd	1655	veh/h
Average Speed, with consideration of horizontal curves, S	57.5	mi/h
Follower Density, FD	24.5	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	85.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1655	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.5	mi/h
Adjusted Follower Density, FDadj	24.5	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	24.5	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040PM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	01/11/2021
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	PM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	15.5	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Vasco Road to St Anne Church Dwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6377	ft
Segment Length Used in Calculation	1.21	mi
Demand Flow Rate in Analysis Direction, vd	1078	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.6	mi/h
Speed, S	52.0	mi/h
Percent Followers, PF	75.4	%
Followers Density, FD	15.6	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1024	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	1078	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.63	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6377	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	55.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1078	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.58298	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	52.0	mi/h

Average Speed, with consideration of horizontal curves, S	52.0	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1078	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32636	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.74669	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	75.4	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	75.4	%
Demand Flow Rate in Analysis Direction, vd	1078	veh/h
Average Speed, with consideration of horizontal curves, S	52.0	mi/h
Follower Density, FD	15.6	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.21	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	75.4	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1078	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	52.0	mi/h
Adjusted Follower Density, FDadj	15.6	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	15.6	followers/mi/ln
Level of Service, LOS	E	

Segment 2St Anne Church Dwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	2253	ft
Segment Length Used in Calculation	0.43	mi
Demand Flow Rate in Analysis Direction, vd	781	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.5	mi/h
Speed, S	36.3	mi/h
Percent Followers, PF	70.8	%
Followers Density, FD	15.2	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	742	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	781	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.46	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	2253	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	38.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.5	mi/h
Demand Flow Rate in Analysis Direction, vd	781	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.61029	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	36.3	mi/h
Average Speed, with consideration of horizontal curves, S	36.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.5	mi/h
Demand Flow Rate in Analysis Direction, vd	781	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.7	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	55.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.45550	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68319	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	70.8	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	70.8	%
Demand Flow Rate in Analysis Direction, vd	781	veh/h
Average Speed, with consideration of horizontal curves, S	36.3	mi/h
Follower Density, FD	15.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	70.8	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	781	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	36.3	mi/h
Adjusted Follower Density, FDadj	15.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	15.2	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040PM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year)
Time Period Analyzed:	PM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	23.1	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	1324	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.5	mi/h
Speed, S	46.9	mi/h
Percent Followers, PF	82.0	%
Followers Density, FD	23.1	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1205	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	1324	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.78	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	1324	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27234	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	46.9	mi/h

Average Speed, with consideration of horizontal curves, S	46.9	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	1324	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39396	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73198	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	82.0	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	82.0	%
Demand Flow Rate in Analysis Direction, vd	1324	veh/h
Average Speed, with consideration of horizontal curves, S	46.9	mi/h
Follower Density, FD	23.1	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	82.0	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1324	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	46.9	mi/h
Adjusted Follower Density, FDadj	23.1	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	23.1	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_AM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Vasco Road, Walnut Boulevard to Camino Diablo Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	2.24	mi
Facility Average Followers Density, FD	24.4	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Walnut Boulevard to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	2020	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.6	mi/h
Speed, S	57.8	mi/h
Percent Followers, PF	84.7	%
Followers Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1939	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	2020	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
d/c Ratio	1.19	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	2020	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00609	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.8	mi/h

Average Speed, with consideration of horizontal curves, S	57.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.6	mi/h
Demand Flow Rate in Analysis Direction, vd	2020	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29343	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72830	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	84.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	84.7	%
Demand Flow Rate in Analysis Direction, vd	2020	veh/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h
Follower Density, FD	24.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	2.24	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	84.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	2020	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.8	mi/h
Adjusted Follower Density, FDadj	24.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_AM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	14.6	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	894	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.0	mi/h
Speed, S	35.5	mi/h
Percent Followers, PF	72.5	%
Followers Density, FD	18.2	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	769	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.86	
Demand Flow Rate in Analysis Direction, vd	894	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.53	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	6.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.0	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	894	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.64602	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.5	mi/h

Average Speed, with consideration of horizontal curves, S	35.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.0	mi/h
Demand Flow Rate in Analysis Direction, vd	894	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	6.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39163	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	72.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	72.5	%
Demand Flow Rate in Analysis Direction, vd	894	veh/h
Average Speed, with consideration of horizontal curves, S	35.5	mi/h
Follower Density, FD	18.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	72.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	894	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.5	mi/h
Adjusted Follower Density, FDadj	18.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	18.2	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	1043	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.2	mi/h
Speed, S	58.3	mi/h
Percent Followers, PF	75.0	%
Followers Density, FD	13.4	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	949	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	1043	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.61	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	8.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.2	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	1043	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00585	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	58.3	mi/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.2	mi/h
Demand Flow Rate in Analysis Direction, vd	1043	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	8.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34624	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68736	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	75.0	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	75.0	%
Demand Flow Rate in Analysis Direction, vd	1043	veh/h
Average Speed, with consideration of horizontal curves, S	58.3	mi/h
Follower Density, FD	13.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	75.0	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1043	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	58.3	mi/h
Adjusted Follower Density, FDadj	13.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	13.4	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_AM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	01/11/2021
Analysis Year:	2040 (Future Year plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	10.4	followers/mi/ln
Facility Level of Service, LOS	D	

Segment 1Vasco Road to St Anne Church Dwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6377	ft
Segment Length Used in Calculation	1.21	mi
Demand Flow Rate in Analysis Direction, vd	833	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.7	mi/h
Speed, S	52.5	mi/h
Percent Followers, PF	68.6	%
Followers Density, FD	10.9	followers/mi/ln
Level of Service, LOS	D	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	725	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	833	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.49	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6377	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	55.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.7	mi/h
Demand Flow Rate in Analysis Direction, vd	833	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.58659	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	52.5	mi/h

Average Speed, with consideration of horizontal curves, S	52.5	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.7	mi/h
Demand Flow Rate in Analysis Direction, vd	833	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32612	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.74659	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	68.6	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	68.6	%
Demand Flow Rate in Analysis Direction, vd	833	veh/h
Average Speed, with consideration of horizontal curves, S	52.5	mi/h
Follower Density, FD	10.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.21	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	68.6	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	833	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	52.5	mi/h
Adjusted Follower Density, FDadj	10.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	10.9	followers/mi/ln
Level of Service, LOS	D	

Segment 2St Anne Church Dwy to Byron Hwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	2253	ft
Segment Length Used in Calculation	0.43	mi
Demand Flow Rate in Analysis Direction, vd	533	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.6	mi/h
Speed, S	36.7	mi/h
Percent Followers, PF	61.2	%
Followers Density, FD	8.9	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	464	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.87	
Demand Flow Rate in Analysis Direction, vd	533	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.31	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	2253	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	38.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.6	mi/h
Demand Flow Rate in Analysis Direction, vd	533	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.61390	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	36.7	mi/h
Average Speed, with consideration of horizontal curves, S	36.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.6	mi/h
Demand Flow Rate in Analysis Direction, vd	533	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	3.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	55.6	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.45583	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68320	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	61.2	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	61.2	%
Demand Flow Rate in Analysis Direction, vd	533	veh/h
Average Speed, with consideration of horizontal curves, S	36.7	mi/h
Follower Density, FD	8.9	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	61.2	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	533	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	36.7	mi/h
Adjusted Follower Density, FDadj	8.9	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	8.9	followers/mi/ln
Level of Service, LOS	C	

HCS7 Two-Lane Highway Segment Text Report

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_AM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year Plus Project)
Time Period Analyzed:	AM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	6.7	followers/mi/ln
Facility Level of Service, LOS	C	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	544	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.4	mi/h
Speed, S	48.1	mi/h
Percent Followers, PF	59.1	%
Followers Density, FD	6.7	followers/mi/ln
Level of Service, LOS	C	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	517	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	544	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.32	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.4	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	544	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27053	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	48.1	mi/h

Average Speed, with consideration of horizontal curves, S	48.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.4	mi/h
Demand Flow Rate in Analysis Direction, vd	544	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39401	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73202	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	59.1	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	59.1	%
Demand Flow Rate in Analysis Direction, vd	544	veh/h
Average Speed, with consideration of horizontal curves, S	48.1	mi/h
Follower Density, FD	6.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	59.1	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	544	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	48.1	mi/h
Adjusted Follower Density, FDadj	6.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	6.7	followers/mi/ln
Level of Service, LOS	C	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_PM_Vasco.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Vasco Road, Walnut Boulevard to Camino Diablo Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	2.24	mi
Facility Average Followers Density, FD	24.4	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Walnut Boulevard to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	11840	ft
Segment Length Used in Calculation	2.24	mi
Demand Flow Rate in Analysis Direction, vd	2446	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.7	mi/h
Speed, S	57.8	mi/h
Percent Followers, PF	84.7	%
Followers Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	2348	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.96	
Demand Flow Rate in Analysis Direction, vd	2446	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
d/c Ratio	1.44	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	11840	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	1.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	0.0	access points/mi
Adjustment for Access-Point Density, fA	0.0	mi/h
Free-Flow Speed, FFS	62.7	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.7	mi/h
Demand Flow Rate in Analysis Direction, vd	2446	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.00790	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.8	mi/h

Average Speed, with consideration of horizontal curves, S	57.8	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.7	mi/h
Demand Flow Rate in Analysis Direction, vd	2446	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	2.24	mi
Percentage of Heavy Vehicles	1.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.1	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.29324	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.72824	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	84.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	84.7	%
Demand Flow Rate in Analysis Direction, vd	2446	veh/h
Average Speed, with consideration of horizontal curves, S	57.8	mi/h
Follower Density, FD	24.4	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	2.24	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	84.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	2446	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.8	mi/h
Adjusted Follower Density, FDadj	24.4	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	24.4	followers/mi/ln
Level of Service, LOS	F	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_PM_Byron.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Byron Highway, SR-4 to San Joaquin County Line
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	6.69	mi
Facility Average Followers Density, FD	24.2	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1SR-4 to Camino Diable Road

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	8668	ft
Segment Length Used in Calculation	1.64	mi
Demand Flow Rate in Analysis Direction, vd	1314	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.1	mi/h
Speed, S	35.2	mi/h
Percent Followers, PF	81.3	%
Followers Density, FD	30.3	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1248	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	1314	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.77	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	8668	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	2.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	7.0	access points/mi
Adjustment for Access-Point Density, fA	1.8	mi/h
Free-Flow Speed, FFS	38.1	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1314	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.65323	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	35.2	mi/h

Average Speed, with consideration of horizontal curves, S	35.2	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.1	mi/h
Demand Flow Rate in Analysis Direction, vd	1314	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.64	mi
Percentage of Heavy Vehicles	2.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.4	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	54.2	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39228	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.67543	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	81.3	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	81.3	%
Demand Flow Rate in Analysis Direction, vd	1314	veh/h
Average Speed, with consideration of horizontal curves, S	35.2	mi/h
Follower Density, FD	30.3	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.64	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	81.3	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1314	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	35.2	mi/h
Adjusted Follower Density, FDadj	30.3	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	30.3	followers/mi/ln
Level of Service, LOS	E	

Segment 2Camino Diablo Road to San Joaquin County Line

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	26662	ft
Segment Length Used in Calculation	3.00	mi
Demand Flow Rate in Analysis Direction, vd	1816	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	62.3	mi/h
Speed, S	57.7	mi/h
Percent Followers, PF	83.5	%
Followers Density, FD	22.2	followers/mi/ln
Level of Service, LOS	F	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1689	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.93	
Demand Flow Rate in Analysis Direction, vd	1816	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
d/c Ratio	1.07	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	26662	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	55	mi/h
Base Free-Flow Speed, BFFS	62.7	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	4.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	1.0	access points/mi
Adjustment for Access-Point Density, fA	0.3	mi/h
Free-Flow Speed, FFS	62.3	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1816	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	4.01307	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	57.7	mi/h
Average Speed, with consideration of horizontal curves, S	57.7	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	62.3	mi/h
Demand Flow Rate in Analysis Direction, vd	1816	veh/h
Demand Flow Rate in Opposing Direction, vo	0	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	3.00	mi
Percentage of Heavy Vehicles	4.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	85.7	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.7	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.34549	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68711	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	83.5	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	83.5	%
Demand Flow Rate in Analysis Direction, vd	1816	veh/h
Average Speed, with consideration of horizontal curves, S	57.7	mi/h
Follower Density, FD	22.2	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	6.69	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	83.5	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1816	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	57.7	mi/h
Adjusted Follower Density, FDadj	22.2	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	55	mi/h
Follower Density, FD	22.2	followers/mi/ln
Level of Service, LOS	F	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_PM_Camino Diablo.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	01/11/2021
Analysis Year:	2040 (Future Year Plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Camino Diablo, Vasco Road to Byron Highway
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	1.63	mi
Facility Average Followers Density, FD	17.8	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Vasco Road to St Anne Church Dwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	6377	ft
Segment Length Used in Calculation	1.21	mi
Demand Flow Rate in Analysis Direction, vd	1180	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	55.6	mi/h
Speed, S	51.9	mi/h
Percent Followers, PF	77.7	%
Followers Density, FD	17.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1121	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	1180	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.69	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	6377	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	50	mi/h
Base Free-Flow Speed, BFFS	57.0	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	55.6	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	55.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1180	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.58298	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	51.9	mi/h

Average Speed, with consideration of horizontal curves, S	51.9	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	55.6	mi/h
Demand Flow Rate in Analysis Direction, vd	1180	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	1.21	mi
Percentage of Heavy Vehicles	5.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	86.1	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	50.4	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.32636	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.74669	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	77.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	77.7	%
Demand Flow Rate in Analysis Direction, vd	1180	veh/h
Average Speed, with consideration of horizontal curves, S	51.9	mi/h
Follower Density, FD	17.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.21	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	77.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1180	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	51.9	mi/h
Adjusted Follower Density, FDadj	17.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	50	mi/h
Follower Density, FD	17.7	followers/mi/ln
Level of Service, LOS	E	

Segment 2St Anne Church Dwy to Byron Hwy

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	2253	ft
Segment Length Used in Calculation	0.43	mi
Demand Flow Rate in Analysis Direction, vd	883	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	38.5	mi/h
Speed, S	36.1	mi/h
Percent Followers, PF	73.7	%
Followers Density, FD	18.0	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	839	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.95	
Demand Flow Rate in Analysis Direction, vd	883	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.52	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	2253	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	35	mi/h
Base Free-Flow Speed, BFFS	39.9	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	
Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	5.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	5.0	access points/mi
Adjustment for Access-Point Density, fA	1.3	mi/h
Free-Flow Speed, FFS	38.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	38.5	mi/h
Demand Flow Rate in Analysis Direction, vd	883	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	5.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	

Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	2.61029	
Step 5b: Calculate the Slope Coefficient		
Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	
Step 5c: Calculate Average Speed for the Segment		
Average Speed, S	36.1	mi/h
Average Speed, with consideration of horizontal curves, S	36.1	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	38.5	mi/h
Demand Flow Rate in Analysis Direction, vd	883	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.43	mi
Percentage of Heavy Vehicles	5.00	%
Step 6a: Calculate Percent Followers at Capacity		
Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	
Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.7	%
Step 6b: Calculate Percent Followers at 25% of Capacity		
Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	55.6	%
Step 6c: Calculate the Slope Coefficient		
Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.45550	
Step 6d: Calculate the Power Coefficient		
Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	

Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.68319	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	73.7	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	73.7	%
Demand Flow Rate in Analysis Direction, vd	883	veh/h
Average Speed, with consideration of horizontal curves, S	36.1	mi/h
Follower Density, FD	18.0	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	1.63	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	73.7	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	883	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	36.1	mi/h
Adjusted Follower Density, FDadj	18.0	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	35	mi/h
Follower Density, FD	18.0	followers/mi/ln
Level of Service, LOS	E	

TWO-LANE HIGHWAY SEGMENT ANALYSIS

File Name:	2040_PROJ_PM_Walnut.xuf
Analyst:	
Agency:	Dudek
Jurisdiction:	Contra Costa County
Date:	10/20/2020
Analysis Year:	2040 (Future Year Plus Project)
Time Period Analyzed:	PM Peak Hour
Project Description:	Walnut Boulevard, Vasco Road to Marsh Creek Road
Units:	United States Customary

Facility LOS and Performance Measures

Facility Length	0.61	mi
Facility Average Followers Density, FD	23.7	followers/mi/ln
Facility Level of Service, LOS	E	

Segment 1Vasco Road to Camino Diablo

LOS and Performance Measures

Coded Segment Type	Passing Constrained	
Analyzed Segment Type	Passing Constrained	
Actual Segment Length, L	3245	ft
Segment Length Used in Calculation	0.61	mi
Demand Flow Rate in Analysis Direction, vd	1347	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Capacity, cap	1700	veh/h
Free-Flow Speed, FFS	50.5	mi/h
Speed, S	46.9	mi/h
Percent Followers, PF	82.3	%
Followers Density, FD	23.7	followers/mi/ln
Level of Service, LOS	E	

Step 1: Identify Facility Study Boundaries and Corresponding Segmentation

Segment Type	Passing Constrained	
Vertical Class	1	
Minimum Segment Length	0.25	mi
Maximum Segment Length	3.00	mi

Step 2: Determine Demand Flow Rates, Capacity, and d/c Ratio

Demand Volume in Analysis Direction, Vd	1226	veh/h
Demand Volume in Opposing Direction, Vo	-	veh/h
Peak Hour Factor, PHF	0.91	
Demand Flow Rate in Analysis Direction, vd	1347	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
d/c Ratio	0.79	

Step 3: Determine the Vertical Alignment Classification

Segment Length, L	3245	ft
Segment Percent Grade	0.00	%
Vertical Class	1	

Step 4: Determine the Free-Flow Speed

Posted Speed Limit, Sp	45	mi/h
Base Free-Flow Speed, BFFS	51.3	mi/h
Coeff. Value from Exhibit 15-12, a0	0.00000	
Coeff. Value from Exhibit 15-12, a1	0.00000	
Coeff. Value from Exhibit 15-12, a2	0.00000	
Coeff. Value from Exhibit 15-12, a3	0.00000	
Coeff. Value from Exhibit 15-12, a4	0.00000	

Coeff. Value from Exhibit 15-12, a5	0.00000	
Coeff. for Heavy Vehicle Adjustment, a	0.03330	
Percentage of Heavy Vehicles, %HV	3.00	%
Lane Width, LW	12	ft
Shoulder Width, SW	6	ft
Adjustment for Lane and Shoulder Width, fLS	0.0	mi/h
Access-Point Density, APD	3.0	access points/mi
Adjustment for Access-Point Density, fA	0.8	mi/h
Free-Flow Speed, FFS	50.5	mi/h

Step 5: Estimate the Average Speed

Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	1347	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 5a: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, b0	0.05580	
Coeff. for Speed-Flow Slope Model, b1	0.05420	
Coeff. for Speed-Flow Slope Model, b2	0.32780	
Coeff. for b3 Segment Length Coeff. Model, c0	0.10290	
Coeff. for b3 Segment Length Coeff. Model, c1	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c2	0.00000	
Coeff. for b3 Segment Length Coeff. Model, c3	0.00000	
Coeff. for Speed-Flow Slope Model, b3	0.10290	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d0	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d1	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d2	0.00000	
Coeff. for b4 Heavy Vehicle Percentage Coeff. Model, d3	0.00000	
Coeff. for Speed-Flow Slope Model, b4	0.00000	
Coeff. for Speed-Flow Slope Model, b5	0.00000	
Slope Coefficient, m	3.27234	

Step 5b: Calculate the Slope Coefficient

Coeff. for Speed-Flow Slope Model, f0	0.67576	
Coeff. for Speed-Flow Slope Model, f1	0.00000	
Coeff. for Speed-Flow Slope Model, f2	0.00000	
Coeff. for Speed-Flow Slope Model, f3	0.12060	
Coeff. for Speed-Flow Slope Model, f4	-0.35919	
Coeff. for Speed-Flow Slope Model, f5	0.00000	
Coeff. for Speed-Flow Slope Model, f6	0.00000	
Coeff. for Speed-Flow Slope Model, f7	0.00000	
Coeff. for Speed-Flow Slope Model, f8	0.00000	
Power Coefficient, p	0.41674	

Step 5c: Calculate Average Speed for the Segment

Average Speed, S	46.9	mi/h

Average Speed, with consideration of horizontal curves, S	46.9	mi/h

Step 6: Estimate the Percent Followers

Segment Type	Passing Constrained	
Vertical Class	1	
Free-Flow Speed, FFS	50.5	mi/h
Demand Flow Rate in Analysis Direction, vd	1347	veh/h
Demand Flow Rate in Opposing Direction, vo	1500	veh/h
Directional Capacity, cap	1700	veh/h
Segment Length, L	0.61	mi
Percentage of Heavy Vehicles	3.00	%

Step 6a: Calculate Percent Followers at Capacity

Coeff. Value for Equation 15-18 or 15-19, b0	37.68080	
Coeff. Value for Equation 15-18 or 15-19, b1	3.05089	
Coeff. Value for Equation 15-18 or 15-19, b2	-7.90866	
Coeff. Value for Equation 15-18 or 15-19, b3	-0.94321	

Coeff. Value for Equation 15-18 or 15-19, b4	13.64266	
Coeff. Value for Equation 15-18 or 15-19, b5	-0.00050	
Coeff. Value for Equation 15-18 or 15-19, b6	-0.05500	
Coeff. Value for Equation 15-18 or 15-19, b7	7.13760	
Percent Followers at Capacity Flow Rate, PFcap	87.3	%

Step 6b: Calculate Percent Followers at 25% of Capacity

Coeff. Value for Equation 15-20 or 15-21, c0	18.01780	
Coeff. Value for Equation 15-20 or 15-21, c1	10.00000	
Coeff. Value for Equation 15-20 or 15-21, c2	-21.60000	
Coeff. Value for Equation 15-20 or 15-21, c3	-0.97853	
Coeff. Value for Equation 15-20 or 15-21, c4	12.05214	
Coeff. Value for Equation 15-20 or 15-21, c5	-0.00750	
Coeff. Value for Equation 15-20 or 15-21, c6	-0.06700	
Coeff. Value for Equation 15-20 or 15-21, c7	11.60410	
Percent Followers of 25% of Capacity Flow Rate, PF25cap	52.6	%

Step 6c: Calculate the Slope Coefficient

Coeff. Value for Equation 15-22, d1	-0.29764	
Coeff. Value for Equation 15-22, d2	-0.71917	
Slope Coefficient, m	-1.39396	

Step 6d: Calculate the Power Coefficient

Coeff. Value for Equation 15-23, e0	0.81165	
Coeff. Value for Equation 15-23, e1	0.37920	
Coeff. Value for Equation 15-23, e2	-0.49524	
Coeff. Value for Equation 15-23, e3	-2.11289	
Coeff. Value for Equation 15-23, e4	2.41146	
Power Coefficient, p	0.73198	

Step 6e: Calculate Percent Followers for the Segment

Percent Followers, PF	82.3	%

Step 7: Estimate Additional Performance Measure for Passing Lane

Step 8: Estimate Follower Density

Percent Followers, PF	82.3	%
Demand Flow Rate in Analysis Direction, vd	1347	veh/h
Average Speed, with consideration of horizontal curves, S	46.9	mi/h
Follower Density, FD	23.7	followers/mi/ln

Step 9: Determine Potential Adjustment to Follower Density

Effective Length of Upstream Passing Lane	1.00	mi
Distance Downstream from Start of Passing Lane Segment	0.61	mi
PF for Upstream Passing Lane Seg., PF	0.0	%
PF for Analysis Segment, PF	82.3	%
Length of Passing Lane Segment, PassLaneLength	0.00	mi
Flow Rate Entering for Analysis Segment	1347	veh/h
% Improve to PF, %ImprovePF	0.0	%
% Improve to the Average Speed, %ImproveS	0.0	%
Adjusted Average Speed for Analysis Segment, S	46.9	mi/h
Adjusted Follower Density, FDadj	23.7	followers/mi/ln

Step 10: Determine LOS

Posted Speed Limit, Sp	45	mi/h
Follower Density, FD	23.7	followers/mi/ln
Level of Service, LOS	E	

Appendix D

SimTraffic Queueing Worksheets

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	5
Average Queue (ft)	5	0
95th Queue (ft)	22	3
Link Distance (ft)	547	465
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	81	81	17
Average Queue (ft)	20	4	1
95th Queue (ft)	62	33	9
Link Distance (ft)	659	540	324
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	24	92	84	229	272	12	183	368	123
Average Queue (ft)	5	29	16	101	71	0	19	162	5
95th Queue (ft)	18	73	46	198	185	8	84	299	53
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)					0		0	2	
Queuing Penalty (veh)					0		0	11	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)					0			3	
Queuing Penalty (veh)					0			1	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	70	28	124
Average Queue (ft)	12	5	61
95th Queue (ft)	47	22	98
Link Distance (ft)	442	207	271
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	75	31	8
Average Queue (ft)	37	2	0
95th Queue (ft)	69	18	6
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	R	L	T	T	L	L	R
Maximum Queue (ft)	242	115	238	245	128	101	134	250	135
Average Queue (ft)	121	20	112	135	35	38	73	102	43
95th Queue (ft)	217	81	204	216	91	83	135	192	111
Link Distance (ft)	1407	1407			470	470		455	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			280	385			75		75
Storage Blk Time (%)			0				9	20	0
Queuing Penalty (veh)			0				24	55	1

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	L	T	T	L	T	TR
Maximum Queue (ft)	69	62	106	171	166	32	181	126	136	196	225
Average Queue (ft)	19	16	45	79	71	2	89	16	58	99	119
95th Queue (ft)	50	46	88	134	145	15	156	73	113	167	197
Link Distance (ft)		948		2491				862		653	
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	310		570		570	515	515		565		450
Storage Blk Time (%)											
Queuing Penalty (veh)											

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	B46	B61	B52	B60	WB	WB	WB	NB	NB	SB
Directions Served	T	TR	T	T	T	T	L	T	R	L	TR	L
Maximum Queue (ft)	900	530	1970	2373	301	59	22	301	127	31	29	342
Average Queue (ft)	869	530	1627	879	15	1	1	162	32	4	2	186
95th Queue (ft)	897	533	2546	2305	136	23	8	264	87	20	14	287
Link Distance (ft)	788		1860	2388	384	102		385			668	
Upstream Blk Time (%)	84		64	6	1	0		0				
Queuing Penalty (veh)	623		467	41	8	1		0				
Storage Bay Dist (ft)		430					260		265	60		470
Storage Blk Time (%)	93	23						1		0		
Queuing Penalty (veh)	349	83						2		0		

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	57
Average Queue (ft)	12
95th Queue (ft)	41
Link Distance (ft)	2521
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B60	SB	SB	SB
Directions Served	L	T	TR	L	T	L	T	TR	T	L	L	T
Maximum Queue (ft)	30	31	25	13	140	50	158	106	24	106	94	272
Average Queue (ft)	5	6	2	1	69	10	79	24	1	48	27	91
95th Queue (ft)	18	21	11	8	123	33	149	74	12	91	68	186
Link Distance (ft)	415	415	415	370	370	102	102	102	384	264	264	264
Upstream Blk Time (%)							4	0				0
Queuing Penalty (veh)							5	0				0
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	B57
Directions Served	T
Maximum Queue (ft)	11
Average Queue (ft)	0
95th Queue (ft)	5
Link Distance (ft)	445
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	TR	L	T	R
Maximum Queue (ft)	42	195	21	86	259	88	73	200	70
Average Queue (ft)	8	97	1	42	157	33	30	99	23
95th Queue (ft)	30	161	8	82	245	73	67	169	56
Link Distance (ft)		2767			15144	258		571	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	370		370	295			160		160
Storage Blk Time (%)					0			1	
Queuing Penalty (veh)					0			1	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	B32	B32	B28	B28	SB
Directions Served	LT	L	TR	L	L	T	TR	T	T	T	T	L
Maximum Queue (ft)	70	31	83	433	468	210	160	92	31	41	25	26
Average Queue (ft)	20	5	37	298	207	59	14	24	3	7	1	3
95th Queue (ft)	54	22	70	546	585	161	90	126	33	57	18	17
Link Distance (ft)	366		723		504	504	504	130	130	1407	1407	
Upstream Blk Time (%)				0	13	0	0	6	0			
Queuing Penalty (veh)				0	36	0	0	18	0			
Storage Bay Dist (ft)		530		385								355
Storage Blk Time (%)				28	4							
Queuing Penalty (veh)				46	6							

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	92	131
Average Queue (ft)	45	57
95th Queue (ft)	81	103
Link Distance (ft)	416	416
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	297	223	348	44	73	182
Average Queue (ft)	173	72	137	12	17	69
95th Queue (ft)	281	158	251	36	52	122
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	196	150	124	98	163	106	93
Average Queue (ft)	93	62	68	27	59	50	45
95th Queue (ft)	171	120	109	70	130	90	76
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350				460
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	111	220	232	140	363	235
Average Queue (ft)	47	79	96	83	183	40
95th Queue (ft)	96	170	179	149	335	185
Link Distance (ft)	1297		1227			15279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		520		65	530	
Storage Blk Time (%)			14	7	0	0
Queuing Penalty (veh)			35	16	1	0

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T
Maximum Queue (ft)	344	70	65	41	105	96	170	134	87
Average Queue (ft)	169	26	24	2	43	27	80	50	22
95th Queue (ft)	278	54	51	16	86	71	144	113	60
Link Distance (ft)		1820	1820		640	640	5366	5366	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	690			315					170
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T
Maximum Queue (ft)	78	68	72	69	34	71	263	204
Average Queue (ft)	32	15	21	10	2	21	101	27
95th Queue (ft)	63	47	57	42	17	60	207	110
Link Distance (ft)	390	390	390	257	257		640	640
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)						185		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 1830

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	33	36
Average Queue (ft)	8	1
95th Queue (ft)	28	15
Link Distance (ft)	547	465
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	65	8
Average Queue (ft)	17	0
95th Queue (ft)	48	7
Link Distance (ft)	659	324
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB
Directions Served	LT	R	LTR	L	TR	T	L	TR
Maximum Queue (ft)	72	173	56	333	382	63	49	210
Average Queue (ft)	13	64	16	128	144	3	13	92
95th Queue (ft)	42	129	41	256	306	39	37	173
Link Distance (ft)	838	838	442		383	6750		271
Upstream Blk Time (%)				0	1			0
Queuing Penalty (veh)				0	5			0
Storage Bay Dist (ft)				325			245	
Storage Blk Time (%)				0	1			0
Queuing Penalty (veh)				0	3			0

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	162	46	28	84
Average Queue (ft)	51	1	2	42
95th Queue (ft)	125	14	14	78
Link Distance (ft)	442	838	207	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	101	12	11
Average Queue (ft)	67	1	0
95th Queue (ft)	93	7	0
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	16		
Queuing Penalty (veh)	42		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B32	WB	WB	WB	NB	NB	NB	B31
Directions Served	T	T	R	T	L	T	T	L	L	R	T
Maximum Queue (ft)	371	300	107	72	141	125	122	135	478	135	32
Average Queue (ft)	188	65	48	2	64	43	50	105	165	77	1
95th Queue (ft)	321	210	86	51	118	98	104	162	337	154	23
Link Distance (ft)	1407	1407		504		470	470		455		5998
Upstream Blk Time (%)									0		
Queuing Penalty (veh)									3		
Storage Bay Dist (ft)			280		385			75		75	
Storage Blk Time (%)		0						21	30	1	
Queuing Penalty (veh)		0						103	150	3	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	TR	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	228	72	125	279	595	675	909	675	341	198	167
Average Queue (ft)	111	14	56	138	117	672	878	369	202	61	59
95th Queue (ft)	196	48	108	250	502	682	926	920	342	141	127
Link Distance (ft)	948		2491				862			653	
Upstream Blk Time (%)							56				
Queuing Penalty (veh)							0				
Storage Bay Dist (ft)		570		570	515	515		515	565		450
Storage Blk Time (%)						92	50				
Queuing Penalty (veh)						739	410				

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	WB	WB	WB	B23	B23	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	R	T		L	TR	L	TR
Maximum Queue (ft)	10	240	48	11	357	283	686	265	31	64	194	21
Average Queue (ft)	0	125	0	0	198	71	50	14	4	11	86	3
95th Queue (ft)	6	226	8	6	306	180	337	168	19	43	162	13
Link Distance (ft)		788			385		653	653		668		2521
Upstream Blk Time (%)					0		0	0				
Queuing Penalty (veh)					1		2	0				
Storage Bay Dist (ft)	430		430	260		265			60		470	
Storage Blk Time (%)					2				0	0		
Queuing Penalty (veh)					12				0	0		

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B60	B60	SB	SB
Directions Served	L	T	TR	L	T	L	T	TR	T	T	L	L
Maximum Queue (ft)	78	149	113	10	43	44	171	144	111	59	155	132
Average Queue (ft)	26	75	31	1	7	11	129	52	19	3	79	59
95th Queue (ft)	57	126	88	6	25	34	200	121	70	24	128	114
Link Distance (ft)	415	415	415	370	370	102	102	102	384	384	264	264
Upstream Blk Time (%)							16	2				
Queuing Penalty (veh)							46	5				
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	SB
Directions Served	T
Maximum Queue (ft)	125
Average Queue (ft)	51
95th Queue (ft)	106
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	NB	NB	B42	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	T	L	T	R
Maximum Queue (ft)	444	716	17	53	311	22	328	28	137	156	38
Average Queue (ft)	117	343	1	13	178	2	188	2	59	54	7
95th Queue (ft)	309	608	8	38	272	12	308	13	117	120	29
Link Distance (ft)		2767			15144	258	258	248		571	
Upstream Blk Time (%)							3				
Queuing Penalty (veh)							10				
Storage Bay Dist (ft)	370		370	295					160		160
Storage Blk Time (%)		11			0				1	0	
Queuing Penalty (veh)		10			0				3	0	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	B32	B28	SB	SB	SB
Directions Served	LT	L	TR	L	L	T	TR	T	T	L	T	TR
Maximum Queue (ft)	145	26	75	482	543	178	147	102	36	55	153	142
Average Queue (ft)	59	4	26	345	256	77	29	19	3	16	60	54
95th Queue (ft)	111	20	59	570	644	150	97	102	27	44	111	106
Link Distance (ft)	366		723		504	504	504	130	1407		416	416
Upstream Blk Time (%)				0	13			3				
Queuing Penalty (veh)				0	43			9				
Storage Bay Dist (ft)		530		385						355		
Storage Blk Time (%)				41	5							
Queuing Penalty (veh)				72	10							

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	406	184	322	82	92	104
Average Queue (ft)	236	65	173	27	24	50
95th Queue (ft)	377	140	271	59	63	82
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	1					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	202	165	245	226	181	107	189
Average Queue (ft)	107	65	125	68	74	51	84
95th Queue (ft)	190	132	233	186	147	94	140
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350				460
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			1	0			

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	387	276	445	140	521	357
Average Queue (ft)	201	101	198	123	315	62
95th Queue (ft)	328	220	382	166	491	222
Link Distance (ft)	1297		1227			15279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		520		65	530	
Storage Blk Time (%)			21	35	1	0
Queuing Penalty (veh)			95	53	3	0

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T
Maximum Queue (ft)	219	63	53	47	89	110	77	54	69
Average Queue (ft)	100	33	29	8	38	38	26	10	19
95th Queue (ft)	167	53	50	31	75	83	61	36	52
Link Distance (ft)		1820	1820		640	640	5366	5366	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	690			315					170
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T
Maximum Queue (ft)	85	90	44	63	30	144	148	68
Average Queue (ft)	48	40	14	18	4	72	52	3
95th Queue (ft)	75	78	38	47	19	134	113	30
Link Distance (ft)	390	390	390	257	257		640	640
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)						185		
Storage Blk Time (%)						0		
Queuing Penalty (veh)						0		

Zone Summary

Zone wide Queuing Penalty: 1837

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	71	260	14
Average Queue (ft)	31	89	1
95th Queue (ft)	56	207	8
Link Distance (ft)	547	465	290
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	243	212	32
Average Queue (ft)	94	17	2
95th Queue (ft)	186	129	16
Link Distance (ft)	659	540	324
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	36	142	68	293	284	37	227	371	225
Average Queue (ft)	4	59	20	144	94	2	19	236	35
95th Queue (ft)	20	116	47	269	222	27	85	388	160
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)					0		0	10	
Queuing Penalty (veh)					1		0	61	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				0	0			12	
Queuing Penalty (veh)				0	0			3	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	104	28	134
Average Queue (ft)	16	6	64
95th Queue (ft)	65	23	110
Link Distance (ft)	442	207	271
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	74	31	19
Average Queue (ft)	36	2	1
95th Queue (ft)	68	20	10
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	1		
Queuing Penalty (veh)	1		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	T	T	R	L	T	T	L	L	R
Maximum Queue (ft)	226	238	277	265	122	104	134	256	134
Average Queue (ft)	124	28	128	151	37	42	87	122	50
95th Queue (ft)	208	125	229	231	89	89	145	214	128
Link Distance (ft)	1407	1407			470	470		455	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			280	385			75		75
Storage Blk Time (%)			1				11	24	0
Queuing Penalty (veh)			1				32	70	1

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	65	81	122	159	219	52	205	171	20	172	188	217
Average Queue (ft)	20	24	53	86	84	6	101	22	1	87	97	124
95th Queue (ft)	54	62	103	143	167	30	170	96	14	146	173	205
Link Distance (ft)		948		2491				862			653	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	310		570		570	515	515		515	565		450
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	B46	B61	B52	B60	B60	WB	WB	WB	NB	NB
Directions Served	T	TR	T	T	T	T		L	T	R	L	TR
Maximum Queue (ft)	900	530	1970	2479	439	191	22	22	351	242	26	29
Average Queue (ft)	865	526	1638	1093	80	31	1	1	185	41	3	2
95th Queue (ft)	909	595	2568	2763	361	159	11	10	311	137	16	12
Link Distance (ft)	788		1860	2388	384	102	102		385			668
Upstream Blk Time (%)	84		70	20	15	9			0			
Queuing Penalty (veh)	653		536	157	118	36			1			
Storage Bay Dist (ft)		430						260		265	60	
Storage Blk Time (%)	92	21							4			
Queuing Penalty (veh)	365	81							5			

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	SB	SB
Directions Served	L	TR
Maximum Queue (ft)	425	157
Average Queue (ft)	238	15
95th Queue (ft)	375	95
Link Distance (ft)		2521
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	470	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B60	B60	SB	SB
Directions Served	L	T	TR	L	T	L	T	TR	T	T	L	L
Maximum Queue (ft)	38	37	26	13	154	54	171	99	31	20	119	93
Average Queue (ft)	7	8	3	1	74	11	90	25	1	1	50	29
95th Queue (ft)	26	25	14	6	136	36	162	79	13	12	90	70
Link Distance (ft)	415	415	415	370	370	102	102	102	384	384	264	264
Upstream Blk Time (%)							5	0				
Queuing Penalty (veh)							7	0				
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	SB	B57	B57	B57	B59	B51
Directions Served	T	T	T	T	T	T
Maximum Queue (ft)	338	267	344	237	109	242
Average Queue (ft)	132	15	43	17	9	18
95th Queue (ft)	297	149	260	157	73	157
Link Distance (ft)	264	445	445	445	98	428
Upstream Blk Time (%)	10	0	5	0	4	3
Queuing Penalty (veh)	0	0	0	0	0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	TR	L	T	R
Maximum Queue (ft)	41	203	16	126	298	90	70	218	59
Average Queue (ft)	7	97	1	47	149	34	33	112	23
95th Queue (ft)	28	156	7	95	245	74	66	189	55
Link Distance (ft)		2767			15144	258		571	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	370		370	295			160		160
Storage Blk Time (%)					0			2	
Queuing Penalty (veh)					0			2	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	L	TR	L	L	T	TR	L	T	TR
Maximum Queue (ft)	52	26	92	382	356	140	94	34	112	135
Average Queue (ft)	16	4	36	211	65	47	9	4	52	61
95th Queue (ft)	46	18	71	361	264	110	47	21	91	109
Link Distance (ft)	366		723		504	504	504		416	416
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		530		385				355		
Storage Blk Time (%)				2	0					
Queuing Penalty (veh)				4	0					

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	350	189	283	53	55	149
Average Queue (ft)	177	70	141	11	16	75
95th Queue (ft)	295	147	241	37	46	125
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	189	145	155	86	173	176	87
Average Queue (ft)	101	69	75	28	73	76	46
95th Queue (ft)	169	125	128	72	140	133	75
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350				460
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	140	253	219	140	337	92
Average Queue (ft)	50	85	105	79	186	32
95th Queue (ft)	104	183	188	141	305	82
Link Distance (ft)	1297		1227			15279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		520		65	530	
Storage Blk Time (%)			19	6		
Queuing Penalty (veh)			47	14		

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T
Maximum Queue (ft)	305	72	64	34	110	101	183	127	89
Average Queue (ft)	158	26	26	3	49	36	80	43	24
95th Queue (ft)	250	53	53	18	96	84	149	100	63
Link Distance (ft)		1820	1820		640	640	5366	5366	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	690			315					170
Storage Blk Time (%)								0	
Queuing Penalty (veh)								0	

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T
Maximum Queue (ft)	74	78	76	63	24	74	230	162
Average Queue (ft)	37	25	23	12	1	23	106	20
95th Queue (ft)	61	61	63	43	14	61	189	88
Link Distance (ft)	390	390	390	257	257		640	640
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)						185		
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 2198

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	375	317	9
Average Queue (ft)	150	96	1
95th Queue (ft)	330	240	7
Link Distance (ft)	547	465	290
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	716	43
Average Queue (ft)	622	2
95th Queue (ft)	895	20
Link Distance (ft)	659	324
Upstream Blk Time (%)	82	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	60	207	70	383	474	390	96	299	22
Average Queue (ft)	15	93	21	235	239	53	17	144	0
95th Queue (ft)	41	164	54	410	474	279	59	248	0
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)				2	6			1	
Queuing Penalty (veh)				0	64			3	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				9	4			1	
Queuing Penalty (veh)				61	18			0	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	263	119	28	94
Average Queue (ft)	85	5	2	41
95th Queue (ft)	200	47	15	76
Link Distance (ft)	442	838	207	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	101	31	24
Average Queue (ft)	70	1	1
95th Queue (ft)	96	22	12
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	21		
Queuing Penalty (veh)	55		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B32	WB	WB	WB	NB	NB	NB	B31
Directions Served	T	T	R	T	L	T	T	L	L	R	T
Maximum Queue (ft)	448	419	227	71	189	135	130	134	430	135	22
Average Queue (ft)	240	106	73	2	90	44	49	105	195	87	1
95th Queue (ft)	438	365	176	51	158	103	105	157	384	162	20
Link Distance (ft)	1407	1407		504		470	470		455		5998
Upstream Blk Time (%)									1		
Queuing Penalty (veh)									5		
Storage Bay Dist (ft)			280		385			75		75	
Storage Blk Time (%)		0						22	34	1	
Queuing Penalty (veh)		1						129	199	6	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	B23
Directions Served	TR	L	LT	R	L	T	T	R	L	T	TR	T
Maximum Queue (ft)	271	105	162	362	594	675	916	675	562	494	414	316
Average Queue (ft)	131	36	81	172	92	672	878	392	404	200	131	84
95th Queue (ft)	231	92	136	300	442	682	926	938	650	609	430	497
Link Distance (ft)	948		2491				862			653		3623
Upstream Blk Time (%)							58		6	8	0	
Queuing Penalty (veh)							0		0	50	0	
Storage Bay Dist (ft)		570		570	515	515		515	565		450	
Storage Blk Time (%)	0					92	53		13	1	0	
Queuing Penalty (veh)	0					764	442		46	4	0	

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	WB	WB	WB	B47	B23	B23	NB	NB	SB
Directions Served	L	T	TR	L	T	R	T	T		L	TR	L
Maximum Queue (ft)	5	226	39	16	376	288	17	711	358	31	63	243
Average Queue (ft)	0	131	1	0	203	74	1	83	12	4	10	132
95th Queue (ft)	6	217	28	6	326	189	16	450	153	20	41	240
Link Distance (ft)		788			385		552	653	653		668	
Upstream Blk Time (%)					0			0				
Queuing Penalty (veh)					5			3				
Storage Bay Dist (ft)	430		430	260		265				60		470
Storage Blk Time (%)					3					0	1	
Queuing Penalty (veh)					17					0	0	

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	20
Average Queue (ft)	2
95th Queue (ft)	12
Link Distance (ft)	2521
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B60	B60	SB	SB
Directions Served	L	T	TR	L	T	L	T	TR	T	T	L	L
Maximum Queue (ft)	80	146	105	15	42	41	180	135	131	31	160	142
Average Queue (ft)	28	77	31	1	7	10	140	61	25	2	83	66
95th Queue (ft)	66	128	86	8	25	31	204	132	83	17	133	123
Link Distance (ft)	415	415	415	370	370	102	102	102	384	384	264	264
Upstream Blk Time (%)							22	3				
Queuing Penalty (veh)							69	9				
Storage Bay Dist (ft)												
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 9: Vasco Rd/Vasco Rd - SR-4 #1 & Marsh Creek Rd/Marsh Creek Rd (SR-4)

Movement	SB
Directions Served	T
Maximum Queue (ft)	144
Average Queue (ft)	52
95th Queue (ft)	108
Link Distance (ft)	264
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	NB	NB	B42	SB	SB	SB
Directions Served	L	T	R	L	TR	L	TR	T	L	T	R
Maximum Queue (ft)	388	605	99	43	320	25	316	40	129	169	40
Average Queue (ft)	106	347	4	7	178	3	185	2	57	66	8
95th Queue (ft)	288	584	65	28	278	15	304	22	124	133	30
Link Distance (ft)		2767			15144	258	258	248		571	
Upstream Blk Time (%)							3				
Queuing Penalty (veh)							8				
Storage Bay Dist (ft)	370		370	295					160		160
Storage Blk Time (%)		9			1				2	0	
Queuing Penalty (veh)		9			0				4	0	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	B32	B32	B32	B28	B28
Directions Served	LT	L	TR	L	L	T	TR	T	T	T	T	T
Maximum Queue (ft)	126	26	72	485	588	302	209	192	116	52	119	46
Average Queue (ft)	58	3	25	336	285	95	36	37	8	3	12	5
95th Queue (ft)	106	17	59	593	721	212	137	148	67	33	85	53
Link Distance (ft)	366		723		504	504	504	130	130	130	1407	1407
Upstream Blk Time (%)				0	24			8	1	0		
Queuing Penalty (veh)				0	85			29	2	0		
Storage Bay Dist (ft)		530		385								
Storage Blk Time (%)				48	11							
Queuing Penalty (veh)				91	21							

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	SB	SB	SB
Directions Served	L	T	TR
Maximum Queue (ft)	64	137	116
Average Queue (ft)	17	68	57
95th Queue (ft)	47	119	102
Link Distance (ft)		416	416
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	355		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	B29	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	389	188	99	392	57	69	127
Average Queue (ft)	242	75	3	206	23	17	54
95th Queue (ft)	366	158	71	327	48	50	94
Link Distance (ft)	430	430	470	975	975	657	657
Upstream Blk Time (%)	0		0				
Queuing Penalty (veh)	0		0				
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	236	210	276	279	192	150	190
Average Queue (ft)	122	86	134	77	90	77	87
95th Queue (ft)	210	164	239	206	163	129	149
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350				460
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			1	0			

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	410	250	436	140	550	555
Average Queue (ft)	202	104	219	126	351	83
95th Queue (ft)	351	204	405	164	526	321
Link Distance (ft)	1297		1227			15279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		520		65	530	
Storage Blk Time (%)			29	35	2	0
Queuing Penalty (veh)			132	59	4	0

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T
Maximum Queue (ft)	188	72	57	64	105	112	77	59	85
Average Queue (ft)	100	37	28	10	44	43	28	12	25
95th Queue (ft)	164	60	50	40	85	96	63	40	65
Link Distance (ft)		1820	1820		640	640	5366	5366	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	690			315					170
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T
Maximum Queue (ft)	93	95	39	71	48	170	126	52
Average Queue (ft)	55	45	13	19	6	69	52	2
95th Queue (ft)	84	82	37	50	26	131	106	19
Link Distance (ft)	390	390	390	257	257		640	640
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)						185		
Storage Blk Time (%)						0		
Queuing Penalty (veh)						0		

Zone Summary

Zone wide Queuing Penalty: 2398

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	29	62
Average Queue (ft)	7	2
95th Queue (ft)	26	28
Link Distance (ft)	547	465
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	718	137	34
Average Queue (ft)	543	5	1
95th Queue (ft)	866	62	13
Link Distance (ft)	659	540	324
Upstream Blk Time (%)	43		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	90	197	84	326	407	76	223	372	185
Average Queue (ft)	33	75	24	155	148	4	25	237	25
95th Queue (ft)	77	148	61	286	324	43	107	382	113
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)				0	1		0	9	
Queuing Penalty (veh)				0	8		0	53	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				0	2			11	
Queuing Penalty (veh)				1	6			3	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	177	4	28	179
Average Queue (ft)	28	0	7	77
95th Queue (ft)	105	3	26	139
Link Distance (ft)	442	838	207	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	77	115	7
Average Queue (ft)	47	5	0
95th Queue (ft)	78	62	6
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	5		
Queuing Penalty (veh)	5		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B32	B32	WB	WB	WB	B84	B84	NB	NB
Directions Served	T	T	R	T		L	T	T	T		L	L
Maximum Queue (ft)	751	844	345	181	85	267	160	135	279	196	135	480
Average Queue (ft)	444	404	244	12	3	162	66	57	16	10	117	224
95th Queue (ft)	817	907	400	130	61	245	124	107	153	124	163	430
Link Distance (ft)	1407	1407		504	504		470	470	430	430		455
Upstream Blk Time (%)									0	0		1
Queuing Penalty (veh)									0	0		4
Storage Bay Dist (ft)			280			385					75	
Storage Blk Time (%)		4	5								30	37
Queuing Penalty (veh)		19	15								134	168

Intersection: 6: Byron Hwy & SR-4 #1

Movement	NB	B31
Directions Served	R	T
Maximum Queue (ft)	135	35
Average Queue (ft)	73	1
95th Queue (ft)	163	20
Link Distance (ft)		5998
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	1	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	134	141	138	188	341	392	604	735	405	283	263	291
Average Queue (ft)	67	56	62	103	158	40	446	444	98	161	165	190
95th Queue (ft)	124	115	118	174	289	262	755	934	489	254	252	278
Link Distance (ft)		948		2491				862			653	
Upstream Blk Time (%)								14				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	310		570		570	515	515		515	565		450
Storage Blk Time (%)					0		33	18				
Queuing Penalty (veh)					1		128	72				

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	B46	B61	B61	WB	WB	WB	B47	B23	NB
Directions Served	L	T	TR	T	T		L	T	R	T	T	L
Maximum Queue (ft)	6	900	530	1975	2178	2161	82	482	330	415	134	96
Average Queue (ft)	0	866	524	1924	1973	1806	6	374	132	84	9	19
95th Queue (ft)	6	884	579	2103	2832	2947	52	551	381	299	132	65
Link Distance (ft)		788		1860	2141	2141		385		552	653	
Upstream Blk Time (%)		54		77	56	15		13		0	0	
Queuing Penalty (veh)		788		1124	398	109		139		2	0	
Storage Bay Dist (ft)	430		430				260		265			60
Storage Blk Time (%)		63	24					21	0			0
Queuing Penalty (veh)		467	170					43	0			1

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	NB	SB	SB
Directions Served	TR	L	TR
Maximum Queue (ft)	267	533	561
Average Queue (ft)	131	390	109
95th Queue (ft)	233	579	473
Link Distance (ft)	668		2521
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		470	
Storage Blk Time (%)	41	10	
Queuing Penalty (veh)	5	5	

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	TR	L	T	R
Maximum Queue (ft)	36	117	135	94	241	284	253	70	233	66
Average Queue (ft)	6	59	72	38	110	150	120	32	107	26
95th Queue (ft)	26	106	125	79	192	233	223	64	183	59
Link Distance (ft)		2767	2767		15303	15303	259		559	
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							1			
Storage Bay Dist (ft)	370			295				160		160
Storage Blk Time (%)									1	
Queuing Penalty (veh)									2	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	L	TR	L	L	T	TR	L	T	TR
Maximum Queue (ft)	54	37	117	235	241	167	97	43	200	228
Average Queue (ft)	18	9	52	132	147	64	15	7	102	110
95th Queue (ft)	46	31	94	200	219	134	58	27	165	185
Link Distance (ft)	366		723		504	504	504		416	416
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		530		385				355		
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	377	242	873	632	82	223
Average Queue (ft)	251	73	548	141	28	104
95th Queue (ft)	360	170	1021	678	67	182
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)	0		9	5		
Queuing Penalty (veh)	0		0	0		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	231	238	266	280	220	159	165
Average Queue (ft)	108	127	145	97	97	82	78
95th Queue (ft)	187	219	249	234	179	137	130
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350			460	
Storage Blk Time (%)			1	0			
Queuing Penalty (veh)			1	1			

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	1228	635	1281	140	1352	756
Average Queue (ft)	617	456	1090	131	764	112
95th Queue (ft)	1310	769	1615	172	1378	466
Link Distance (ft)	1297		1227		15285	15285
Upstream Blk Time (%)	10		57			
Queuing Penalty (veh)	0		0			
Storage Bay Dist (ft)		520		65		
Storage Blk Time (%)	7	35	59	22		
Queuing Penalty (veh)	47	99	273	113		

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B67
Directions Served	LT	R	R	L	T	T	T	T	T	R	T
Maximum Queue (ft)	740	1732	1685	55	286	279	484	541	270	176	111
Average Queue (ft)	650	1065	879	6	161	147	263	254	165	22	4
95th Queue (ft)	925	2266	2122	31	249	236	464	486	316	126	79
Link Distance (ft)		1820	1820		640	640	5366	5366			536
Upstream Blk Time (%)		17	4								0
Queuing Penalty (veh)		0	0								0
Storage Bay Dist (ft)	690			315					170	170	
Storage Blk Time (%)	36	1			0			26	5	0	
Queuing Penalty (veh)	83	5			0			145	11	0	

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T	R
Maximum Queue (ft)	83	67	80	82	70	141	691	698	531
Average Queue (ft)	40	31	29	29	11	49	517	467	68
95th Queue (ft)	67	63	66	71	42	105	814	850	383
Link Distance (ft)	390	390	390	257	257		640	640	640
Upstream Blk Time (%)							5	3	0
Queuing Penalty (veh)							27	17	2
Storage Bay Dist (ft)						185			
Storage Blk Time (%)						0			
Queuing Penalty (veh)						0			

Intersection: 17: SR-4 southbound ramps & Marsh Creek Rd/Marsh Creek Rd - SR-4 #1

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	TR	L	T	T	L	L	TR
Maximum Queue (ft)	84	79	26	193	36	88	109	61
Average Queue (ft)	38	36	2	93	2	33	55	27
95th Queue (ft)	68	60	13	165	18	74	92	54
Link Distance (ft)	269	269		901	901			827
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			300			690	690	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 18: SR-4 northbound ramps & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	TR
Maximum Queue (ft)	69	57	58	102	64	195	95	31
Average Queue (ft)	23	13	15	46	9	91	35	3
95th Queue (ft)	53	37	43	90	38	159	72	18
Link Distance (ft)		901	901	1352	1352			636
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	300					755	510	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 4697

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	77	76
Average Queue (ft)	24	4
95th Queue (ft)	57	43
Link Distance (ft)	547	465
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB
Directions Served	LR
Maximum Queue (ft)	187
Average Queue (ft)	51
95th Queue (ft)	136
Link Distance (ft)	659
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	36	191	95	361	368	106	135	319	20
Average Queue (ft)	10	92	34	188	158	7	14	135	1
95th Queue (ft)	30	164	73	344	314	72	68	243	11
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)				0	0		0	1	
Queuing Penalty (veh)				0	7		0	2	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				1	1			1	
Queuing Penalty (veh)				12	3			0	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	264	43	28	144
Average Queue (ft)	77	3	5	60
95th Queue (ft)	194	26	23	108
Link Distance (ft)	442	838	207	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	95	40	25
Average Queue (ft)	62	1	1
95th Queue (ft)	90	29	13
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	12		
Queuing Penalty (veh)	37		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B28	B28	B32	B32	B32	WB	WB	WB	B84
Directions Served	T	T	R	T	T	T	T		L	T	T	T
Maximum Queue (ft)	1500	1513	345	226	234	514	514	636	183	113	128	91
Average Queue (ft)	1116	1085	224	94	96	178	181	206	83	53	57	6
95th Queue (ft)	1888	1942	436	259	270	543	553	677	144	97	106	93
Link Distance (ft)	1407	1407		130	130	504	504	504		470	470	430
Upstream Blk Time (%)	48	46		42	41	1	1	26				0
Queuing Penalty (veh)	303	291		266	256	3	6	111				0
Storage Bay Dist (ft)			280						385			
Storage Blk Time (%)		6	0									
Queuing Penalty (veh)		23	0									

Intersection: 6: Byron Hwy & SR-4 #1

Movement	NB	NB	NB	B31
Directions Served	L	L	R	T
Maximum Queue (ft)	134	473	135	36
Average Queue (ft)	102	169	86	2
95th Queue (ft)	159	349	159	33
Link Distance (ft)		455		5998
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		4		
Storage Bay Dist (ft)	75		75	
Storage Blk Time (%)	20	27	1	
Queuing Penalty (veh)	160	216	9	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	B23
Directions Served	TR	L	LT	R	L	T	T	R	L	T	TR	T
Maximum Queue (ft)	153	46	205	482	595	675	902	675	653	755	653	3735
Average Queue (ft)	67	8	42	222	93	674	881	424	640	705	410	2981
95th Queue (ft)	130	31	159	424	443	678	894	959	703	892	895	5041
Link Distance (ft)	948		2491				862			653		3623
Upstream Blk Time (%)							63		29	51	1	64
Queuing Penalty (veh)							0		0	705	0	883
Storage Bay Dist (ft)		570		570	515	515		515	565		450	
Storage Blk Time (%)			0	0		93	54		77	0		
Queuing Penalty (veh)			1	0		1012	599		527	1		

Intersection: 7: Vasco Rd & Camino Diablo

Movement	B62	B48	B47
Directions Served	T	T	T
Maximum Queue (ft)	6351	596	345
Average Queue (ft)	2861	121	66
95th Queue (ft)	7167	524	309
Link Distance (ft)	6243	552	385
Upstream Blk Time (%)	21	17	1
Queuing Penalty (veh)	283	235	9
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	B46	B61	B61	WB	WB	WB	B47	B48	B23
Directions Served	L	T	TR	T	T		L	T	R	T	T	T
Maximum Queue (ft)	495	898	530	1972	1927	1268	5	466	330	204	6	542
Average Queue (ft)	122	852	521	1550	801	373	0	272	154	18	0	45
95th Queue (ft)	437	971	590	2580	2225	1491	4	444	340	146	4	320
Link Distance (ft)		788		1860	2141	2141		385		552	6243	653
Upstream Blk Time (%)		43		39	8	3		3		0		0
Queuing Penalty (veh)		525		477	51	15		65		5		3
Storage Bay Dist (ft)	430		430				260		265			
Storage Blk Time (%)		53	13					9				
Queuing Penalty (veh)		334	82					75				

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	B23	NB	NB	SB	SB
Directions Served		L	TR	L	TR
Maximum Queue (ft)	114	125	724	369	163
Average Queue (ft)	4	81	680	174	17
95th Queue (ft)	82	145	781	349	100
Link Distance (ft)	653		668		2521
Upstream Blk Time (%)			76		
Queuing Penalty (veh)			0		
Storage Bay Dist (ft)		60		470	
Storage Blk Time (%)		33	76	2	
Queuing Penalty (veh)		139	62	0	

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB	B42	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	T	L	T	R
Maximum Queue (ft)	395	523	542	118	390	449	55	346	225	149	156	59
Average Queue (ft)	142	312	324	15	227	274	11	255	44	65	51	8
95th Queue (ft)	315	486	497	43	366	418	38	396	160	132	118	36
Link Distance (ft)		2767	2767		15303	15303	259	259	248		559	
Upstream Blk Time (%)								12	0			
Queuing Penalty (veh)								71	1			
Storage Bay Dist (ft)	370			295						160		160
Storage Blk Time (%)	0	7			4					1	0	
Queuing Penalty (veh)	0	6			1					3	0	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	EB	B35	B35	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	T	T	L	TR	L	L	T	TR	L	T
Maximum Queue (ft)	146	466	1246	1312	37	106	195	221	238	180	70	183
Average Queue (ft)	73	123	192	229	9	46	108	132	113	50	17	99
95th Queue (ft)	129	449	876	961	29	88	172	196	196	130	50	156
Link Distance (ft)	366	366	15303	15303		723		504	504	504		416
Upstream Blk Time (%)		24										
Queuing Penalty (veh)		110										
Storage Bay Dist (ft)					530		385				355	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	175
Average Queue (ft)	91
95th Queue (ft)	153
Link Distance (ft)	416
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	419	169	924	439	82	110
Average Queue (ft)	253	56	555	127	29	58
95th Queue (ft)	394	130	995	610	73	94
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)	0		8	5		
Queuing Penalty (veh)	1		0	0		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB	B67	B68
Directions Served	T	TR	L	L	T	L	R	T	T
Maximum Queue (ft)	275	298	212	207	387	612	485	768	62
Average Queue (ft)	149	156	142	84	182	353	382	194	4
95th Queue (ft)	251	278	203	177	318	689	584	806	50
Link Distance (ft)	424	424		1325	1325	536		1229	3659
Upstream Blk Time (%)						8		1	
Queuing Penalty (veh)						116		12	
Storage Bay Dist (ft)			350				460		
Storage Blk Time (%)						0	16		
Queuing Penalty (veh)						0	58		

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	1351	635	1286	140	6027	5830
Average Queue (ft)	1304	635	1246	139	3164	2156
95th Queue (ft)	1449	636	1357	155	6199	5173
Link Distance (ft)	1297		1227		15285	15285
Upstream Blk Time (%)	45		72			
Queuing Penalty (veh)	0		0			
Storage Bay Dist (ft)		520		65		
Storage Blk Time (%)	5	73	55	52		
Queuing Penalty (veh)	65	475	487	259		

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T	R
Maximum Queue (ft)	277	123	116	84	190	210	148	100	125	15
Average Queue (ft)	154	66	59	22	100	112	66	38	55	1
95th Queue (ft)	249	109	99	61	167	186	121	88	106	8
Link Distance (ft)		1820	1820		640	640	5366	5366		
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	690			315					170	170
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	B78	SB	SB
Directions Served	L	LT	R	T	T	R	T	T	T
Maximum Queue (ft)	126	145	45	134	364	245	670	247	171
Average Queue (ft)	74	75	17	44	229	227	157	109	23
95th Queue (ft)	111	119	44	99	457	282	544	195	102
Link Distance (ft)	390	390	390	257	257		629	640	640
Upstream Blk Time (%)					9	3	3		
Queuing Penalty (veh)					0	0	0		
Storage Bay Dist (ft)						185			
Storage Blk Time (%)					0	27			
Queuing Penalty (veh)					0	55			

Intersection: 17: SR-4 southbound ramps & Marsh Creek Rd/Marsh Creek Rd - SR-4 #1

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	TR	L	T	T	L	L	TR
Maximum Queue (ft)	71	61	19	140	38	114	128	56
Average Queue (ft)	33	27	1	69	2	54	75	23
95th Queue (ft)	61	53	9	127	17	98	113	50
Link Distance (ft)	269	269		901	901			827
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			300			690	690	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 18: SR-4 northbound ramps & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	TR
Maximum Queue (ft)	55	72	96	95	63	236	72	26
Average Queue (ft)	18	26	30	25	4	108	29	4
95th Queue (ft)	41	55	67	71	28	201	59	18
Link Distance (ft)		901	901	1352	1352			636
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	300					755	510	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 9518

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB	B25	SB
Directions Served	LR	LT	T	TR
Maximum Queue (ft)	106	440	12	34
Average Queue (ft)	40	142	0	2
95th Queue (ft)	83	347	8	13
Link Distance (ft)	547	465	27270	290
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		4		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	NB	B30	SB
Directions Served	LR	LT	T	TR
Maximum Queue (ft)	720	398	62	25
Average Queue (ft)	666	26	2	1
95th Queue (ft)	857	195	33	16
Link Distance (ft)	659	540	7586	324
Upstream Blk Time (%)	90	0		
Queuing Penalty (veh)	0	3		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	103	325	84	378	472	335	270	377	381
Average Queue (ft)	32	127	24	207	161	18	55	289	110
95th Queue (ft)	77	244	55	364	369	171	215	419	417
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)				0	2		0	21	
Queuing Penalty (veh)				0	23		0	144	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				3	2		0	24	
Queuing Penalty (veh)				15	10		0	7	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	211	41	174
Average Queue (ft)	40	10	78
95th Queue (ft)	137	33	138
Link Distance (ft)	442	207	271
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	84	87	20
Average Queue (ft)	45	5	1
95th Queue (ft)	81	48	8
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	6		
Queuing Penalty (veh)	6		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B32	B32	WB	WB	WB	B84	B84	NB	NB
Directions Served	T	T	R	T		L	T	T	T		L	L
Maximum Queue (ft)	580	741	345	162	98	300	197	150	271	190	134	451
Average Queue (ft)	317	257	225	6	3	179	67	54	12	7	114	185
95th Queue (ft)	593	695	382	84	70	273	136	114	132	98	160	357
Link Distance (ft)	1407	1407		504	504		470	470	430	430		455
Upstream Blk Time (%)					0				0	0		0
Queuing Penalty (veh)					0				0	0		2
Storage Bay Dist (ft)			280			385					75	
Storage Blk Time (%)		3	8								26	34
Queuing Penalty (veh)		14	21								124	160

Intersection: 6: Byron Hwy & SR-4 #1

Movement	NB	B31
Directions Served	R	T
Maximum Queue (ft)	135	15
Average Queue (ft)	62	1
95th Queue (ft)	151	11
Link Distance (ft)		5998
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	75	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	1	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	LT	R	L	T	T	R	L	T	TR
Maximum Queue (ft)	156	159	141	189	328	484	671	831	540	320	290	306
Average Queue (ft)	67	65	62	103	169	42	534	571	180	191	168	198
95th Queue (ft)	131	134	117	170	289	277	810	1049	666	293	254	286
Link Distance (ft)		948		2491				862			653	
Upstream Blk Time (%)								21				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	310		570		570	515	515		515	565		450
Storage Blk Time (%)							51	25				
Queuing Penalty (veh)							212	107				

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	B46	B61	B61	WB	WB	WB	B47	B48	B23
Directions Served	L	T	TR	T	T		L	T	R	T	T	T
Maximum Queue (ft)	12	898	530	1975	2181	2166	28	485	330	460	138	493
Average Queue (ft)	0	866	526	1937	2007	1876	2	382	137	131	24	13
95th Queue (ft)	6	884	556	2005	2765	2885	15	556	384	453	201	158
Link Distance (ft)		788		1860	2141	2141		385		552	6243	653
Upstream Blk Time (%)		54		78	55	17		17		3		
Queuing Penalty (veh)		801		1167	404	124		181		28		
Storage Bay Dist (ft)	430		430				260		265			
Storage Blk Time (%)		62	20					24				
Queuing Penalty (veh)		472	146					50				

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	NB	NB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	91	308	535	802
Average Queue (ft)	18	147	434	270
95th Queue (ft)	67	266	607	848
Link Distance (ft)		668		2521
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	60		470	
Storage Blk Time (%)	1	49	22	0
Queuing Penalty (veh)	1	5	12	0

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	TR	L	T	R
Maximum Queue (ft)	32	152	162	90	254	292	272	79	241	158
Average Queue (ft)	7	64	72	38	119	157	120	31	113	27
95th Queue (ft)	25	118	127	78	211	251	228	63	194	84
Link Distance (ft)		2767	2767		15303	15303	259		559	
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							1			
Storage Bay Dist (ft)	370			295				160		160
Storage Blk Time (%)					0				2	
Queuing Penalty (veh)					0				3	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	L	TR	L	L	T	TR	L	T	TR
Maximum Queue (ft)	64	41	142	219	239	155	95	30	197	224
Average Queue (ft)	18	8	61	134	143	63	15	4	100	122
95th Queue (ft)	48	30	111	205	207	127	56	19	166	196
Link Distance (ft)	366		723		504	504	504		416	416
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		530		385				355		
Storage Blk Time (%)										
Queuing Penalty (veh)										

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (ft)	398	262	1036	1033	73	237
Average Queue (ft)	245	74	942	771	22	110
95th Queue (ft)	373	174	1211	1468	55	189
Link Distance (ft)	430	430	975	975	657	657
Upstream Blk Time (%)	0		70	60		
Queuing Penalty (veh)	0		0	0		
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	L	R
Maximum Queue (ft)	210	262	265	230	228	232	162
Average Queue (ft)	112	131	150	94	120	112	80
95th Queue (ft)	182	223	254	206	198	185	130
Link Distance (ft)	424	424		1325	1325	536	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)			350			460	
Storage Blk Time (%)			0				
Queuing Penalty (veh)			0				

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	1220	635	1280	140	1273	1014
Average Queue (ft)	964	570	1157	132	747	155
95th Queue (ft)	1700	797	1570	167	1466	623
Link Distance (ft)	1297		1227		15285	15285
Upstream Blk Time (%)	35		62			
Queuing Penalty (veh)	0		0			
Storage Bay Dist (ft)		520		65		
Storage Blk Time (%)	7	65	60	25		
Queuing Penalty (veh)	52	188	280	130		

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	R	L	T	T	T	T	T	R
Maximum Queue (ft)	740	1881	1861	67	333	323	509	593	255	212
Average Queue (ft)	642	1141	1005	8	186	172	272	266	142	29
95th Queue (ft)	932	2386	2306	38	298	280	632	649	287	146
Link Distance (ft)		1820	1820		640	640	5366	5366		
Upstream Blk Time (%)		26	7							
Queuing Penalty (veh)		0	0							
Storage Bay Dist (ft)	690			315					170	170
Storage Blk Time (%)	38	1			1			22	5	0
Queuing Penalty (veh)	94	10			0			126	10	0

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	R	T	T	R	T	T	R
Maximum Queue (ft)	119	111	82	101	81	133	692	705	546
Average Queue (ft)	50	43	31	32	11	51	522	476	79
95th Queue (ft)	85	84	66	77	49	105	835	883	406
Link Distance (ft)	390	390	390	257	257		640	640	640
Upstream Blk Time (%)							6	4	0
Queuing Penalty (veh)							33	21	2
Storage Bay Dist (ft)						185			
Storage Blk Time (%)						0			
Queuing Penalty (veh)						0			

Intersection: 17: SR-4 southbound ramps & Marsh Creek Rd/Marsh Creek Rd - SR-4 #1

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	TR	L	T	T	L	L	TR
Maximum Queue (ft)	86	92	20	212	42	82	95	57
Average Queue (ft)	38	38	2	96	2	29	54	27
95th Queue (ft)	67	68	13	169	14	64	88	54
Link Distance (ft)	269	269		901	901			827
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			300			690	690	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 18: SR-4 northbound ramps & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	TR
Maximum Queue (ft)	85	61	57	134	106	179	104	21
Average Queue (ft)	27	13	14	49	11	93	38	3
95th Queue (ft)	61	37	41	103	52	153	79	16
Link Distance (ft)		901	901	1352	1352			636
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	300					755	510	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Zone Summary

Zone wide Queuing Penalty: 5194

Intersection: 1: Byron Hwy & Holey Rd

Movement	EB	NB	B25	SB
Directions Served	LR	LT	T	TR
Maximum Queue (ft)	562	423	16	13
Average Queue (ft)	508	113	1	0
95th Queue (ft)	737	305	11	7
Link Distance (ft)	547	465	27270	290
Upstream Blk Time (%)	85	0		
Queuing Penalty (veh)	0	6		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Byron Hwy & Byron Hot Springs Rd

Movement	EB	SB
Directions Served	LR	TR
Maximum Queue (ft)	713	11
Average Queue (ft)	635	0
95th Queue (ft)	859	8
Link Distance (ft)	659	324
Upstream Blk Time (%)	85	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Byron Hwy & Camino Diablo

Movement	EB	EB	WB	NB	NB	B38	SB	SB	B49
Directions Served	LT	R	LTR	L	TR	T	L	TR	T
Maximum Queue (ft)	33	226	145	366	410	103	131	335	64
Average Queue (ft)	6	113	49	203	184	7	21	198	7
95th Queue (ft)	21	193	106	338	345	82	101	343	50
Link Distance (ft)	838	838	442		383	6750		271	1146
Upstream Blk Time (%)				0	0		0	6	
Queuing Penalty (veh)				0	9		0	25	
Storage Bay Dist (ft)				325			245		
Storage Blk Time (%)				1	1			9	
Queuing Penalty (veh)				9	6			2	

Intersection: 4: Holway Dr & Camino Diablo

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	264	36	28	158
Average Queue (ft)	90	2	5	66
95th Queue (ft)	210	18	22	128
Link Distance (ft)	442	838	207	271
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Byron Hwy & Holway Dr

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (ft)	92	52	20
Average Queue (ft)	62	2	1
95th Queue (ft)	89	26	12
Link Distance (ft)	65	1146	98
Upstream Blk Time (%)	11		
Queuing Penalty (veh)	33		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Byron Hwy & SR-4 #1

Movement	EB	EB	EB	B28	B28	B32	B32	B32	WB	WB	WB	B84
Directions Served	T	T	R	T	T	T	T		L	T	T	T
Maximum Queue (ft)	1502	1519	345	225	244	513	515	636	243	189	165	280
Average Queue (ft)	1211	1198	242	125	127	242	248	299	125	66	59	13
95th Queue (ft)	1916	1965	443	290	297	608	623	798	251	173	149	137
Link Distance (ft)	1407	1407		130	130	504	504	504		470	470	430
Upstream Blk Time (%)	61	60		56	55	2	3	40				0
Queuing Penalty (veh)	394	386		365	356	7	11	173				0
Storage Bay Dist (ft)			280						385			
Storage Blk Time (%)		11	0						0	0		
Queuing Penalty (veh)		45	0						1	0		

Intersection: 6: Byron Hwy & SR-4 #1

Movement	NB	NB	NB
Directions Served	L	L	R
Maximum Queue (ft)	134	393	135
Average Queue (ft)	107	157	83
95th Queue (ft)	156	302	155
Link Distance (ft)		455	
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (ft)	75		75
Storage Blk Time (%)	21	25	2
Queuing Penalty (veh)	183	224	14

Intersection: 7: Vasco Rd & Camino Diablo

Movement	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB	B23
Directions Served	TR	L	LT	R	L	T	T	R	L	T	TR	T
Maximum Queue (ft)	225	76	562	603	595	675	918	675	653	753	653	3739
Average Queue (ft)	84	25	85	255	87	673	882	369	644	717	446	3082
95th Queue (ft)	175	67	347	514	431	681	899	920	695	844	926	4986
Link Distance (ft)	948		2491				862			653		3623
Upstream Blk Time (%)							65		38	55	1	69
Queuing Penalty (veh)							0		0	799	0	983
Storage Bay Dist (ft)		570		570	515	515		515	565		450	
Storage Blk Time (%)	1		0	3		95	56		79	0	0	
Queuing Penalty (veh)	0		2	4		1055	632		540	3	0	

Intersection: 7: Vasco Rd & Camino Diablo

Movement	B62	B48	B47
Directions Served	T	T	T
Maximum Queue (ft)	6349	656	456
Average Queue (ft)	3302	201	112
95th Queue (ft)	7757	685	406
Link Distance (ft)	6243	552	385
Upstream Blk Time (%)	31	28	3
Queuing Penalty (veh)	450	403	23
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	EB	EB	EB	B46	B61	B61	WB	WB	WB	B47	B23	B23
Directions Served	L	T	TR	T	T		L	T	R	T	T	
Maximum Queue (ft)	495	894	530	1966	2164	2053	12	471	330	157	682	136
Average Queue (ft)	97	864	526	1632	1111	580	0	280	161	15	56	5
95th Queue (ft)	397	889	572	2603	2553	1857	6	458	344	115	363	98
Link Distance (ft)		788		1860	2141	2141		385		552	653	653
Upstream Blk Time (%)		50		51	15	5		3			0	0
Queuing Penalty (veh)		625		639	91	31		77			4	0
Storage Bay Dist (ft)	430		430				260		265			
Storage Blk Time (%)	0	61	17					10	0			
Queuing Penalty (veh)	0	396	108					81	1			

Intersection: 8: Walnut Blvd & Vasco Rd

Movement	NB	NB	SB	SB
Directions Served	L	TR	L	TR
Maximum Queue (ft)	125	712	535	906
Average Queue (ft)	79	648	338	166
95th Queue (ft)	143	810	585	667
Link Distance (ft)		668		2521
Upstream Blk Time (%)		63		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	60		470	
Storage Blk Time (%)	32	76	25	0
Queuing Penalty (veh)	135	62	6	0

Intersection: 10: Walnut Blvd & Marsh Creek Rd - SR-4 #1

Movement	EB	EB	EB	WB	WB	WB	NB	NB	B42	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	T	L	T	R
Maximum Queue (ft)	373	552	551	60	374	450	41	352	204	166	149	51
Average Queue (ft)	148	331	342	17	228	278	6	251	37	80	60	9
95th Queue (ft)	331	513	516	47	347	410	26	391	134	151	135	34
Link Distance (ft)		2767	2767		15303	15303	259	259	248		559	
Upstream Blk Time (%)								11	0			
Queuing Penalty (veh)								68	0			
Storage Bay Dist (ft)	370			295						160		160
Storage Blk Time (%)	0	9			2					2	0	
Queuing Penalty (veh)	0	8			0					4	0	

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	EB	EB	B35	B35	WB	WB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	T	T	L	TR	L	L	T	TR	L	T
Maximum Queue (ft)	191	474	1735	1792	36	106	184	208	208	181	60	222
Average Queue (ft)	68	189	389	436	6	46	109	124	109	48	16	107
95th Queue (ft)	142	547	1444	1526	26	88	168	182	184	124	44	189
Link Distance (ft)	366	366	15303	15303		723		504	504	504		416
Upstream Blk Time (%)		37										
Queuing Penalty (veh)		177										
Storage Bay Dist (ft)					530		385				355	
Storage Blk Time (%)												
Queuing Penalty (veh)												

Intersection: 11: Byron Hwy - SR-4 #1/Byron Hwy & Marsh Creek Rd - SR-4 #1/Marsh Creek Rd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	190
Average Queue (ft)	99
95th Queue (ft)	181
Link Distance (ft)	416
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: SR-4 #1 & Discovery Bay Blvd

Movement	EB	EB	B84	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (ft)	463	164	18	942	631	90	147
Average Queue (ft)	264	63	1	641	185	30	62
95th Queue (ft)	409	141	13	1061	771	73	110
Link Distance (ft)	430	430	9279	975	975	657	657
Upstream Blk Time (%)	1			14	10		
Queuing Penalty (veh)	3			0	0		
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 13: Mountain House Pkwy & Byron Rd

Movement	EB	EB	WB	WB	WB	NB	NB	B67	B68	B69
Directions Served	T	TR	L	L	T	L	R	T	T	T
Maximum Queue (ft)	268	277	247	205	352	620	485	1092	482	168
Average Queue (ft)	142	158	141	86	186	438	409	313	82	6
95th Queue (ft)	241	265	212	182	303	722	593	1067	596	120
Link Distance (ft)	424	424		1325	1325	536		1229	3659	3261
Upstream Blk Time (%)						10		3		
Queuing Penalty (veh)						146		43		
Storage Bay Dist (ft)			350				460			
Storage Blk Time (%)			0			2	17			
Queuing Penalty (veh)			0			18	72			

Intersection: 14: Byron Rd & Grant Line Rd

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	R	L	T
Maximum Queue (ft)	1356	635	1288	140	6136	5757
Average Queue (ft)	1313	635	1243	139	3224	2160
95th Queue (ft)	1408	635	1388	154	6259	5102
Link Distance (ft)	1297		1227		15285	15285
Upstream Blk Time (%)	46		72			
Queuing Penalty (veh)	0		0			
Storage Bay Dist (ft)		520		65		
Storage Blk Time (%)	8	72	55	49		
Queuing Penalty (veh)	106	470	484	251		

Intersection: 15: Mountain House Pkwy & I-205 westbound on-ramp/I-205 westbound off-ramp

Movement	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB	B67
Directions Served	LT	R	R	L	T	T	T	T	T	R	T
Maximum Queue (ft)	301	123	126	75	209	222	161	118	138	47	117
Average Queue (ft)	163	70	63	23	121	132	69	43	63	2	4
95th Queue (ft)	257	109	105	62	193	207	133	95	117	21	84
Link Distance (ft)		1820	1820		640	640	5366	5366			536
Upstream Blk Time (%)											0
Queuing Penalty (veh)											0
Storage Bay Dist (ft)	690			315					170	170	
Storage Blk Time (%)								0	0		
Queuing Penalty (veh)								0	0		

Intersection: 16: Mountain House Pkwy & I-205 eastbound off-ramp/I-205 eastbound on-ramp

Movement	EB	EB	EB	NB	NB	NB	B78	SB	SB
Directions Served	L	LT	R	T	T	R	T	T	T
Maximum Queue (ft)	140	150	44	121	361	245	674	242	194
Average Queue (ft)	86	86	17	40	266	235	204	110	23
95th Queue (ft)	127	132	42	86	460	277	617	206	109
Link Distance (ft)	390	390	390	257	257		629	640	640
Upstream Blk Time (%)					11	4	4		
Queuing Penalty (veh)					0	0	0		
Storage Bay Dist (ft)						185			
Storage Blk Time (%)					0	32			
Queuing Penalty (veh)					1	64			

Intersection: 17: SR-4 southbound ramps & Marsh Creek Rd/Marsh Creek Rd - SR-4 #1

Movement	EB	EB	WB	WB	WB	SB	SB	SB
Directions Served	T	TR	L	T	T	L	L	TR
Maximum Queue (ft)	79	67	16	149	20	147	138	63
Average Queue (ft)	38	30	1	69	1	61	78	25
95th Queue (ft)	66	56	9	131	13	109	117	53
Link Distance (ft)	269	269		901	901			827
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			300			690	690	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 18: SR-4 northbound ramps & Marsh Creek Rd - SR-4 #1

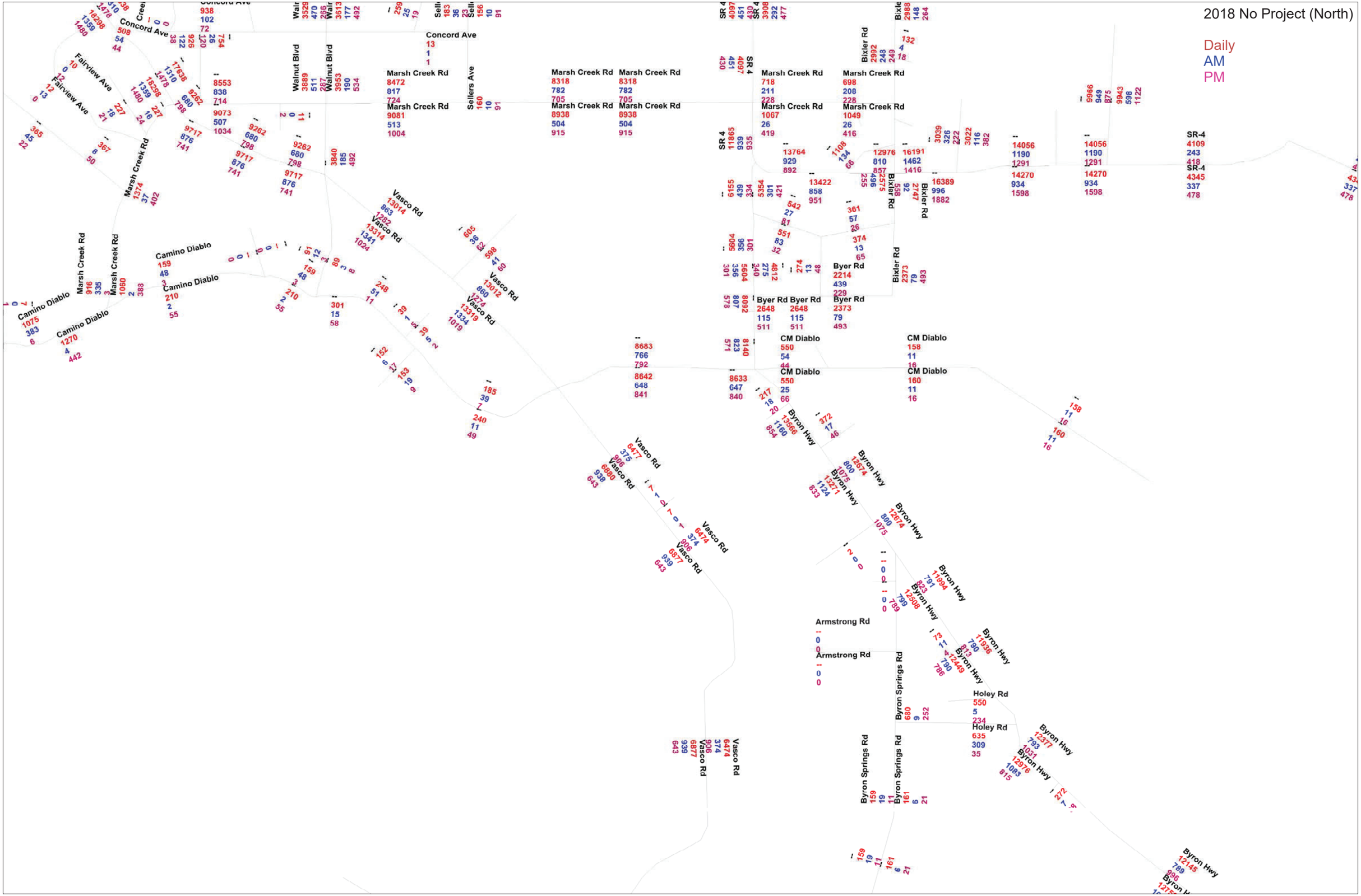
Movement	EB	EB	EB	WB	WB	WB	NB	NB
Directions Served	L	T	T	T	T	R	L	TR
Maximum Queue (ft)	56	71	74	106	53	210	70	25
Average Queue (ft)	19	26	28	24	4	109	29	3
95th Queue (ft)	43	55	61	70	25	192	58	15
Link Distance (ft)		901	901	1352	1352			636
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	300					755	510	
Storage Blk Time (%)								
Queuing Penalty (veh)								

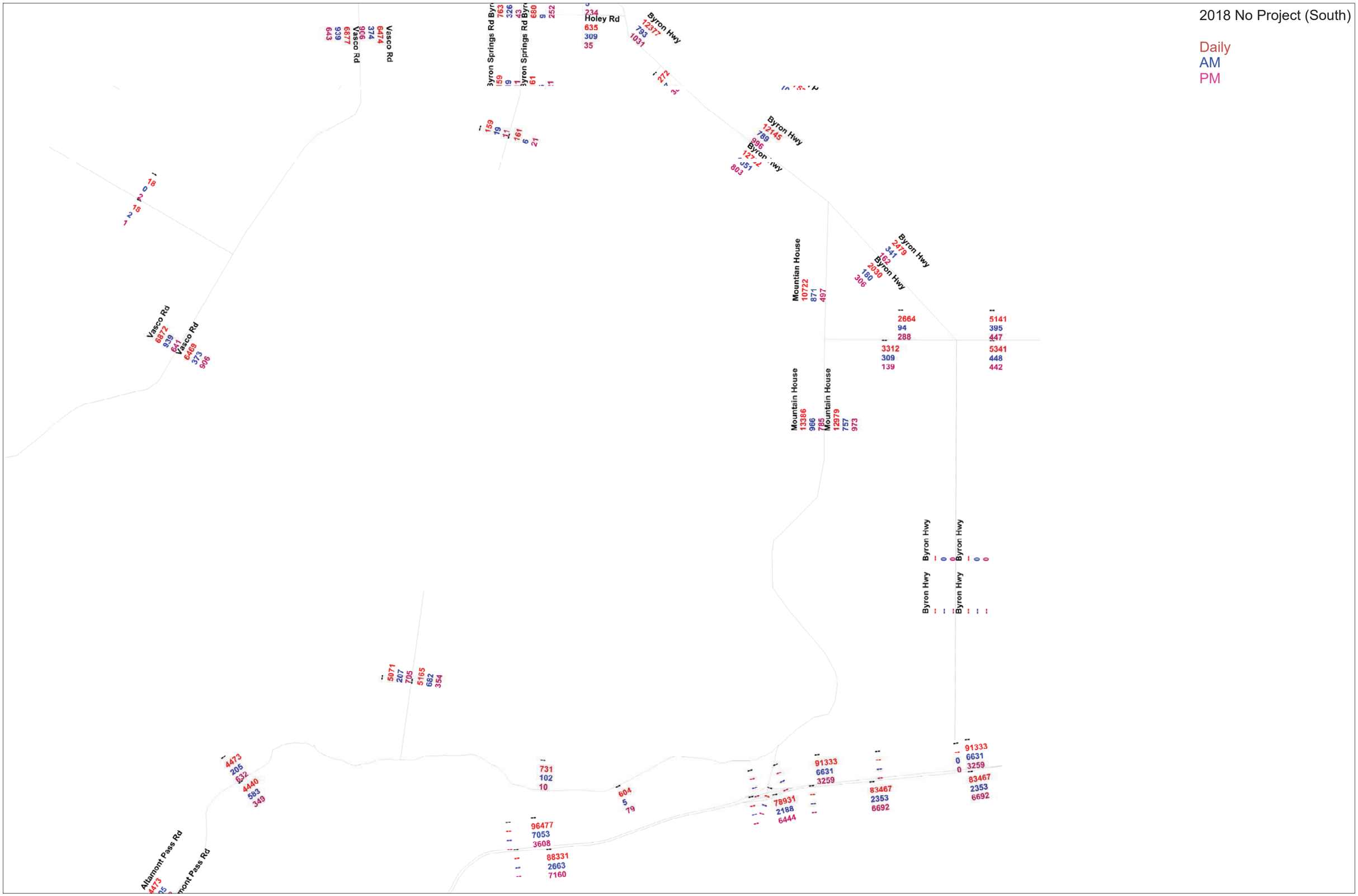
Zone Summary

Zone wide Queuing Penalty: 11315

Appendix E

CCTA Model Plots


2018 No Project (North)
Daily
AM
PM
Concord Ave
Fairview Ave
Walnut Blvd
Sellers Ave
Marsh Creek Rd
Vasco Rd
Camino Diablo
SR 4
Bixler Rd
Byer Rd
CM Diablo
Byron Hwy
Armstrong Rd
Byron Springs Rd
Holey Rd
SR-4


2018 No Project (South)
Daily
AM
PM
Vasco Rd
Holey Rd
Byron Springs Rd
Byron Hwy
Mountain House
Altamont Pass Rd

2040 No Project (North)

Daily
AM
PM

Chestnut Ave
1364
64
216

Balfour Rd
906
52
135
2724
313
165
1598
172
227
4244
536
255
4521
517
312

Balfour Rd
2831
87
248
Balfour Rd
2700
80
231
Balfour Rd
4323
122
556

Minnesota Ave
Eureka Ave
Eureka Ave
Fairview Ave
Walnut Blvd
Payne Ave
Sellers Ave
Sellers Ave

SR 4
4055
332
429
3719
315
389
1852
256
126
1818
82
302
SR 4
4306
426
386
3972
394
356
3266
340
220
SR 4
4938
567
427
SR 4
4474
311
714
330
22
36

Bixler Rd
2786
162
268
2820
212
280
Bixler Rd
2817
267
238
2541
79
346
Bixler Rd
3782
402
367
Bixler Rd
4009
202
498

Marsh Creek Rd
8541
786
900
Marsh Creek Rd
8510
777
902
Marsh Creek Rd
8510
777
902
SR 4
714
311
4474
Marsh Creek Rd
1250
313
519

Marsh Creek Rd
9469
603
1258
Marsh Creek Rd
9438
609
1228
Marsh Creek Rd
9438
609
1228

Fairview Ave
Fairview Ave
Fairview Ave

Vasco Rd
Vasco Rd
Vasco Rd

Camino Diablo
Camino Diablo
Camino Diablo
Camino Diablo
Marsh Creek Rd
Marsh Creek Rd

Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd

CM Diablo
681
55
65
CM Diablo
206
12
23
CM Diablo
681
45
74
CM Diablo
206
17
19

Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy

Armstrong Rd
3386
315
350
Armstrong Rd
2059
303
261

Vasco Rd
Vasco Rd

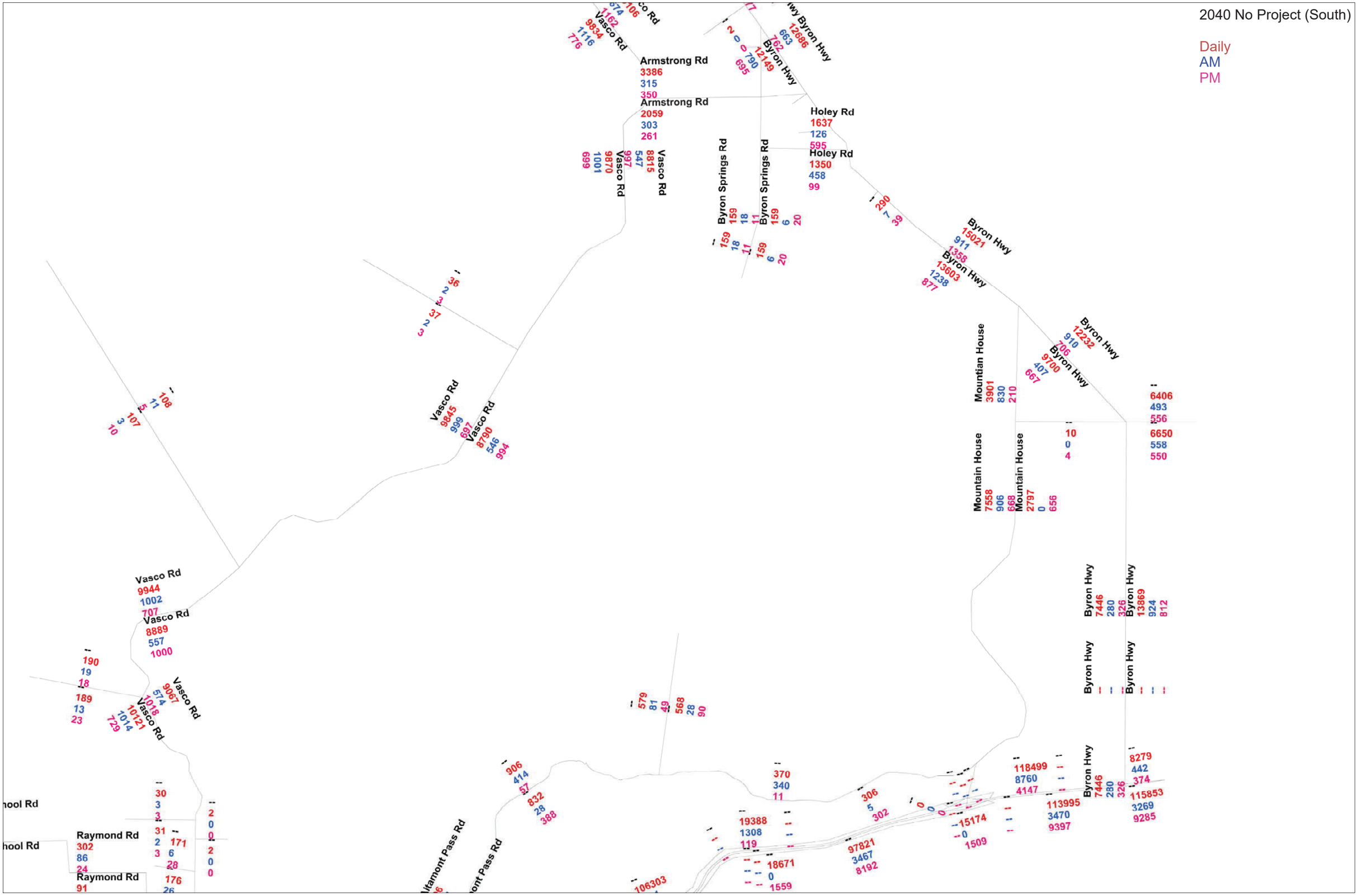
Byron Springs Rd
Byron Springs Rd

Holey Rd
1637
126
595
Holey Rd
1350
458
99

SR-4
5109
302
519
SR-4
5408
419
594

Bixler Rd
2558
72
597

Byron Hwy
15021
911
1358
Byron Hwy
13603
1238
877


2040 No Project (South)
Daily
AM
PM
Armstrong Rd
3386
315
350
Armstrong Rd
2059
303
261
Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd
Vasco Rd
Byron Springs Rd
Byron Springs Rd
Holey Rd
1637
126
595
Holey Rd
1350
458
99
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Mountain House
Mountain House
Mountain House
Raymond Rd
302
86
24
Raymond Rd
91
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy
Byron Hwy

Appendix F

Signal Warrant Evaluation Worksheets

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Existing	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Byron Hot Springs Road	☐	☑



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

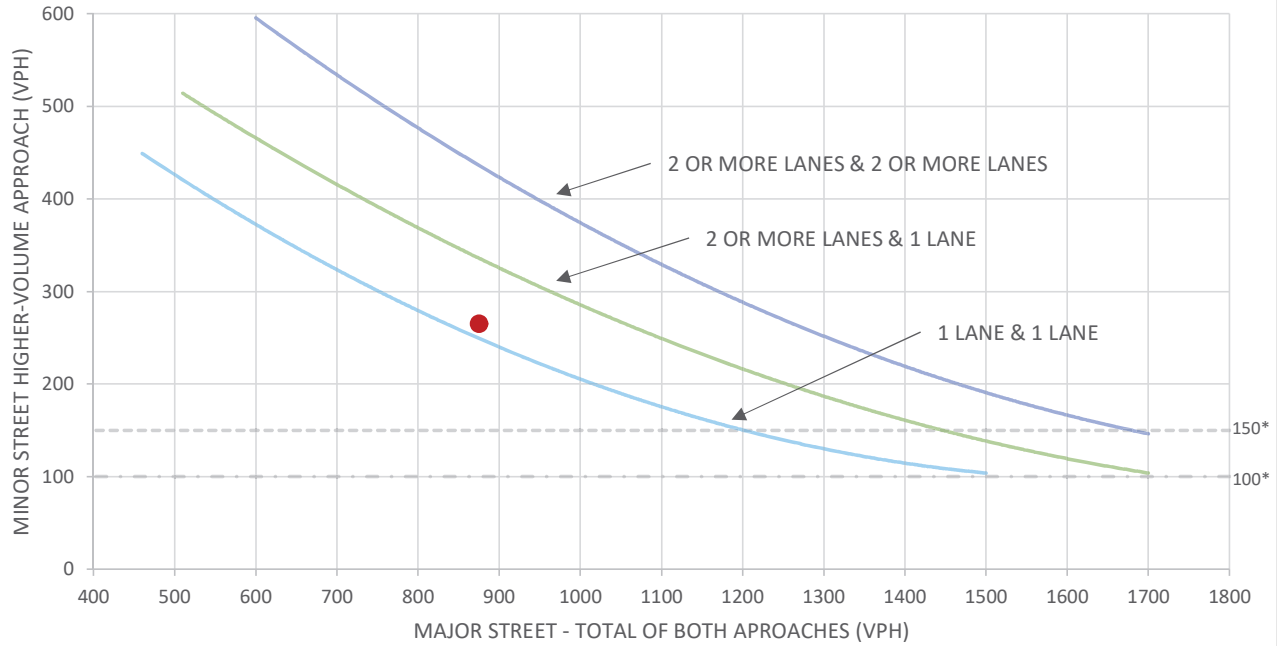
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,488	21	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Existing	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

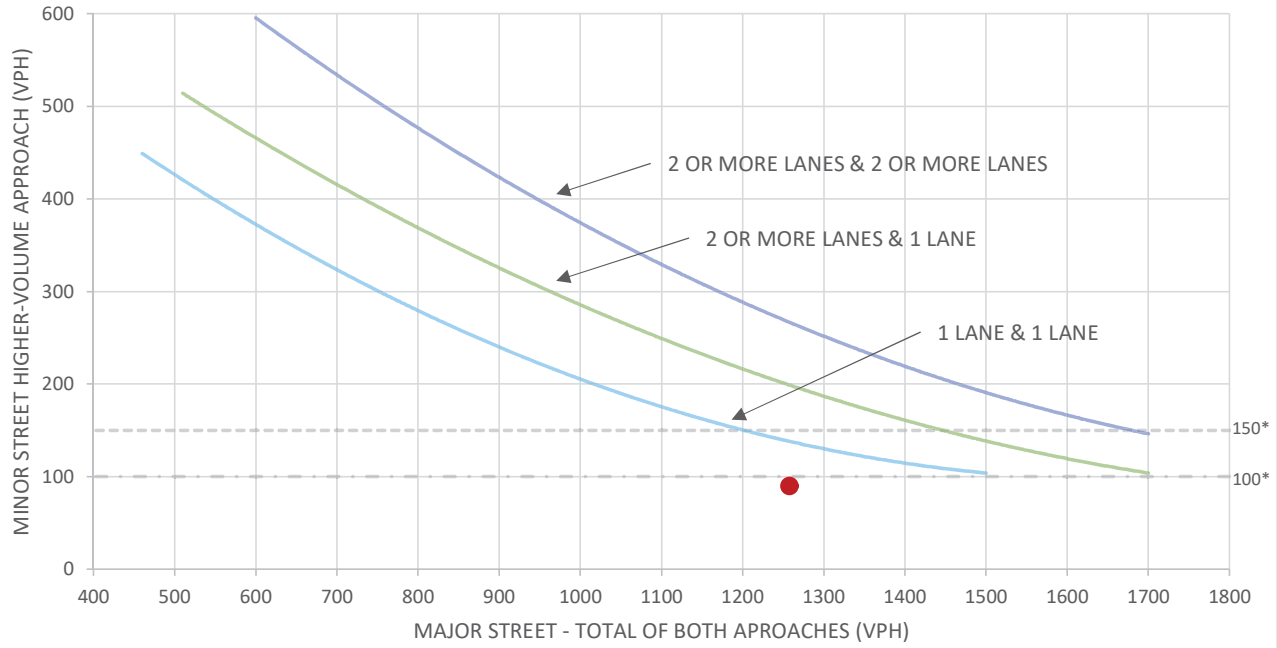
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	875	265	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Existing plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Byron Hot Springs Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



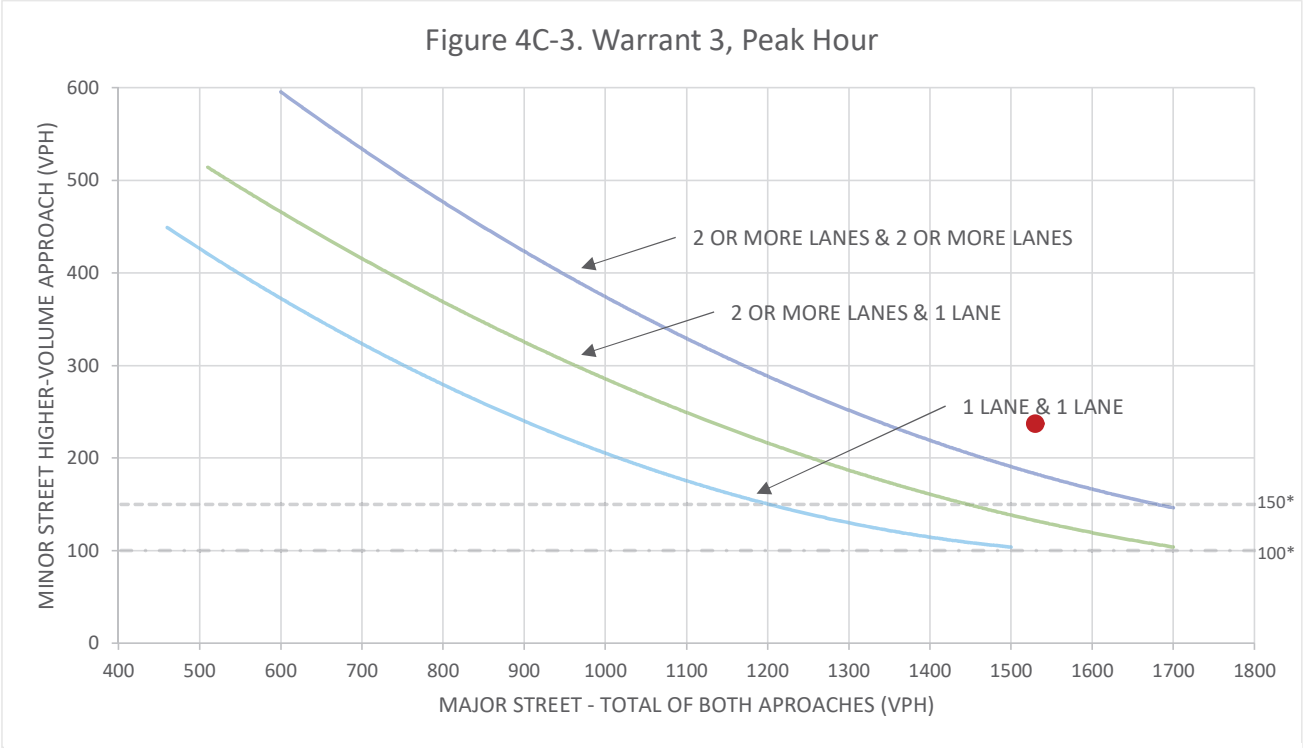
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,258	90	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	1		
Scenario	Existing plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

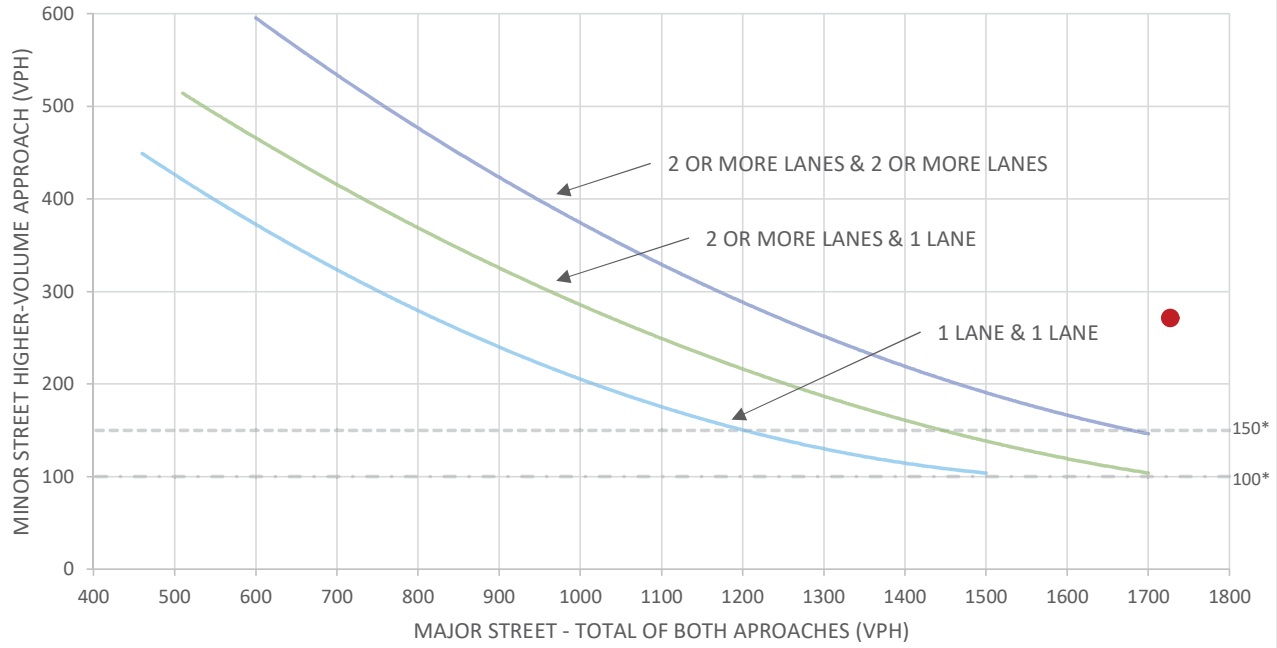
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,530	237	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Existing plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Byron Hot Springs Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



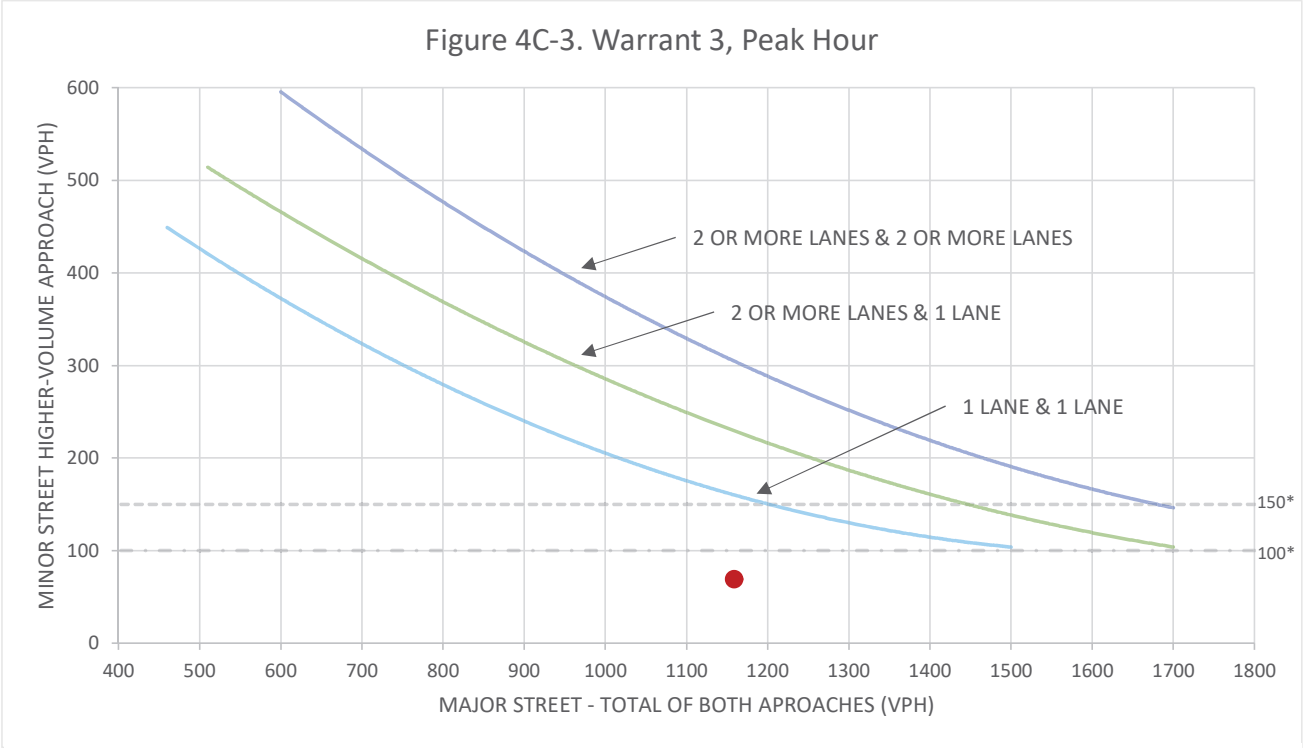
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,727	271	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	4		
Scenario	Existing plus Project	**Major Street**	Camino Diablo Road	☐	☑
Peak Hour	PM	**Minor Street**	Holway Drive	☑	☐



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

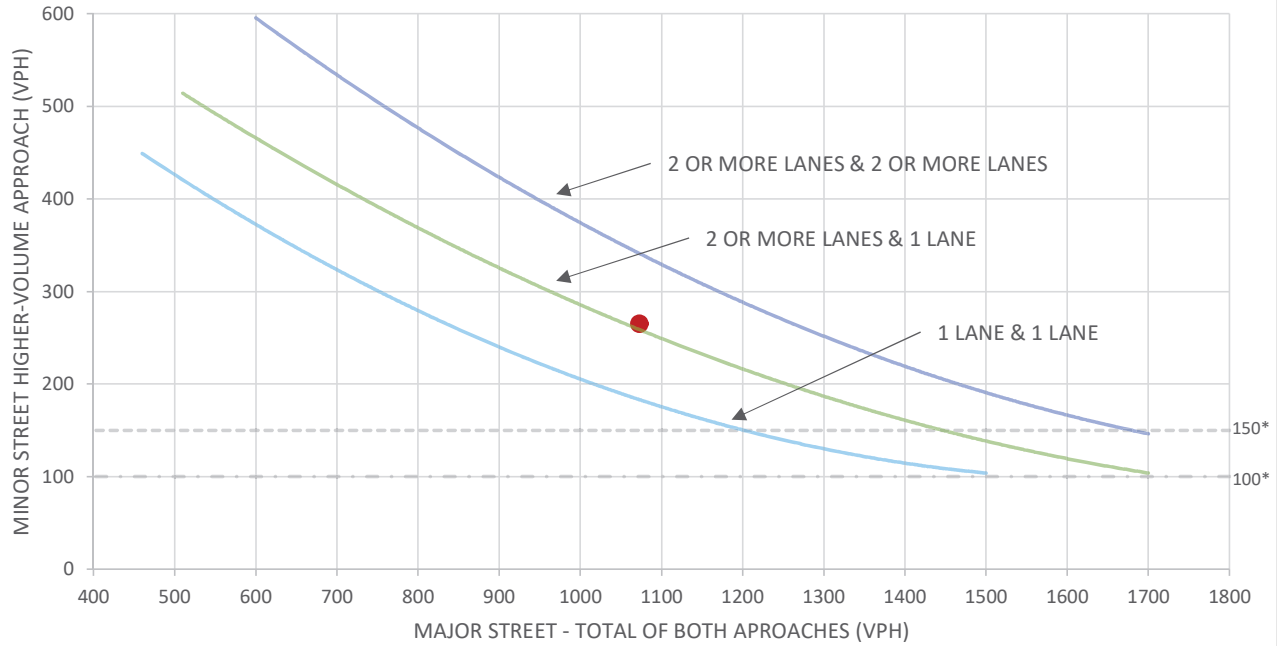
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Camino Diablo Road	Holway Drive	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,159	69	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Existing plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

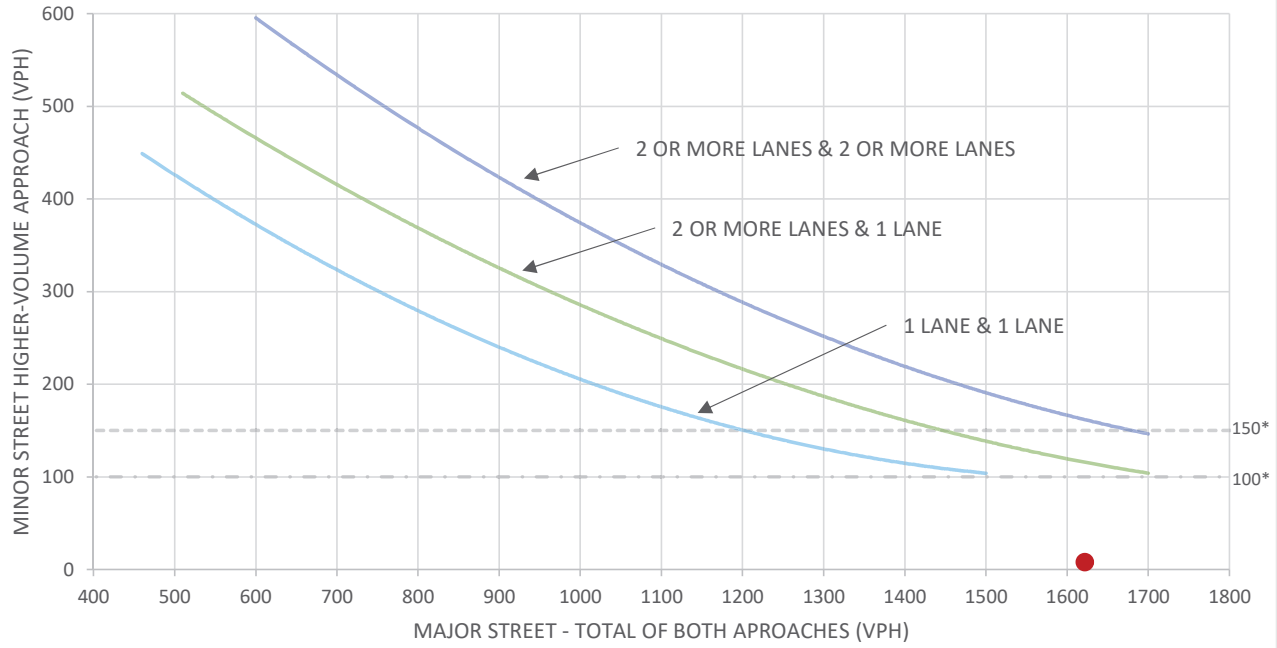
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,073	265	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	1		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

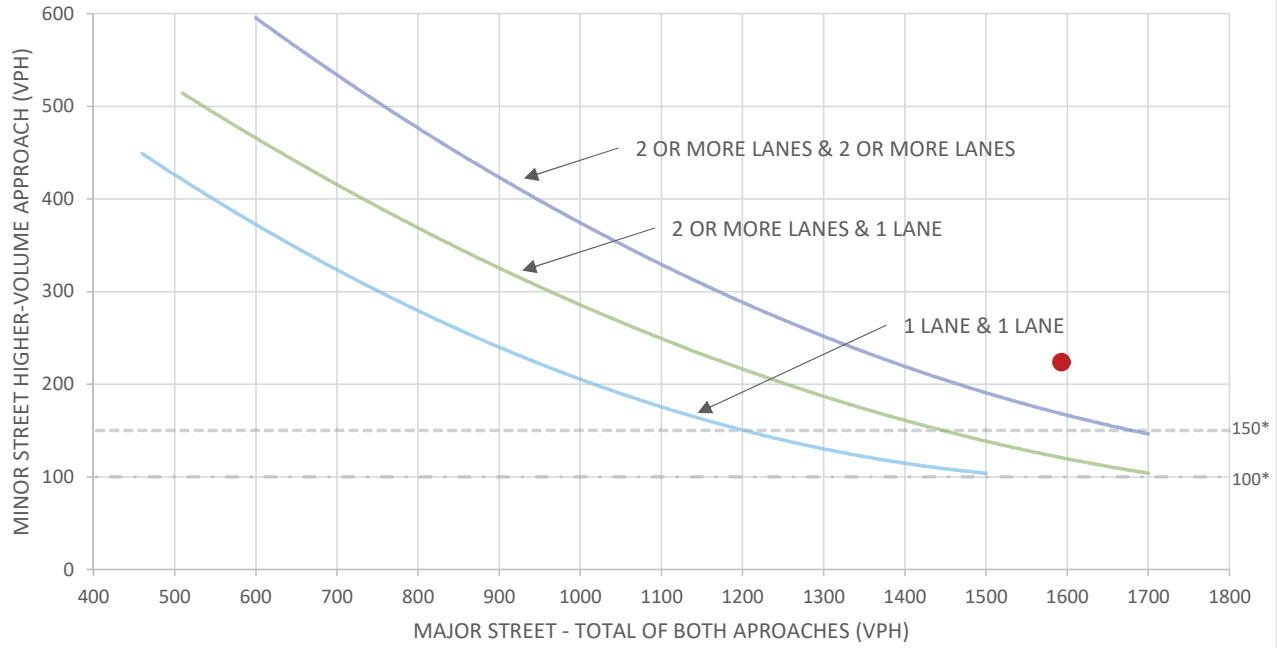
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,622	8	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Byron Hot Springs Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



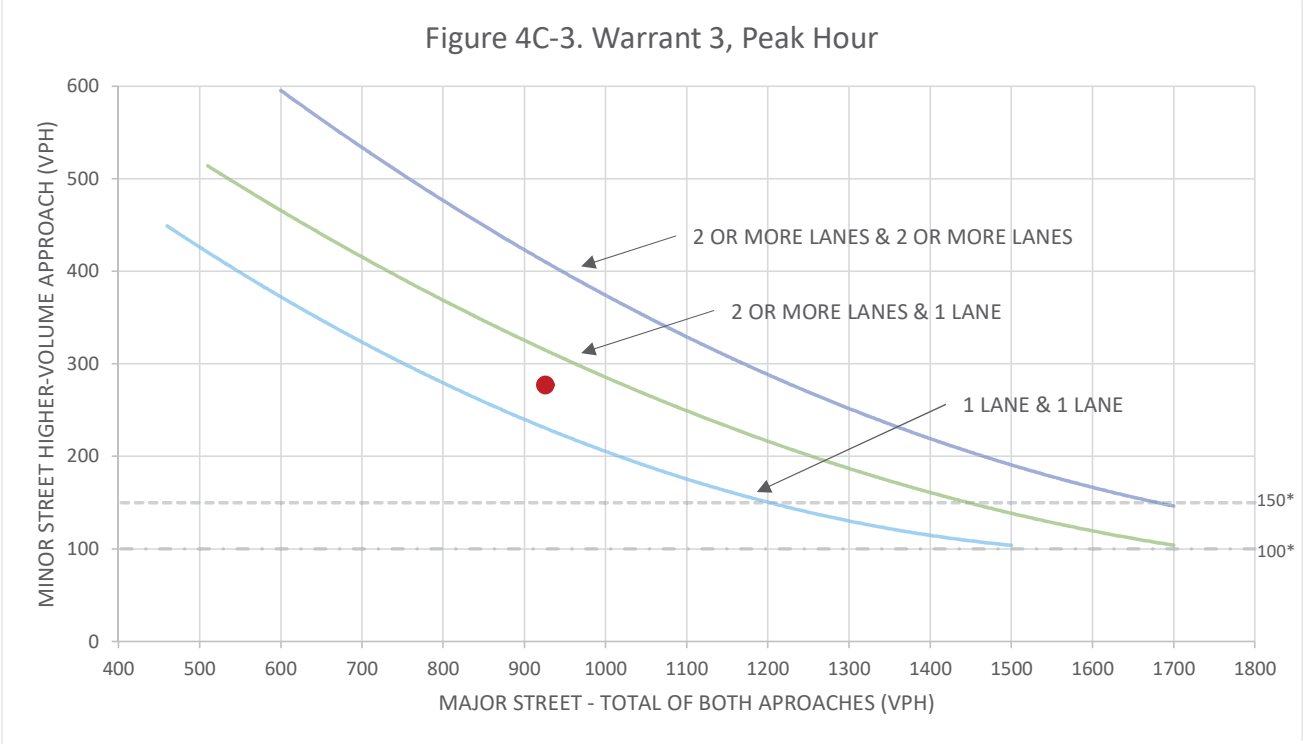
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,593	223	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	4		
Scenario	Future Year 2040	**Major Street**	Camino Diablo	☐	☑
Peak Hour	AM	**Minor Street**	Holway Drive	☑	☐



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

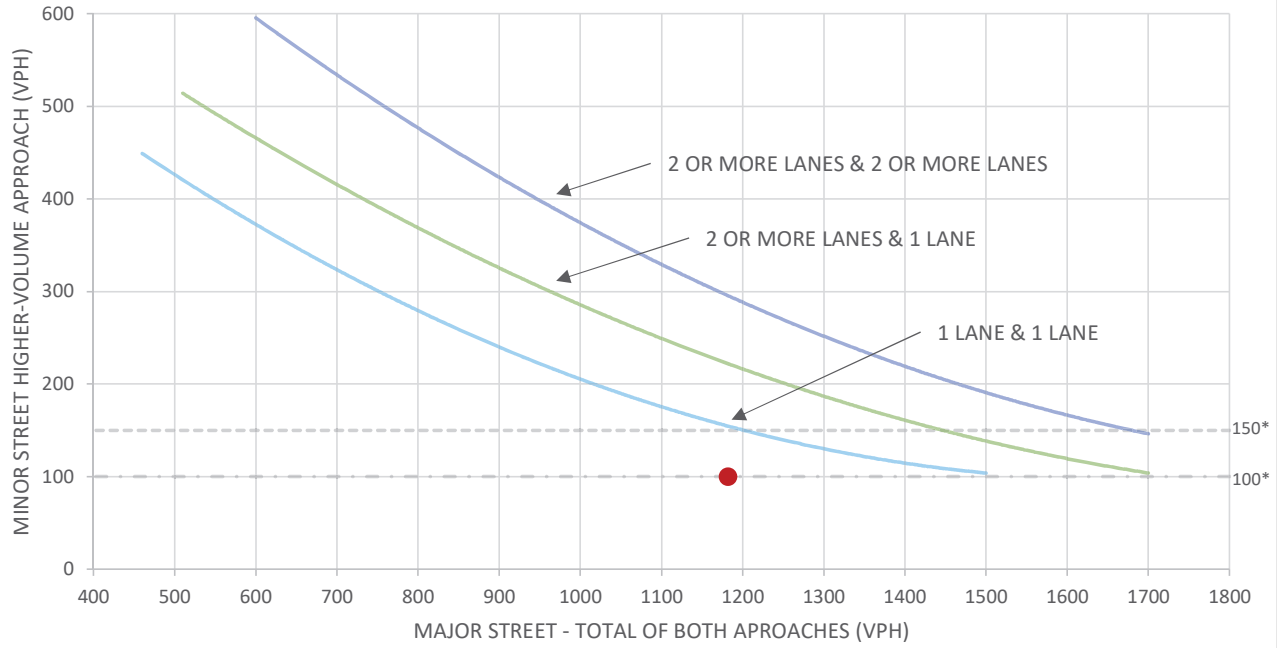
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Camino Diablo	Holway Drive	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	926	277	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Holway Drive	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

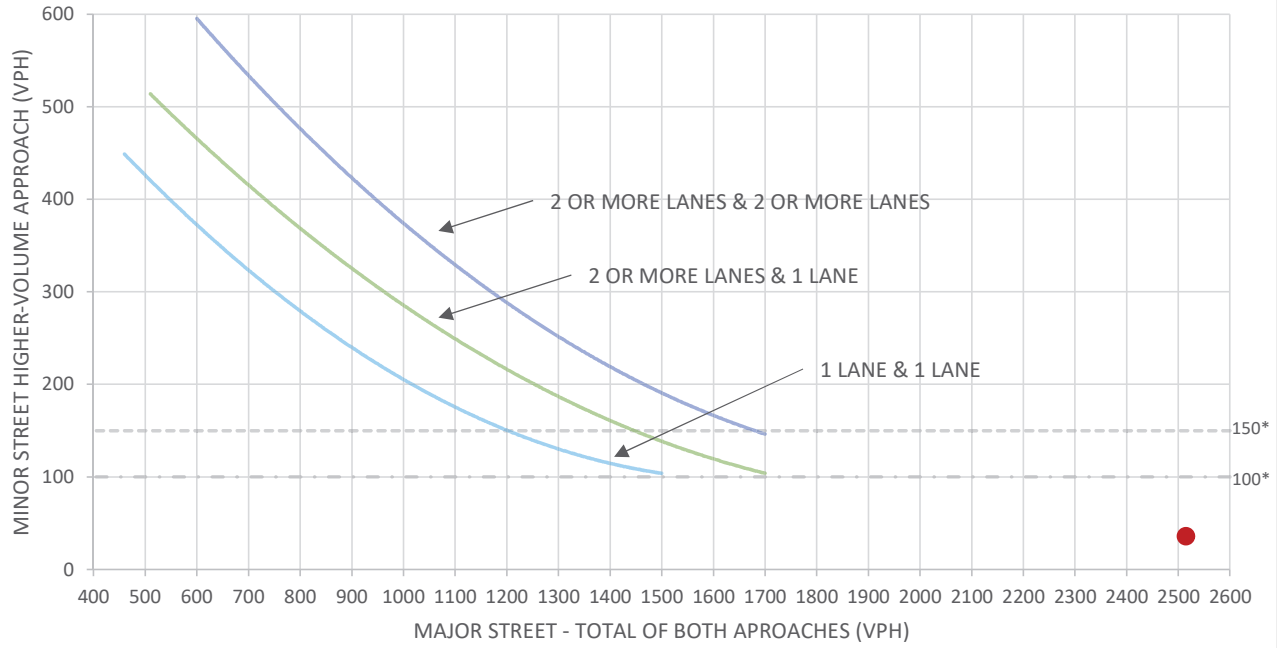
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holway Drive	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,182	100	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	1		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

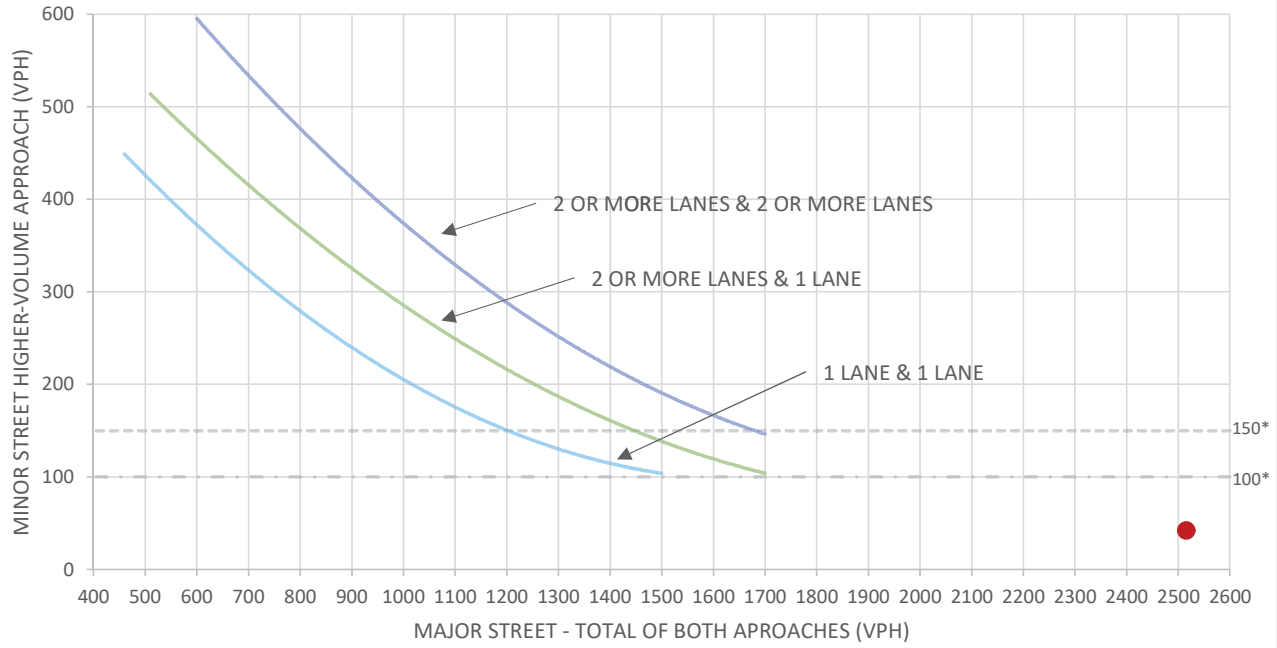
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	2,515	36	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Byron Hot Springs Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



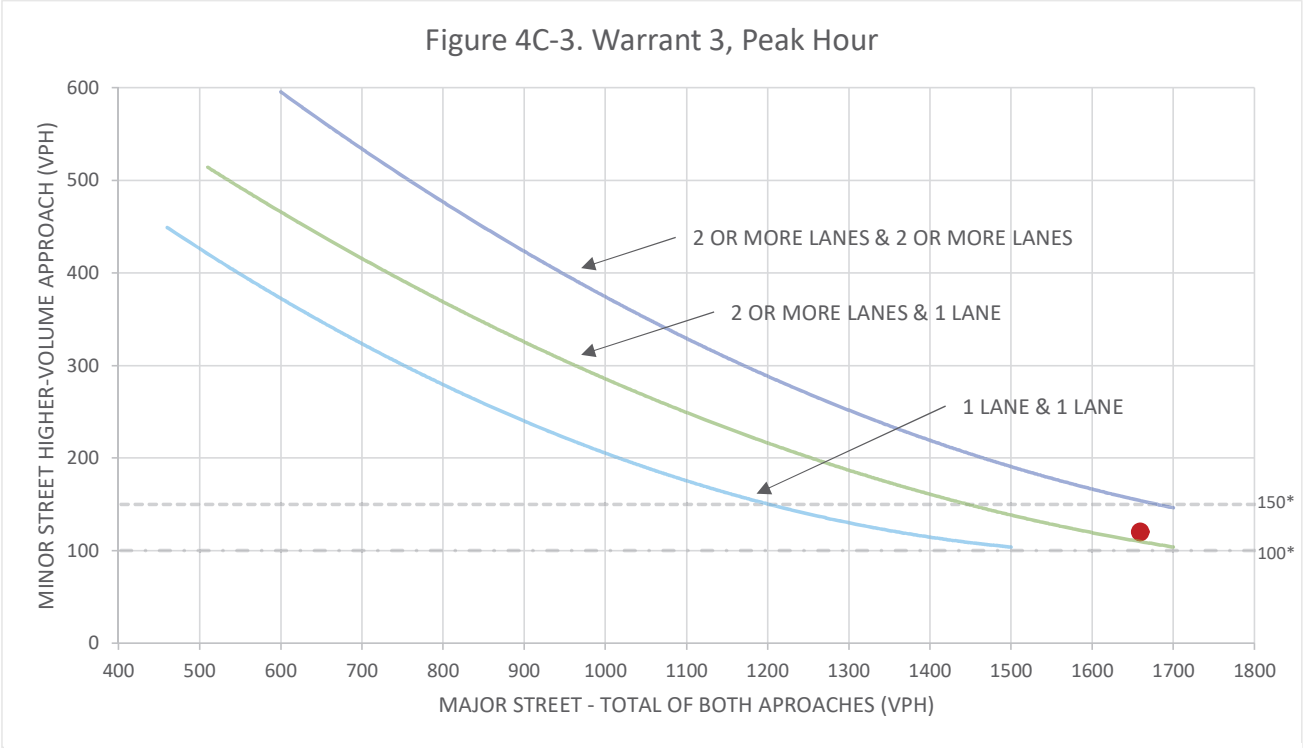
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	2,516	42	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	4		
Scenario	Future Year 2040	**Major Street**	Camino Diablo Road	☐	☑
Peak Hour	PM	**Minor Street**	Holway Drive	☑	☐



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

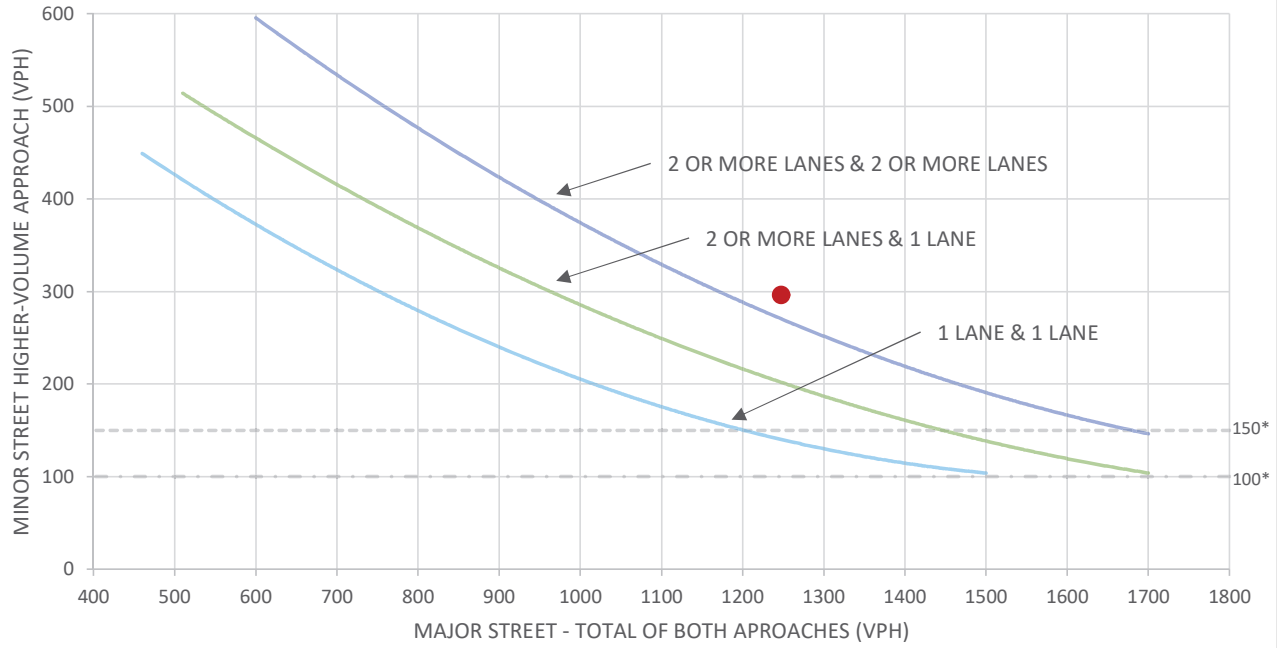
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Camino Diablo Road	Holway Drive	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,659	120	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Future Year 2040	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

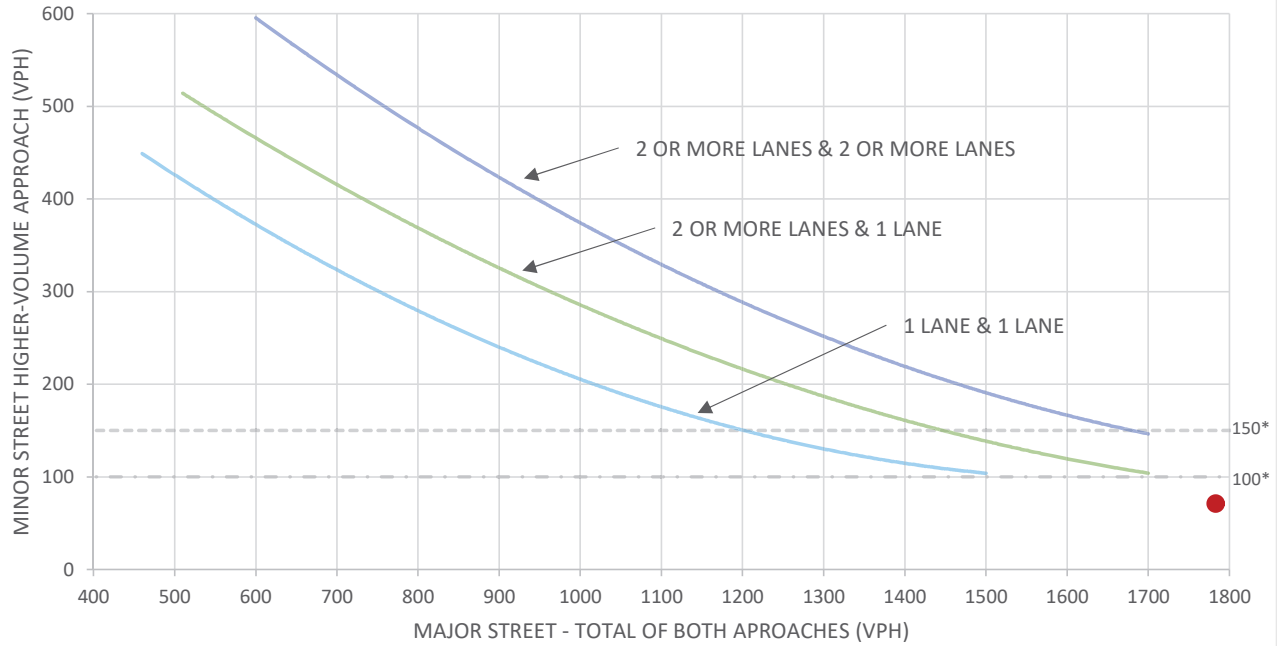
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,248	296	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	1		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



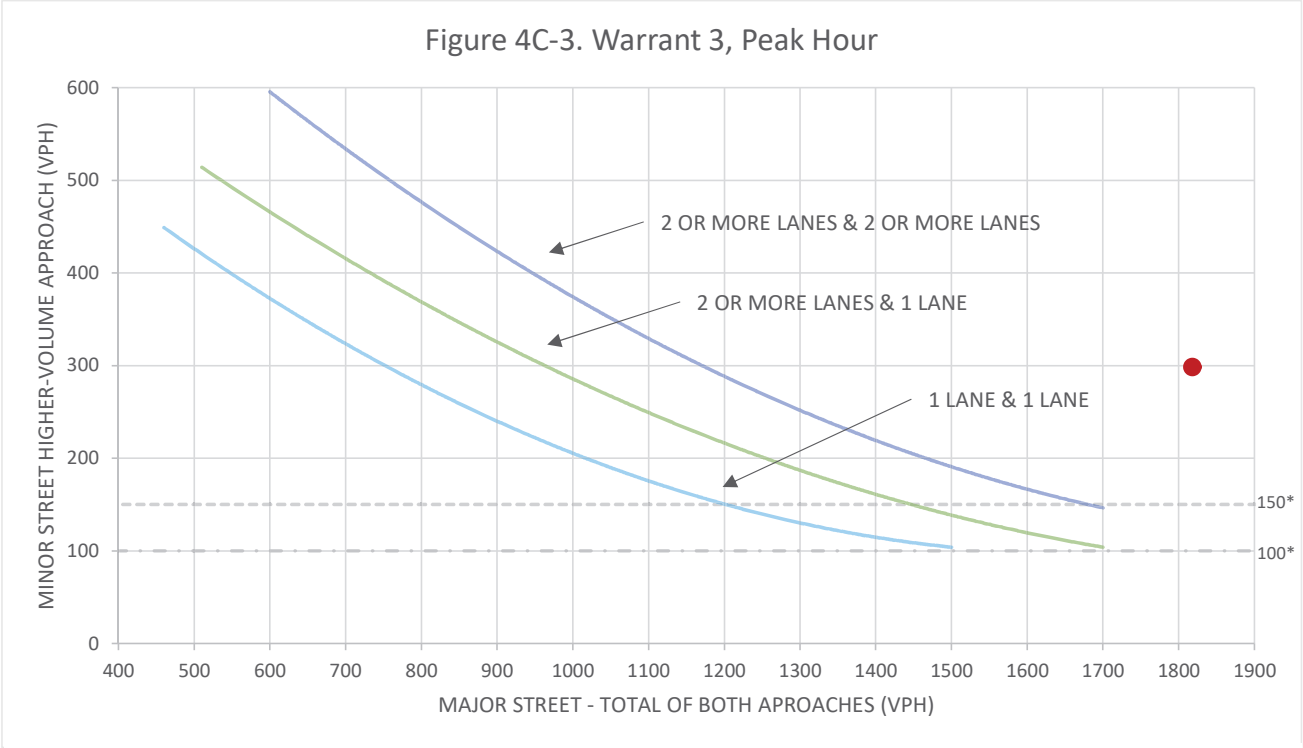
Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	Minor Street	Warrant Met?
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,783	71	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Byron Hot Springs Road	☐	☑



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

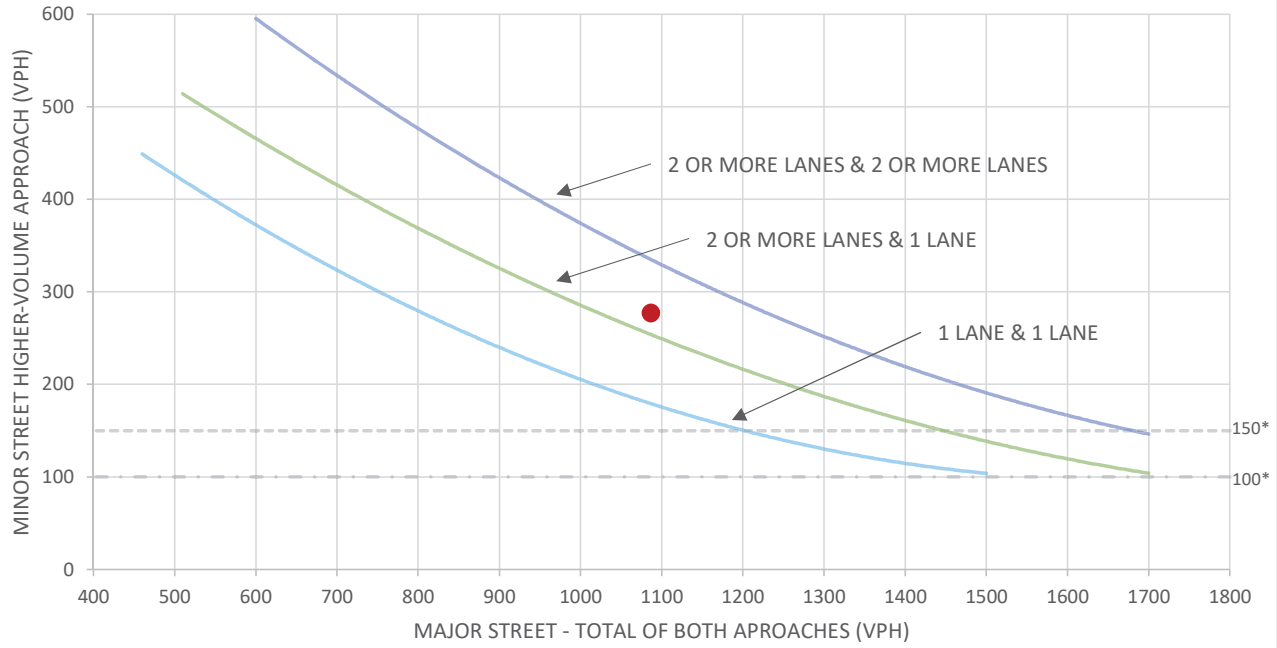
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,818	298	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	4		
Scenario	Future Year 2040 plus Project	**Major Street**	Camino Diablo	☐	☑
Peak Hour	AM	**Minor Street**	Holway Drive	☑	☐

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

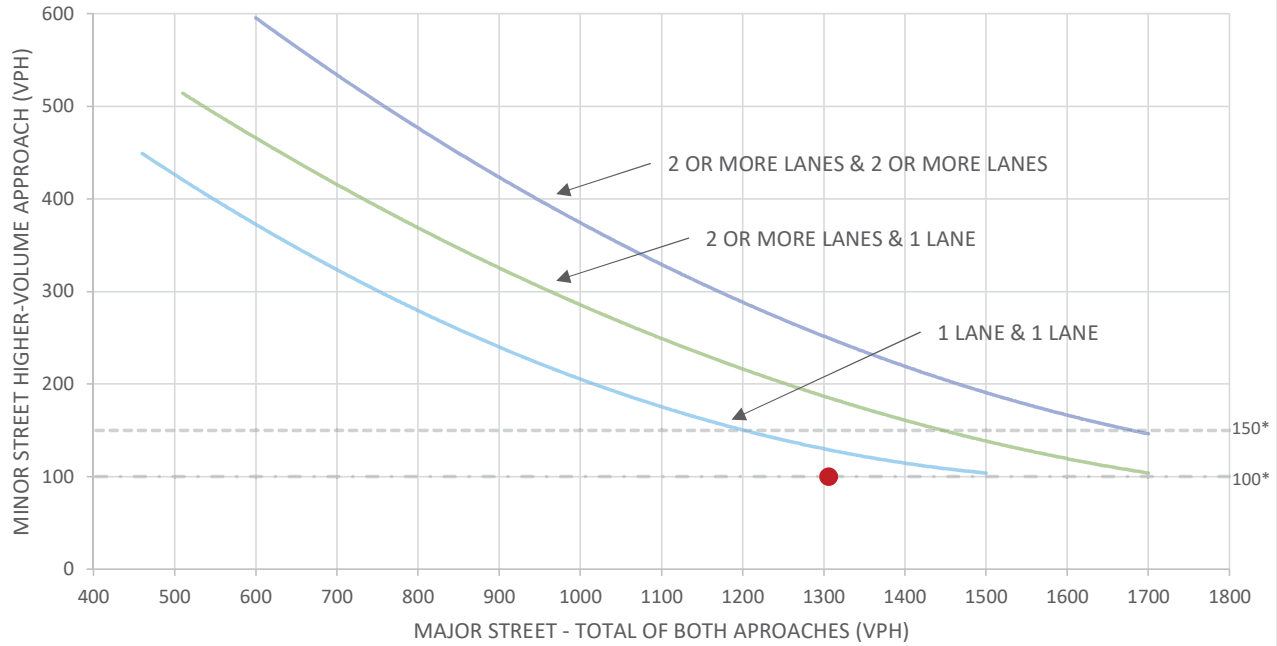
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Camino Diablo	Holway Drive	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,087	277	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	AM	**Minor Street**	Holway Drive	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

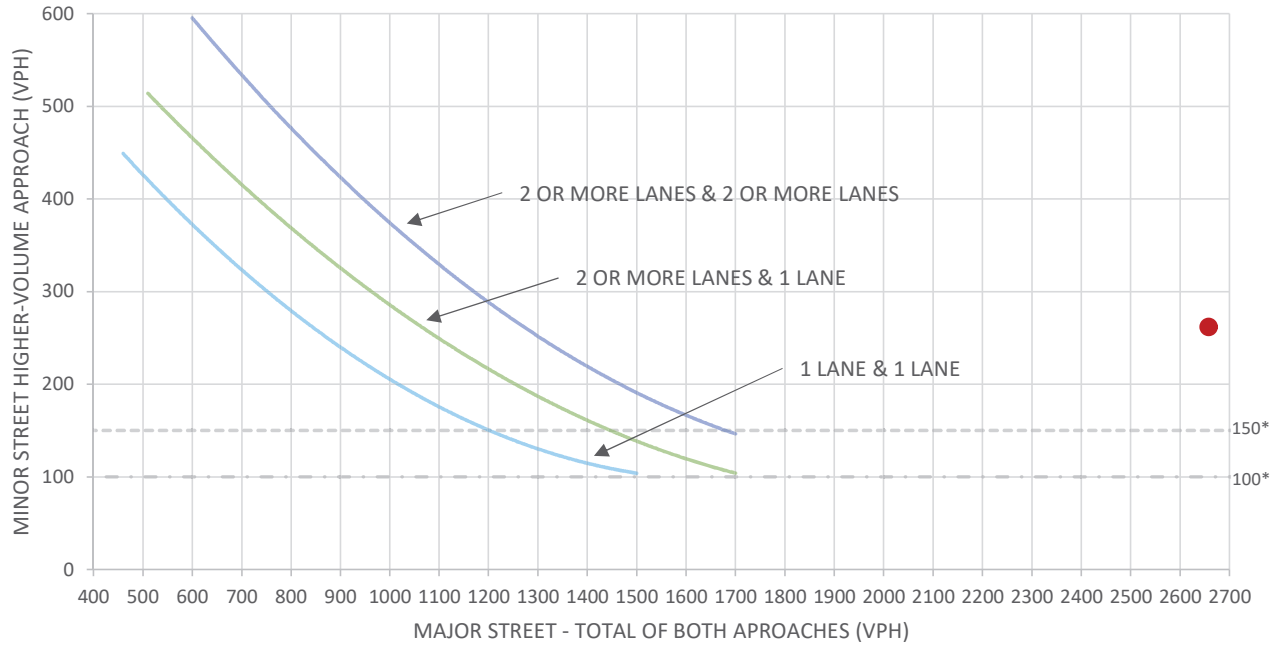
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holway Drive	
Number of Approach Lanes	1	1	**No**
Traffic Volume (VPH)*	1,306	100	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	1		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

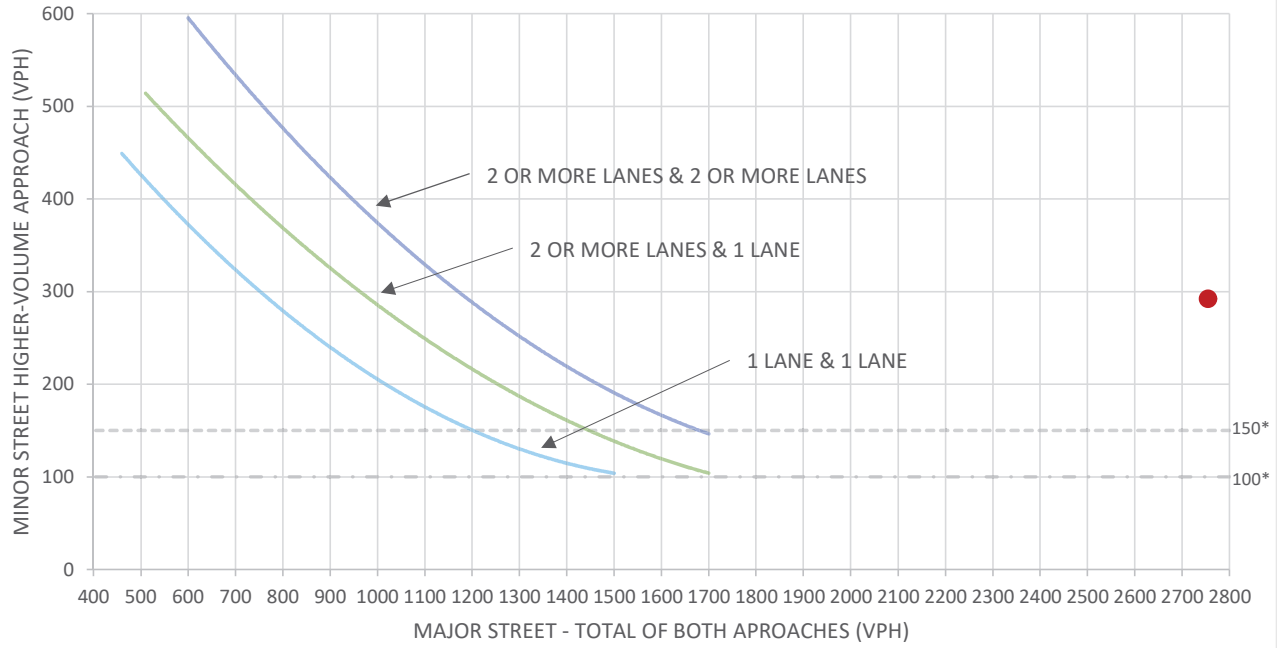
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	2,658	262	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	2		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Byron Hot Springs Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

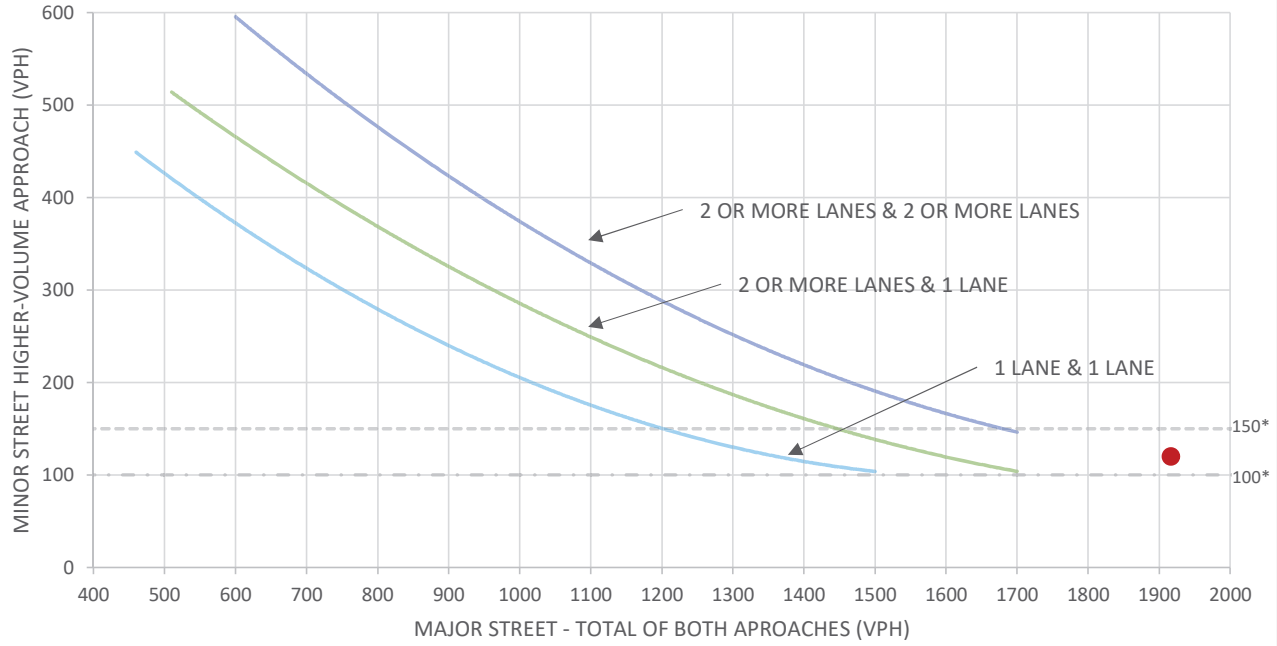
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Byron Hot Springs Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	2,755	292	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	4		
Scenario	Future Year 2040 plus Project	**Major Street**	Camino Diablo Road	☐	☑
Peak Hour	PM	**Minor Street**	Holway Drive	☑	☐

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

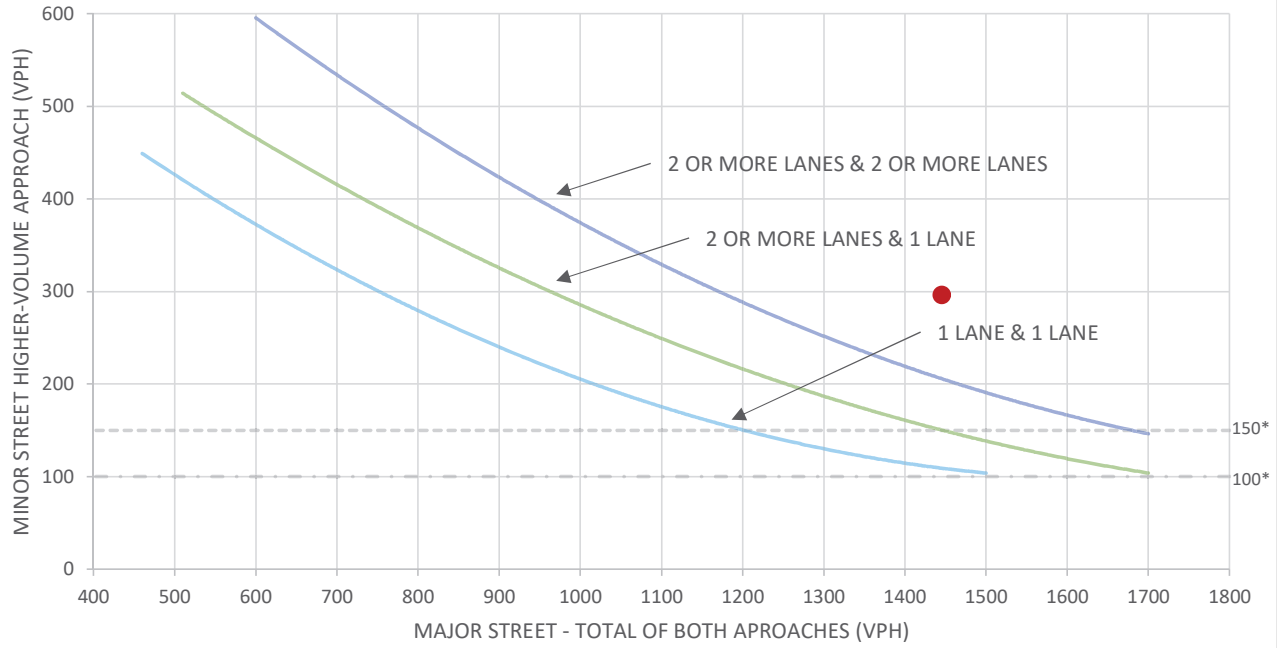
*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Camino Diablo Road	Holway Drive	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,916	120	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

				N-S	E-W
Project	Byron Airport Development	**Intersection #**	5		
Scenario	Future Year 2040 plus Project	**Major Street**	Byron Highway	☑	☐
Peak Hour	PM	**Minor Street**	Holey Road	☐	☑

Figure 4C-3. Warrant 3, Peak Hour



Source: California Manual on Uniform Traffic Control Devices, Caltrans, 2014.

*Note: 150 vph applies as the lower threshold volumes for a minor-street approach with two or more lanes and a 100 vph applies as the lower threshold volumes for a minor-street approach with one lane.

	Major Street	**Minor Street**	**Warrant Met?**
	Byron Highway	Holey Road	
Number of Approach Lanes	1	1	Yes
Traffic Volume (VPH)*	1,446	296	

*Note:
Traffic volume for the Major Street approach is the total volume of both approaches.
Traffic volume for the Minor Street is the highest volume approach.

APPENDIX I

Water Supply Assessment

Water Supply Assessment
for the
Byron Airport Development Program
Contra Costa County, California

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Department of Conservation and Development

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JANUARY 2019

Printed on 30% post-consumer recycled material.

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ACRONYMS AND ABBREVIATIONS

AF	acre-feet
AFY	acre-feet per year
bgs	below ground surface
BBID	Byron–Bethany Irrigation District
CEQA	California Environmental Quality Act
CSD	Community Services District
CWC	California Water Code
CVP	Central Valley Project
CY	cubic yards
DWR	California Department of Water Resources
gpm	gallons per minute
GSA	groundwater sustainability agency
mg/L	milligrams per liter
PWS	public water system
SB	Senate Bill
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	total dissolved solids
UWMP	urban water management plan
WSA	water supply assessment

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1 EXECUTIVE SUMMARY

The County of Contra Costa (the County) proposes to modify existing General and Land Use Compatibility Plan policies to accommodate modified land uses in accordance with the proposed Byron Airport Development Program (proposed project). Proposed modifications to Byron Airport (the Airport) include both aviation and non-aviation land uses, such as aviation hangars, maintenance and repair facilities, offices, and light industry. The proposed modifications require the preparation of this water supply assessment (WSA) in accordance with Senate Bill (SB) 610 because the proposed project is envisioned as having industrial uses (assumed to include logistics/ warehouse/distribution, aircraft storage, and aviation uses) of more than 40 acres in size and with more than 650,000 square feet of floor area. As required by SB 610, this WSA examines water supply and demand under existing conditions and with implementation of the proposed project. Identified water sources are evaluated under normal and dry conditions and as projected for 20 years, including existing and planned land uses.

The estimated construction water demand for the proposed project is 31 acre-feet (AF) spread out over a 10-year build-out period, equivalent to an average of 3.1 acre-feet per year (AFY). Operations and maintenance activities for the proposed project would require a water demand that would ramp up to approximately 36 AFY by the end of the 10-year build-out period. Because a definitive source of water for the proposed project has not yet been identified, three sources are examined as potential supplies: on-site groundwater, imported water from the Town of Discovery Bay (Discovery Bay), and additional imported water from the Byron–Bethany Irrigation District (BBID). On-site groundwater is determined to be the supply with the least potential as there is evidence of low yields and poor groundwater quality from existing wells. However, extraction of on-site groundwater may potentially be used to provide redundancy and backup for another supply. The Discovery Bay water supply is exclusively from groundwater and the analysis indicates that Discovery Bay could reliably support the proposed project currently and through the 20-year planning period. The BBID service area includes part of the proposed project and BBID supplies to the area are mainly surface water diverted from the State Water Project (SWP) facilities. The BBID supply would likely support the proposed project water demand through the planning period.

This WSA concludes that at the programmatic level of analysis, the proposed project would have sufficient water supplies available to serve its water demand under normal and dry conditions, including existing and planned land uses, over the 20-year projection period. As development under the proposed project proceeds, each of the potential supplies considered will require additional feasibility analysis to determine the actual potential for project implementation.

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2 INTRODUCTION

2.1 Purpose of Document

SB 610 was passed on January 1, 2002, amending the California Water Code (CWC) to require detailed analysis of water supply availability for certain types of development projects, as specified in the legislation. The primary purpose of SB 610 is to improve the linkage between water and land use planning by ensuring greater communication between water providers and local planning agencies, and ensuring that land use decisions for specified large development projects are fully informed as to whether sufficient water supplies are available to meet project demands. SB 610 requires the preparation of a WSA for a project that is subject to the California Environmental Quality Act (CEQA) and that meets certain requirements. When a WSA is required per the CWC, it must examine the availability of an identified water supply under normal-year, single-dry-year, and multiple-dry-year conditions over a 20-year projection, accounting for the projected water demand of the proposed project in addition to other existing and planned future uses of the identified water supply.

The proposed Byron Airport Development Program (proposed project) has been determined to be subject to CEQA by the Contra Costa County Department of Conservation and Development, acting as lead agency. Following this determination, a public water system (PWS) is required to prove adequate water supply for the new project. The proposed project site is not located within the service area of a PWS. Therefore, this WSA will be included in the CEQA documentation and will be reviewed by the lead agency, which will make an independent determination as to whether there is adequate water supply for the proposed project. This WSA provides information on the proposed project's potential water supplies and provides data to evaluate the sufficiency of supply.

2.2 Project Description, Location, and Existing Resources

2.2.1 Project Background and Description

The County purchased the existing Byron Airpark and prepared an Airport Master Plan in the late 1980s. The County constructed a new airfield in the early 1990s and opened it to the public in 1994. In 2005, the County adopted a revised Airport Master Plan. The County proposes new and revised General Plan and Land Use Compatibility Plan policies consistent with economic development and enhanced operational growth of the airport. Proposed land uses include aviation-related uses such as hangar development and aircraft maintenance and repair, and non-aviation-related uses such as warehouses, offices, and light industry. The proposed project would allow for the implementation of these land uses and was determined by the County to require an

environmental impact report. As described in Section 2.3, Water Supply Assessment Applicability, the proposed project requires the preparation of this WSA.

2.2.2 Project Location

Byron Airport is located in the southeastern part of the County, approximately 2.5 miles south of the community of Byron (see Figure 1, Project Location). Approximately half (the eastern portion) of the project area is within the BBID, Byron Division. The Airport property consists of 1,307 acres on the western edge of the Sacramento–San Joaquin Delta (Delta) agricultural area. The Clifton Court Forebay is approximately 2 miles to the east, Bethany Reservoir approximately 3 miles to the south, and Los Vaqueros Reservoir about 5 miles to the west of the Airport. The Airport property is located at an elevation of 30 to 100 feet above mean sea level. About 814 acres to the west and south of the Airport is a designated wildlife preserve.

2.2.3 Existing Water Resources

Currently, Byron Airport extracts non-potable water from an on-site groundwater well and stores it in a 4,000-gallon water storage tank. BBID Canal 45 traverses the project area from northwest to southeast and passes along the north end of Runway 12/30. Water for fire suppression is pumped from an underground portion of the BBID canal into a 750,000-gallon capacity storage pond (Figure 2, Existing Airport Water Resources). There is currently no potable water supply source at the Airport. Instead, the Airport purchases bottled water for existing personnel and visitors (e.g., through 5-gallon dispensers).

2.3 Water Supply Assessment Applicability

SB 610 requires any proposed development that is subject to CEQA and defined as a "project" in accordance with the CWC, Section 10912, to prepare a WSA. The WSA must be prepared by the PWS, if there is one, or by the CEQA lead agency if there is no PWS. The WSA must be submitted to, and approved by, the lead agency.

Under the CWC, Section 10912, several project conditions require preparation of a WSA. According to the California Department of Water Resources (DWR) (2003), those with potential relevance to the proposed project include:

1. A proposed residential development of more than 500 dwelling units.
2. A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

3. A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
4. A proposed hotel or motel, or both, having more than 500 rooms.
5. A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
6. A mixed-use project that includes one or more of the projects specified in this subdivision.
7. A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

The proposed project requires preparation of a WSA in accordance with number 5 (see tables in Section 3.1, Construction Water Demand, for the proposed project land use categories).

The CWC, as amended by SB 610, requires that a WSA address the following questions:

- Is there a PWS that will service the project?
- Is there a current urban water management plan (UWMP) that accounts for the project demand?
- Is groundwater a component of the supplies for the project?
- Are there sufficient supplies to serve the project over the next 20 years?

SB 610 requires the evaluation of the adequacy of water supplies available during normal, single dry, and multiple dry water years during the 20-year projection period, including existing and future uses of the identified water supplies.

The following sections address the SB 610 WSA questions as they relate to the proposed project.

2.3.1 Public Water Systems and/or Local Water Agencies and Service Areas

The CWC, Section 10912, defines a "public water system" as a system that has 3,000 or more service connections and provides piped water to the public for human consumption. The proposed project site is not connected to a PWS. However, approximately half of the proposed project area is within the BBID service area, which supplies untreated water for agriculture and to the Community of Mountain House for domestic use. BBID also supplies untreated water to the Airport for fire suppression. Several water agencies or private water companies are located within an approximately 5-mile radius of the proposed project, including the Contra Costa Water District, South Delta Water Agency, Central Delta Water Agency, Mountain

House Community Services District (CSD), and Discovery Bay CSD (Figure 3, Water Agencies and Canals/Aqueducts) (DWR 2019a).

The site's water system is permitted as a transient non-community water system (Water System No. CA0706110), which means the water system regularly serves at least 25 non-residential (transient) individuals during 60 or more days per year (CA Drinking Water Watch 2016).

2.3.2 Urban Water Management Plan Coverage

UWMPs are prepared by California's urban water suppliers to support long-term resource planning and ensure adequate water supplies. Every urban water supplier that either delivers more than 3,000 AFY of water annually or serves more than 3,000 connections is required to assess the reliability of its water sources over a 20-year period under normal-year, dry-year, and multiple-dry-year scenarios. These are the same requirements as for a WSA, as specified by SB 610. UWMPs must be updated and submitted to DWR every 5 years for review and approval.

The proposed project is located partly within the BBID service area. As a supplier of more than 3,000 AFY of water for municipal and industrial purposes, BBID is required to prepare or adopt a UWMP. BBID has not prepared its own UWMP but has adopted those prepared for Mountain House CSD and the City of Tracy (Resolution 2017-6) and has prepared an Agricultural Water Management Plan (CH2M 2017). The proposed project is not within the any area addressed by a UWMP. However, the proposed project is located east of the Contra Costa Water District, south of Discovery Bay, and within the East Contra Costa County Integrated Water Management Plan Region (Region 7). Where appropriate, information from planning documents from these agencies has been used in the preparation of this WSA.

2.3.3 Groundwater as a Component of the Supplies for the Project

Groundwater extracted from the Tracy Subbasin of the San Joaquin Valley Groundwater Basin (DWR Basin No. 5-022.15) through an on-site groundwater well is the current source of Byron Airport's domestic water supply. Groundwater from this well is untreated and non-potable. Potential water sources for the proposed project include treatment of groundwater obtained from the existing or new on-site well(s) and/or importation of water from Discovery Bay, the source of which is groundwater extracted from the Tracy Subbasin. Therefore, groundwater is a potential source for the proposed project. Section 4.1.2, Groundwater, includes an analysis of the potential groundwater supply.

2.3.4 Sufficient Supplies to Serve the Project over the Next 20 Years

This WSA concludes that at the programmatic level of analysis, the proposed project would have sufficient water supplies available to serve its water demand under normal and dry conditions, including existing and planned land uses, over the 20-year projection period. As development under the proposed project proceeds, each of the potential supplies considered will require additional feasibility analysis to determine the actual potential for project implementation (see Chapter 4, Water Supply Assessment).

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3 PROJECT WATER DEMAND

The proposed project would require about 31 AF of water to support construction over the 10-year build-out period. Thereafter, the project would require approximately 36 AFY to support operations and maintenance activities. The water demands for each phase of the proposed project are described in greater detail below.

3.1 Construction Water Demand

Construction details for the proposed project are not yet finalized; only building areas and land use acreage have been approximated. Therefore, this WSA makes broad assumptions regarding building type and schedule to estimate construction water demand. It is assumed that all construction acreage would require clearing, grubbing, grinding, and dust control and no areas would require filling and compacting. Buildings are assumed to be of the concrete tilt-up type, which are common for many uses including those planned for the proposed project (Exhibit 1). A single building is assumed to occupy the entire building area for each land use type. Building floors and walls are assumed (conservatively) to consist of 12-inch-thick concrete with non-concrete roofs. Note that for tilt-up buildings, wall thickness depends on panel height, loading, and other factors, with common thicknesses ranging from 3.9 to 10.4 inches (Glass 2000). All building walls are assumed to be 20 feet high.

Clearing, Grubbing, Grinding, and Dust Control

Table 1 lists the proposed project acreages associated with each planned land use. The total acreage assumed to be cleared and prepared for construction is 70 acres. The water required for land preparation is 24,204 gallons per acre (AECOM 2013). Therefore, the total estimated water demand for this phase of construction is 70 acres × 24,204 gallons per acre = 1,694,280 gallons (or 5.2 AF).

Building Construction

Slabs and walls of tilt-up buildings consist primarily of concrete (Exhibit 1). For estimating building construction water use, concrete preparation is assumed to require 202 gallons per cubic yard (CY) (AECOM 2013).

Exhibit 1: Typical Tilt-Up Construction



Tables 1 and 2 provide calculations of concrete volume and water required for each land use type given the assumptions described above. Table 2 indicates that the proposed project buildings would require an estimated 41,730 CY of concrete and 25.9 AF of water. Note that the proposed project build-out is estimated to be 10 years.

Table 1
Proposed Project Construction Estimated Concrete Volume

Land Use	Land Use Area (ac)	Building Area (sq ft)	Slab Volume (cf)[a]	Wall Volume (cf)[b]	Slab & Wall Volume Combined (cf)
Logistics/Warehouse/Distribution	21.0	274,000	274,000	41,876	315,876
Light Industry/Business Park	14.0	213,000	213,000	36,922	249,922
Office	4.7	81,000	81,000	22,768	103,768

Table 1
Proposed Project Construction Estimated Concrete Volume

Land Use	Land Use Area (ac)	Building Area (sq ft)	Slab Volume (cf)[a]	Wall Volume (cf)[b]	Slab & Wall Volume Combined (cf)
Commercial	7.0	91,000	91,000	24,133	115,133
Aircraft Storage	11.8	128,000	128,000	28,622	156,622
Aviation	11.8	154,000	154,000	31,394	185,394
Total	**70.3**	**941,000**	**941,000**	**185,715**	**1,126,715**

ac = acres; sq ft = square feet; cf = cubic feet.
[a] Slab volume is the floor area multiplied by 1 cubic foot thickness.
[b] Wall volume is the square root of the building floor area multiplied by an assumed 20-foot height and 1-foot wall thickness. This value is multiplied by 4 to account for each wall.

Table 2
Proposed Project Building Construction Estimated Water Demand

Land Use	Floor & Wall Volume Combined (CY)[a]	Construction Volume of Water (gal)[b]	Volume of Water (AF)
Logistics/Warehouse/Distribution	11,699	2,363,220	7.3
Light Industry/Business Park	9,256	1,869,783	5.7
Office	3,843	776,341	2.4
Commercial	4,264	861,365	2.6
Aircraft Storage	5,800	1,171,762	3.6
Aviation	6,866	1,387,023	4.3
Total	**41,730**	**8,429,496**	**25.9**

CY = cubic yards; gal = gallons; AF = acre-feet.
[a] Volumes are the cubic feet shown in the last column of Table 1 converted to cubic yards.
[b] Water volume required for tilt-up wall building construction was based on the volume assumed to be required for concrete preparation, which is 202 gal/CY; therefore, construction volume of water (gal) = floor and wall volume combined (CY) × 202 gal/CY.

Total Construction Phase Water Demand

The total estimated construction phase water demand for the proposed project is the sum of the site preparation (5.2 AF) and building construction water demand (25.9 AF), or about 31 AF. Project build-out is projected to take 10 years. Construction activities are assumed to occur at a steady rate throughout the build-out period, requiring about 3.1 AFY of water.

3.2 Operational Water Demand

Table 3 lists the proposed project land uses, building areas, and estimated water demand required for ongoing use of the proposed facilities.

Table 3
Proposed Project Operational Water Demand

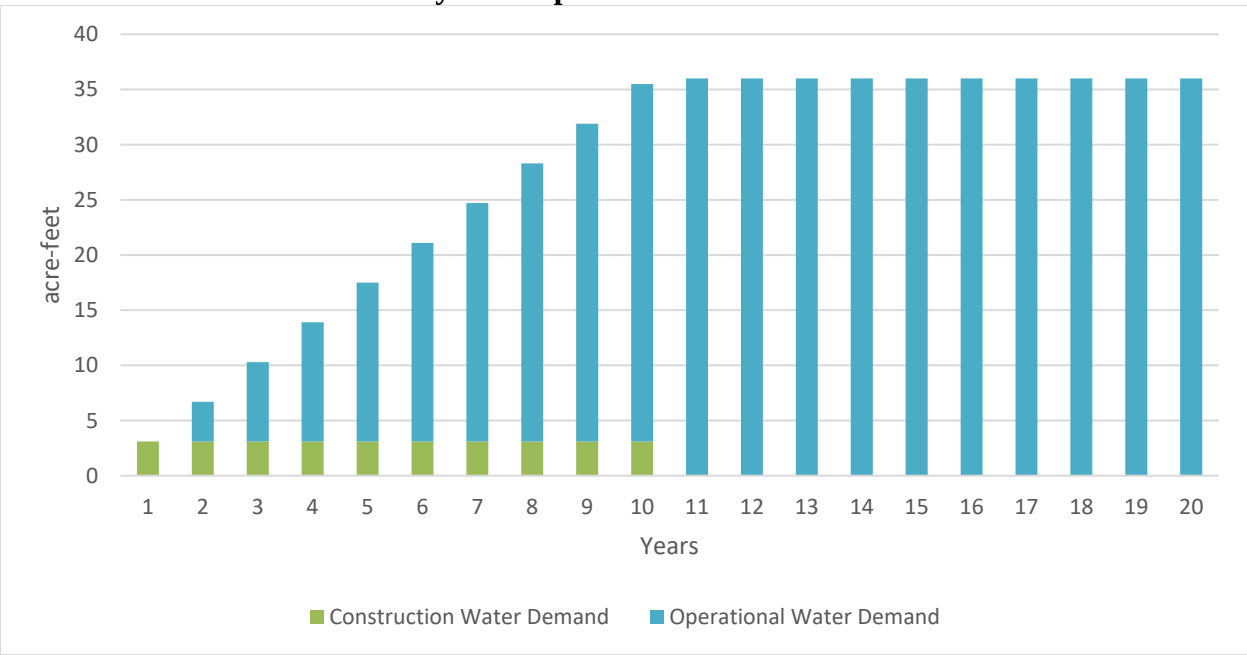
Land Use	Building Area (acres)	Land Use Category for Water Use Factor Determination	Water Use Factor (AF/acre/Yr)[a]	Total Water Demand (AFY)
Logistics/Warehouse/Distribution	6.3	Light Industrial	2.0	12.7
Light Industrial/Business Park	4.9	Light Industrial/Business Park	1.8	8.8
Office	1.9	Office	1.53	2.9
Commercial	2.0	Commercial	2.48	5.0
Aircraft Storage	2.9	Warehouse	0	0
Aviation	3.5	Light Industrial/Business Park	1.8	6.3
Total	**21.5**	**N/A**	**N/A**	**35.7**

Sources: VWD 2011, Table 2-3; CCWD 2007, Table A-2.
Notes: AF = acre-feet; yr = year; AFY = acre-feet per year; N/A = not applicable.
Light Industrial/Business Park Water Use = (Light Industrial Water Use Factor + Business Park Water Use Factor)/2.

3.3 Total Water Demand

The water demand is assumed to increase incrementally through the build-out period as structures are constructed and put into operation. The annual construction water demand is estimated to be 3.1 AFY and is included in calculations for the build-out period. It is anticipated that existing airport uses will continue after build-out and therefore that the existing water use would be in addition to that of the proposed project. However, there is currently no source of potable water and the on-site well yields less than 1 gallon per minute (gpm) (see Section 4.1.2.4, Groundwater as a Potential Project Water Source). Therefore, existing water use is considered negligible and unable to support the proposed development. Exhibit 2 illustrates the estimated water demand for the 20-year evaluation period.

Exhibit 2: Byron Airport Estimated Water Demand



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4 WATER SUPPLY ASSESSMENT

A WSA is required to identify and describe the water supply sources in the PWS that will serve the proposed project. CWC, Section 10910(d), requires a WSA to include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the PWS. Because the proposed project is not within the service area of any PWS, this WSA focuses on the potential sources for the project.

The current water sources for Byron Airport are not adequate to support the demand of the proposed project. Although specific water sources have not yet been secured for the proposed project, there are potential sources under consideration. These are as follows:

- On-site development and treatment of additional groundwater
- Importation of treated water from Discovery Bay
- Importation and on-site treatment of additional water from BBID

Note that the potential water sources are examined in general terms and will require additional feasibility analyses beyond that included in this WSA.

4.1 Water Resources

4.1.1 Surface Water

Surface water supplies within Contra Costa County include the SWP and the Central Valley Project (CVP), both of which originate from the Sacramento–San Joaquin Delta (Delta). Local reservoirs include the San Pablo and Briones Reservoirs in the west and Los Vaqueros Reservoir in the southeast part of the County. The northern County line bisects the Sacramento and San Joaquin Rivers. The proposed project is not within any water supplier service areas, except for being partially within that of BBID (Figure 3). Except during exceptional drought conditions, when some groundwater has been used, the BBID water supply consists only of surface water sources (see Section 4.1.3, Imported Water).

4.1.2 Groundwater

The Airport has historically used untreated, non-potable groundwater from an on-site well for its domestic supply. Potential proposed project supplies include extraction from additional on-site groundwater wells and importation of groundwater from the Discovery Bay CSD. The Discovery Bay water supply is exclusively from groundwater.

4.1.2.1 Hydrogeologic Setting

The proposed project is located within the San Joaquin River Hydrologic Region (Region 6), which includes approximately 15,200 square miles of Central California and all or part of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, Stanislaus, Merced, Amador, Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito Counties. Region 6 includes the northern and southern parts of the San Joaquin Valley and the Delta, respectively, and parts of the Sierra Nevada and the Diablo Mountain Range (DWR 2006).

The San Joaquin Valley is a sediment-filled depression bounded by the uplifted block of the Sierra Nevada Mountains to the east and the folded California Coastal Ranges to the west. The proposed project site is located at the western boundary of the Tracy Subbasin of the San Joaquin Valley Groundwater Basin (Figure 4, Hydrologic Areas). The Tracy Subbasin is about 540 square miles in area, bounded by the Diablo Mountain Range to the west and the San Joaquin Subbasin to the east. The southern end of the Tracy Subbasin is bounded by the San Joaquin–Stanislaus County line and the northern part of the Subbasin is bounded by the Mokelumne and San Joaquin Rivers. The Subbasin is drained by the San Joaquin River and Corral Hollow Creek. The San Joaquin River flows north to the Delta. Annual rainfall increases northward in the Subbasin from about 11 to 16 inches per year.

The Tracy Subbasin aquifers consist of late tertiary to quaternary age continental deposits ranging in thickness from about 300 feet in the west to about 3,000 feet in the east. Aquifer thickness beneath the proposed project site is likely about 300 feet, due its location near the western boundary of the Subbasin. Water-bearing formations within the Subbasin include the Tulare Formation, older alluvium, flood basin deposits, and younger alluvium (Figure 5, Geologic Map) (DWR 2006). Water wells within the Subbasin are reported to yield up to 3,000 gpm.

4.1.2.2 Groundwater Quality in the Tracy Subbasin

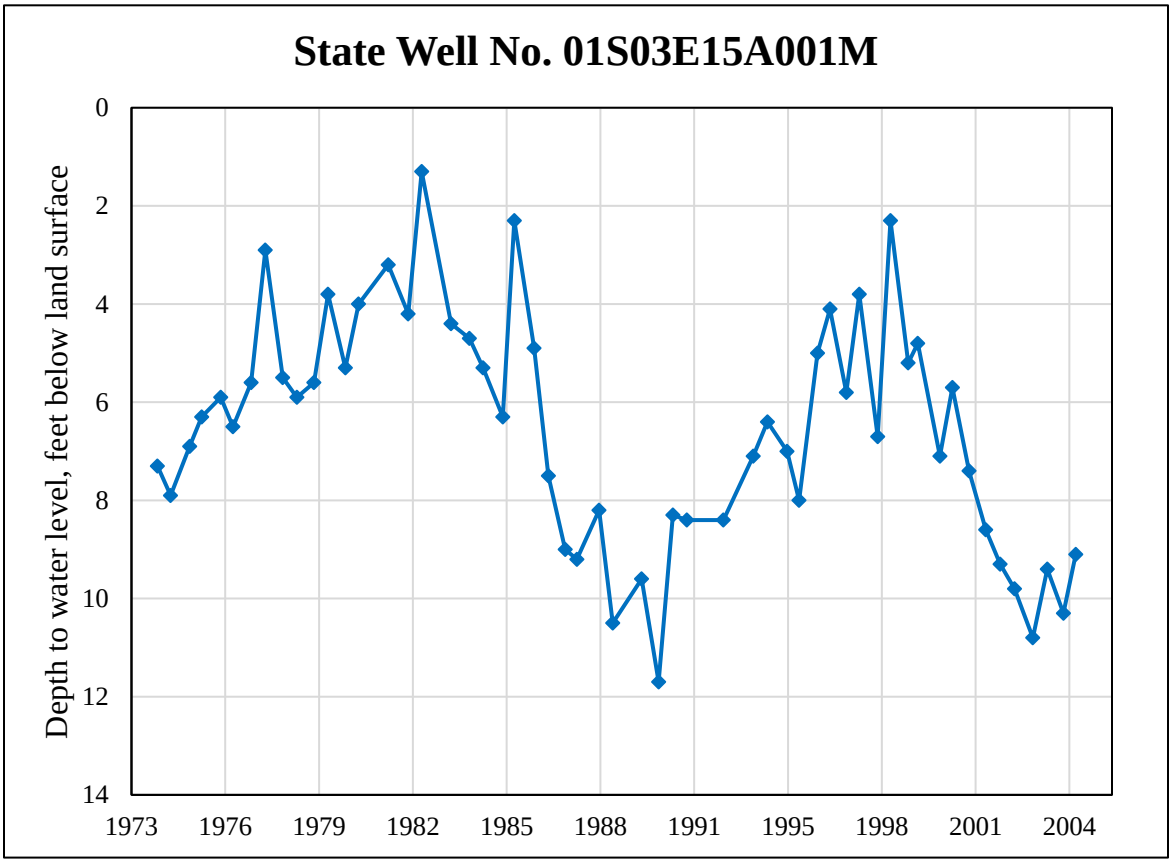
DWR evaluated groundwater quality for the 2014 basin prioritization process and noted "poor quality water throughout the subbasin" (DWR 2014). Total dissolved solids (TDS) concentrations in the Subbasin ranged from 210 to 7,800 milligrams per liter (mg/L) and averaged about 1,190 mg/L (the State Water Resources Control Board (SWRCB) secondary maximum contaminant level (MCL) standards for TDS in drinking water is 500 mg/L). Subbasin water quality impairments noted in DWR Bulletin 118 include elevated chloride in the west, elevated nitrate in the northwest, and elevated boron northwest of the City of Tracy (DWR 2006).

4.1.2.3 Groundwater Level Trends in the Tracy Subbasin

There are limited groundwater data for the Tracy Subbasin except in the south, proximate to the City of Tracy, and in the north, proximate to the Cities of Brentwood and Oakley. DWR reports relatively stable groundwater levels during the 10 years prior to 2006 (DWR 2006). Near the proposed project site, records from two off-site wells also indicate relatively stable groundwater elevations. Water levels from State Well No. 01S03E25M999M ranged from about 5 to 14 feet below ground surface (bgs) from July 2014 to March 2018, and those from State Well No. 01S03E15A001M ranged from about 2 to 12 feet bgs from October 1974 to March 2004 (DWR 2018). These wells are located about 1 mile east and 0.75 miles north of the project site, respectively.

Exhibit 3 shows historical water levels for State Well No. 01S03E15A001M. The data indicate declining water levels with the dry conditions of the late 1980s and recovery during the relatively wet period of the 1990s. Note that groundwater fluctuations may result from variations in seasonal rainfall, pumping patterns or intensity, irrigation return flow, and other factors.

Exhibit 3: U.S. Geological Survey Well Hydrograph (State Well No. 01S03E15A001M)



4.1.2.4 Groundwater as a Potential Project Water Source

DWR has designated the Tracy Subbasin as medium priority in accordance with the requirements of the Sustainable Groundwater Management Act (SGMA). SGMA requires all medium- and high-priority basins to be managed in accordance with a groundwater sustainability plan by January 31, 2022. Groundwater sustainability agencies (GSAs) formed in accordance with SGMA are responsible for complying with the requirements of SGMA.

In addition to requiring the sustainable management of priority California groundwater basins, the SGMA legislation states that nothing in the legislation "determines or alters surface water rights or groundwater rights under common law or any provisions of law that determines or grants surface water rights" (CWC, Section 10720.5(b)). California landowner rights include the right to use groundwater underlying their property for beneficial and non-wasteful use.

The west half of the proposed project area is located within the Contra Costa County GSA and the east half is within the jurisdiction of the BBID GSA (DWR 2019b). Per SGMA, these GSAs are responsible for coordinating with each other on issues of groundwater management. Note that, although nothing in SGMA allows for the alteration of existing groundwater rights, to achieve sustainable conditions within a groundwater basin the GSA may limit the construction of new wells or the amount of groundwater extracted.

The present Byron Airport domestic water supply is from a single on-site groundwater well. Groundwater from this well and additional on-site wells has been considered as a potential source of water for the proposed project. Data and information for the on-site and nearby groundwater wells provide an indication of the feasibility of on-site groundwater as a supply for the proposed project.

Constructed in 1994, the existing on-site well is 200 feet deep and screened through limited sand or sandy clay intervals (see Appendix A, Well Completion Report). Well test information from the time of drilling is unavailable, but in recent times, the well has been estimated to yield less than 1 gpm (Mead & Hunt 2013). Groundwater from the existing well contained about 13,000 mg/L TDS (Mead & Hunt 2013).

Despite greater yields documented throughout the Subbasin, data from wells in the vicinity of the proposed project site suggest very limited yield potential. Table 4 shows yields from groundwater wells located in the township/ranges surrounding the proposed project site.

Table 4
Yields from Nearby Wells

Township, Range, and Section	Year Completed	Well Depth (ft bgs)	Approximate Yield at the Time of Construction (gpm)	Well Type
01S03E16	1994	200	20	Test well
M01S03E23	2001	260	5	Domestic
M01S03E26	1986	250	5	Domestic
M01S03E22	1994	200	1[a]	Domestic

Source: USGS 2018.
Notes: ft bgs = feet below ground surface; gpm = gallons per minute.
[a] Yield estimate after 2010.

Based on the estimated water demand of the operational phase of the proposed project, extraction from one or multiple wells would have to support a continuous rate of about 22 gpm. If a yield of about 5 gpm is assumed for each well, then the proposed project would require four wells to meet the estimated demand. The use of the existing or additional storage tanks would provide greater flexibility to meet peak demand. However, yields from the Byron Airport well and surrounding wells have been documented to be low and it is unclear whether on-site wells could provide an adequate and reliable water supply for the proposed project.

In addition, groundwater quality within the Subbasin and at the proposed project location is known to be inadequate for potable uses. Groundwater supplies would need on-site treatment prior to use. Mead & Hunt (2013) describe the potential and cost for on-site water treatment using a packaged treatment plant. Additional hydrogeologic study consisting of on-site test borings, well tests, and water quality analysis would facilitate further evaluation of the feasibility of this option.

4.1.3 Imported Water

Byron Airport is located partially within the BBID service area and the Airport receives water from the BBID for fire suppression. BBID supplies untreated water for irrigation, municipal, and industrial uses within Alameda, Contra Costa, and San Joaquin Counties. It is a Special District with pre-1914 appropriative water rights and water from the CVP (CH2M 2017). BBID diverts water from the Harvey O. Banks Pumping Plant Intake Channel and the Delta Mendota Canal, primary facilities of the SWP and the CVP.

Per contract 14-06-200-785-LTR1 with the U.S. Bureau of Reclamation, BBID is allocated 20,600 AFY of CVP water. The contract acknowledges the variability of the CVP capacity and supply and references the availability of an average quantity of 13,555 AFY during the 5-year period

ending in 2004. The contract term ends February 28, 2030. In addition, a May 28, 2003, contract with DWR allows BBID to divert up to 50,000 AFY from the SWP (BBID 2017).

In 2015, SWRCB issued an order curtailing BBID water diversion from the Delta due to inadequate supply. BBID successfully defended their pre-1914 water rights in a lawsuit against SWRCB in which a Santa Clara County Superior Court ruled that SWRCB did not have jurisdiction over pre-1914 water rights and riparian water rights (Tracy Press 2018). With the drought-related curtailment of surface water supplies in 2015, BBID met system demand with groundwater and water transfers. Groundwater was pumped from the wells of private landowners for distribution by BBID.

Untreated water for fire protection at Byron Airport is imported from the BBID and stored on site in a lined 750,000-gallon storage pond. Additionally, a 96-inch-diameter pipe and emergency pump station is located southeast of the runway intersection and provides a supplemental supply for fire protection (Mead & Hunt 2013). There is no other source of imported water to the Airport.

4.1.3.1 Imported Byron–Bethany Irrigation District Water as a Potential Project Water Supply

BBID currently provides untreated water to Byron Airport for fire protection and has indicated the availability of additional year-round water supplies (Mead & Hunt 2013). BBID also supplies untreated water to the Mountain House CSD, located about 2 miles to the southeast of the Airport. The Mountain House CSD treats the water for potable uses.

Mead & Hunt (2013) describe two potential methods to convey water from the BBID system to the proposed project: via the existing irrigation canal or construction of a new pipeline. BBID Canal 45 traverses the north side of the Airport, and water could be diverted directly from it. Alternatively, a buried pipeline could be constructed from the existing BBID pump station at the California Aqueduct to the Airport, which is approximately 2 miles away. Due to complications related to the permitting of an open canal water supply, it is anticipated that the buried pipeline option would be preferable. The BBID pumping station currently supplies water to Mountain House CSD, and the pumping station capacity may need to be increased to accommodate the proposed project supply. Other required components of the BBID source would be a booster pump, storage tank, and a method of treating the water for potable uses (Mead & Hunt 2013). Additional water supply from the BBID to the proposed project would require additional feasibility analysis, including consideration of the cost and availability of the supply.

4.1.3.2 Imported Discovery Bay Community Services District Water as a Potential Project Water Supply

Another potential source of imported water is from the Discovery Bay CSD. The Town of Discovery Bay is an unincorporated community formed in 1998 that is about 5 miles north of Byron Airport. The Discovery Bay CSD provides treated water for about 16,000 residents and limited commercial and institutional uses. The Discovery Bay water supply is from six wells located in or near the town. The supply wells are screened to extract water from productive zones to a depth of about 350 feet bgs. Well testing indicates yields of up to 2,000 gpm, with water quality generally suitable, with treatment, for potable uses (L&S 2017). The Discovery Bay CSD is the exclusive GSA for SGMA implementation in the part of the Tracy Subbasin within its jurisdiction (DWR 2019b).

The 2012 Discovery Bay Water Master Plan did not contemplate a Byron Airport connection but indicated that existing facilities have the needed capacity for the proposed project (Mead & Hunt 2013). Additional facilities for implementation of this option include a tank, pipelines, and a water booster pump station. Outstanding questions of feasibility include an agreement with Discovery Bay CSD, County approval, and connection costs.

4.1.4 Recycled Water

There is no recycled water produced by, or used at, Byron Airport. Recycled water is not proposed as a water source for the proposed project.

4.2 Water Resources Plans and Programs

The proposed project site is not within any PWS jurisdiction. Approximately half of the proposed project area is within the BBID, Byron Division. Although not a PWS as defined by the CWC, Section 10912, which specifies supply for human consumption, BBID serves more than 3,000 AFY of water and is therefore required to adopt a UWMP. BBID has prepared an Agricultural Water Management Plan and has adopted the UWMPs from its municipal and industrial customers. Discovery Bay has prepared a UWMP.

4.3 Water Supply Sufficiency and Reliability

This WSA contemplates on-site groundwater, imported water from BBID, and imported groundwater from Discovery Bay as potential supplies for the proposed project. As noted, each potential source requires further analysis to determine the feasibility of implementation. The following sections examine each source in relation to the sufficiency and reliability of supply without consideration of implementation feasibility.

4.3.1 On-Site Groundwater Supply Sufficiency and Reliability

As noted in Section 4.1.2.4, the potential for groundwater extracted from on-site wells appears to be limited and a hydrogeologic investigation would be needed to more accurately evaluate the appropriate placement and number of wells. On-site groundwater could be developed in conjunction with more reliable sources to provide a backup supply in times of shortage or emergency. This might also allow for treatment of the groundwater using the facilities that will be required for the other potential water sources.

Relatively stable groundwater levels have been recorded near the proposed project site, and existing water rights would likely allow extraction of the required groundwater quantities. However, the SGMA implementation currently underway could result in the limitation of the number, location, and permitted extraction quantities of the wells. A final groundwater sustainability plan for the Tracy Subbasin is due January 31, 2022.

4.3.2 Discovery Bay Supply Sufficiency and Reliability

4.3.2.1 Discovery Bay Water Supply Sufficiency

The Discovery Bay water demand is primarily from residential customers, with smaller amounts of demand from commercial customers and non-residential landscaping. Table 5 lists existing (2015) and projected population estimates. Population estimates include data from the 2010 census and the number of houses constructed since 2010, along with build-out assumptions through 2040 (L&S 2017). Water demand was measured for 2015 and projected through 2040, assuming 200 gallons per day per person. The projected water demand is provided in Table 6.

Table 5
Discovery Bay Current and Projected Population

Year	2015	2020	2025	2030	2035	2040
Population	14,895	18,500	18,500	18,500	22,374	27,059

Source: L&S 2017.

Table 6
Discovery Bay Current and Projected Water Demand (AF)

Year	2015	2020	2025	2030	2035	2040
Groundwater	2,661	4,211	4,211	4,211	5,094	6,159

Source: L&S 2017.
Note: AF = acre-feet.

Discovery Bay obtains its entire water supply from groundwater wells. Historical records of groundwater levels indicate groundwater elevation near mean sea level (10 feet bgs) prior to significant development. Seasonal water level fluctuations of from 10 to 40 feet bgs were recorded with development of the area in the late 1900s. Groundwater level monitoring conducted by Discovery Bay CSD since the late 1980s indicates stable or rising groundwater levels since 2008, despite recent drought conditions. As noted by L&S, "The stability in groundwater levels in recent dry years indicates that groundwater pumpage is sustainable at current usage by the TODB [Town of Discovery Bay]" (L&S 2017).

4.3.2.2 Discovery Bay Water Supply Reliability

The Discovery Bay water supply is solely from groundwater wells. Therefore, impacts to Discovery Bay operations could occur from the SGMA process that is currently underway. However, impacts may be small or none may occur, depending on the stability of local water levels. In addition, SGMA will serve to enhance the sustainability of the Tracy Subbasin as a whole. Discovery Bay anticipates no water-supply-related projects at this time except for the construction of an additional water supply well. In 2019, the new well will be brought into service as a replacement for the existing Well 5A, which has yielded water of poor quality. It is anticipated that the replacement will not affect the overall groundwater availability to Discovery Bay CSD (L&S 2017).

In 2016, Discovery Bay CSD prepared a memorandum to comply with the 2016 California State Emergency Drought Regulations. The memorandum concluded that there were no restrictions to Discovery Bay CSD meeting current and projected demand. Similarly, the existing wells, with the exception of Well 5A (which is scheduled for replacement), are able to meet projected demands (L&S 2016).

4.3.2.3 Discovery Bay Water Supply Quality

The Discovery Bay groundwater supply meets all California primary drinking water standards. Groundwater is treated to bring manganese concentrations to levels that are below applicable standards. TDS concentrations from groundwater wells monitored from the mid-1980s through 2012 have generally been stable at 500 to 600 mg/L. Brackish or saline groundwater has been identified in an aquifer that is shallower than the Discovery Bay water supply aquifer. Discovery Bay constructs wells in such as way as to prevent excessive corrosion or cross-contamination from this aquifer (L&S 2017).

4.3.2.4 Discovery Bay Water Supply Reliability by Year Type

SB 610 includes the evaluation of the adequacy of water supplies available during normal, single dry, and multiple dry water years during the 20-year projection period, including existing and

future uses of the identified water supplies. The 2015 Discovery Bay UWMP determined the average or normal water year to be that with the highest water production of record (4,075 AF in 2008) and the dry years were based on the 2012 to 2015 drought years. Table 7 provides the classifications of water years and the specific periods used in the analysis.

Table 7
Discovery Bay Normal and Dry Year Classifications and Water Availability

Classification of Water Years	Period (Years)	Volume Available (AF)	% of Average Supply Available
Average year	2008	4,075	100
Single dry year	2007	4,075	100
Two consecutive dry years	2012–2013	4,075	100
Three consecutive dry years	2012–2014	4,075	100
Multiple dry years	2012–2015	4,075	100

Source: L&S 2017.
Notes: AF = acre-feet.

Table 8 provides an evaluation of projected supply and demand using the water year classifications from Table 7. Note that the total available supply is assumed as the operation of all existing wells for 12 hours per day on a continuous basis. The existing wells are designed to operate in this way.

Table 8
Discovery Bay Projected Supply/Demand Comparison (AF)

	2020	2025	2030	2035	2040
Total available supply for each type of year	7,672	7,672	7,672	7,672	7,672
Normal-year demand	4,201	4,201	4,201	5,067	6,116
Normal-year supply surplus/shortage	3,471	3,471	3,471	2,605	1,556
Single-dry-year demand	4,201	4,201	4,201	5,067	6,116
Single-dry-year supply surplus/shortage	3,471	3,471	3,471	2,605	1,556
Multiple-dry-year demand (3 years)	4,201	4,201	4,201	5,067	6,116
Multiple-dry-year demand for each of 3 years	3,471	3,471	3,471	2,605	1,556

Source: L&S 2017.
Note: AF = acre-feet.

Table 8 indicates that the Discovery Bay supply will exceed demand under normal-year, single-dry-year, and multiple-dry-year scenarios through 2040.

In addition to the availability of groundwater, Discovery Bay has implemented plans and programs that contribute to water supply reliability. In accordance with the requirements of CWC, Section 10632, Discovery Bay has developed a water shortage contingency plan consisting of a progressive four-stage response strategy for shortages of up to 50% of supply. Stages from least to most severe include public information and voluntary water conservation, mandatory water conservation, new water use prohibition and water consumption reduction ordinances, and water rationing. Related actions include end use restrictions and enforcement penalties and charges.

In addition, Discovery Bay has in place a program of comprehensive demand management measures. A 2014 ordinance prohibits water waste and imposes fees in certain circumstances. A program to meter all residential, commercial, and landscape accounts began in 2008, and is scheduled for completion in 2024. A conservation rate structure was planned for implementation with the completion of the metering program (L&S 2017). In addition, Discovery Bay has implemented a public education and outreach program for water conservation that includes newsletters, school programs and fairs, and residential water audits.

4.3.2.5 Discovery Bay Ability to Supply the Proposed Project

Table 9 demonstrates the ability of the Discovery Bay supply to fulfill the estimated proposed project demand in addition to Discovery Bay existing and forecasted demands. As indicated in Table 9, there is a substantial water surplus throughout the planning period.

Table 9
Current and Projected Water Supply/Demand Comparison
Source – Discovery Bay

Water Sources	Actual (AF)	Projected (AF)				
	2015	*2020*	*2025*	*2030*	*2035*	*2040*
Demand						
Discovery Bay Community Services District[a]	2,661	4,211	4,211	4,211	5,094	6,159
Byron Airport	N/A	3.1	21.1	36	36	36
Total water demand	**2,661**	**4,214**	**4,232**	**4,247**	**5,130**	**6,195**
Potential Supply						
Discovery Bay Community Services District[a]	2,615	7672	7672	7672	7672	7672
Supply surplus/shortage	**−46.0**	**3,458.6**	**3440.6**	**3,425.7**	**2,541.9**	**1,477.0**

Source: L&S 2017.
Note: AF = acre-feet.

4.3.3 Byron–Bethany Irrigation District Supply Sufficiency and Reliability

4.3.3.1 Byron–Bethany Irrigation District Water Supply Sufficiency

BBID has adopted the UWMPs of its municipal and industrial customers as an alternative to preparing one of its own. As described in Section 4.1.3, the BBID supplies are primarily from Pre-1914 water rights and diversions from SWP and CVP facilities. Full contract amounts are 50,000 AFY and 20,600 AFY from the SWP and CVP, respectively. Byron Airport is within the Byron Division of the BBID service area and would therefore receive water only in accordance with pre-1914 water rights from the SWP. Therefore, the sufficiency and reliability of that supply is considered herein.

The BBID supply is primarily dictated by crop demand, which is in turn related to climate. Municipal and industrial demand within the Byron and Bethany Divisions of BBID are a small percentage of the total water demand (Table 10). Therefore, the BBID supply is largely a function of demand, with water sufficiency normally adequate. From a historical and water rights perspective, there is adequate water supply to meet all of the BBID water demand.

Table 10
Byron–Bethany Irrigation District Water Demand (AF)

Source	2013	2014	2015
Crop water use	21,970	24,321	17,065
Conveyance losses	1,005	1,005	1,005
Municipal and industrial	3,868	3,330	2,937
Total	**26,842**	**28,656**	**21,007**

Source: L&S 2017.
Notes: AF = acre-feet.

Table 11 lists the BBID surface water pre-1914 supplies for 2013 through 2015. The quantities shown are those available to the Byron and Bethany Divisions only. Note that each of these years was during drought conditions.

Table 11
Byron–Bethany Irrigation District Water Supply (AF)

Source	2013	2014	2015
Pre-1914 Rights	29,241	30,325	18,625
Groundwater	0	0	510
Water Transfers	0	0	2,224

Table 11
Byron–Bethany Irrigation District Water Supply (AF)

Source	2013	2014	2015
Total	29,241	30,325	21,359

Source: L&S 2017.
Notes: AF = acre-feet.

4.3.3.2 Byron–Bethany Irrigation District Water Supply Reliability

BBID's pre-1914 water rights water is diverted from the Harvey O. Banks Pumping Plant, which is operated in accordance with the 2003 agreement between BBID and DWR (DWR and BBID 2003). There has never been a shortage in this source until June 2015, when SWRCB issued a curtailment notice due to drought conditions (see Section 4.1.3). However, because of legal proceedings, the curtailment did not stand, and subsequent legislation resulting from the legal action serves to further protect water rights holders from unwarranted curtailment (as per Assembly Bill 747). Although aspects of the case are ongoing, the outcomes in the initial phases assist the sufficiency and reliability of the BBID pre-1914 water. The preponderance of water supply that is available to BBID for the Bethany Division demand is from the SWP. In addition to the reliability afforded by the recent legal action described above, the pre-2014 water rights supply to BBID may be considered very reliable due to the seniority of BBID water rights and the location of BBID diversion facilities within the Delta system (L&S 2017).

BBID water demand includes that from the Community of Mountain House and the City of Tracy, each of which has identified BBID pre-1914 water rights supply as being sufficient and reliable through the build-out period. The WSA prepared for the Tracy Hills Specific Plan indicates 100% supply availability to that project in normal years and 90% availability in single and multiple dry years (West Yost 2014). The 2016 Municipal Service Review and Sphere of Influence Plan for Mountain House CSD also concludes, "The pre-1914 right provides an adequate, reliable water supply for the community of Mountain House now and at buildout" (MHCSD 2016). This, in addition to the previous implementation of high-efficiency irrigation techniques and reliability measures for agriculture throughout the agricultural sector of the BBID service area, indicates a high probability of sufficient BBID water supply for the proposed project in the near term and throughout the planning period.

BBID has implemented other reliability measures. Since 2001, BBID has been investigating the feasibility of recycled water use to diversify its water supplies. The majority of agricultural growers in the BBID service area have implemented drip or micro-spray irrigation systems. BBID has an ongoing program of infrastructure improvement to increase efficiency and prevent waste, such as lining canals to reduce seepage. In addition, BBID has designated a water conservation coordinator (CH2M 2017).

4.3.3.3 Byron–Bethany Irrigation District Water Supply Quality

The vast majority of water supplied by DWR to its Byron Division is diverted from the intake channel of the Harvey O. Banks Pumping Plant. Water from this source is generally of good quality and without restriction for agricultural or urban uses. Groundwater extracted from within BBID's jurisdiction has rarely been used by BBID as a supply and has historically been of poor quality.

4.3.3.4 Byron–Bethany Irrigation District Water Supply Reliability by Year Type

Supply reliability by year classification under projected demand conditions is unavailable due to the lack of a BBID-specific UWMP. However, the 2017 BBID Agricultural Water Management Plan evaluates water supply and demand during 2013 through 2015, a period categorized as critically dry by the DWR California Data Exchange Center (DWR 2019c). Therefore, it represents a conservative evaluation of water supply reliability. With consideration of the outcome of the legal action concerning BBID water rights, the supply reliability for this multiple-dry-year period may be considered good (Tables 10 and 11).

4.3.3.5 Byron–Bethany Irrigation District Ability to Supply the Proposed Project

Table 12 compares BBID supply and demand for historical drought years. The table indicates that for each year, there would have been adequate supply for the BBID and proposed project estimated demand. Recent litigation has served to increase the likelihood of adequate future supplies for the proposed project.

Table 12
Byron–Bethany Irrigation District Historical Drought Year
Water Supply and Demand Comparison

Water Sources	Projected (AF)		
	2013	*2014*	*2015*
Demand			
Byron–Bethany Irrigation District	26,842	28,656	21,007
Byron Airport	3.1	21.1	36
Total water demand	**26,845.1**	**28,677.1**	**21,043**
Potential Supply			
Byron–Bethany Irrigation District	29,241	30,325	21,359
Total water supply	**29,241**	**30,325**	**21,359**
Supply surplus/shortage	**2,395.9**	**1,647.9**	**314**

Source: L&S 2017.
Notes: AF = acre-feet.
Agriculture estimates are based on crop water demand.

5 CONCLUSIONS

Included in this WSA is an estimate of water demand for build-out and operation of the Byron Airport Development Program. Definitive water supply sources have not yet been secured for the proposed project, but three potential sources have been evaluated in regard to their ability to supply the proposed project. These are extraction of additional on-site groundwater, importation of Discovery Bay groundwater supplies, and importation of water from BBID in accordance with pre-1914 water rights.

On-site wells may not provide an adequate water supply due to low yields and poor groundwater quality at the site. This source may be considered as a backup or emergency supply. The sufficiency and reliability of BBID, Byron Division, water supply is examined based on the UWMPs of its municipal and industrial customers, water supply agreements, and previously implemented conservation measures. Both the Discovery Bay and BBID potential water sources would provide adequate supply for the proposed project construction and operational phases, including planned development of those sources, throughout the projected 20-year planning period. These potential water sources require additional study and vetting to confirm their availability and feasibility.

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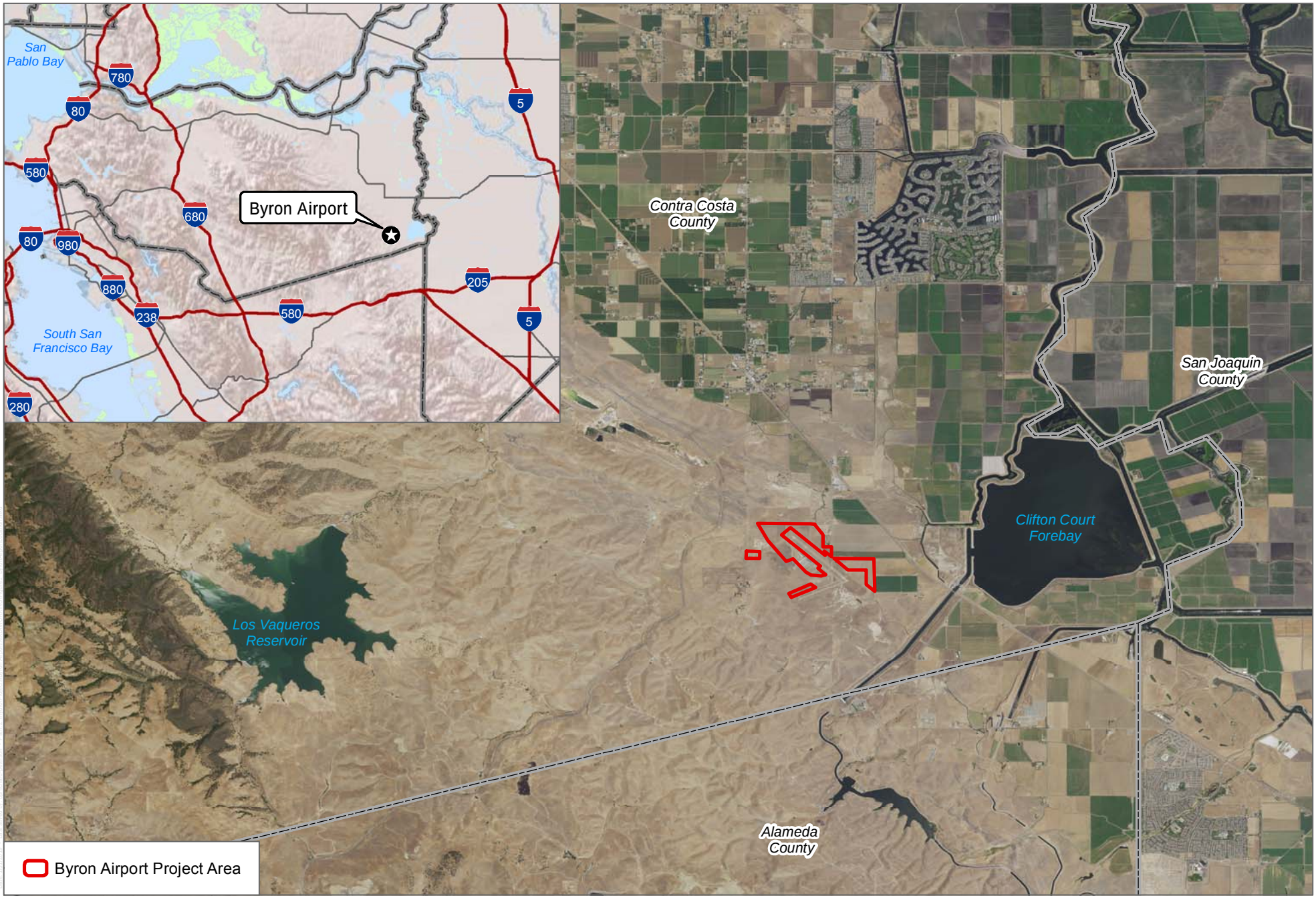

SOURCE: ESRI; NAIP 2014

DUDEK

0 1 2 Miles

FIGURE 1

Project Location

Water Supply Assessment - Byron Airport Development Program

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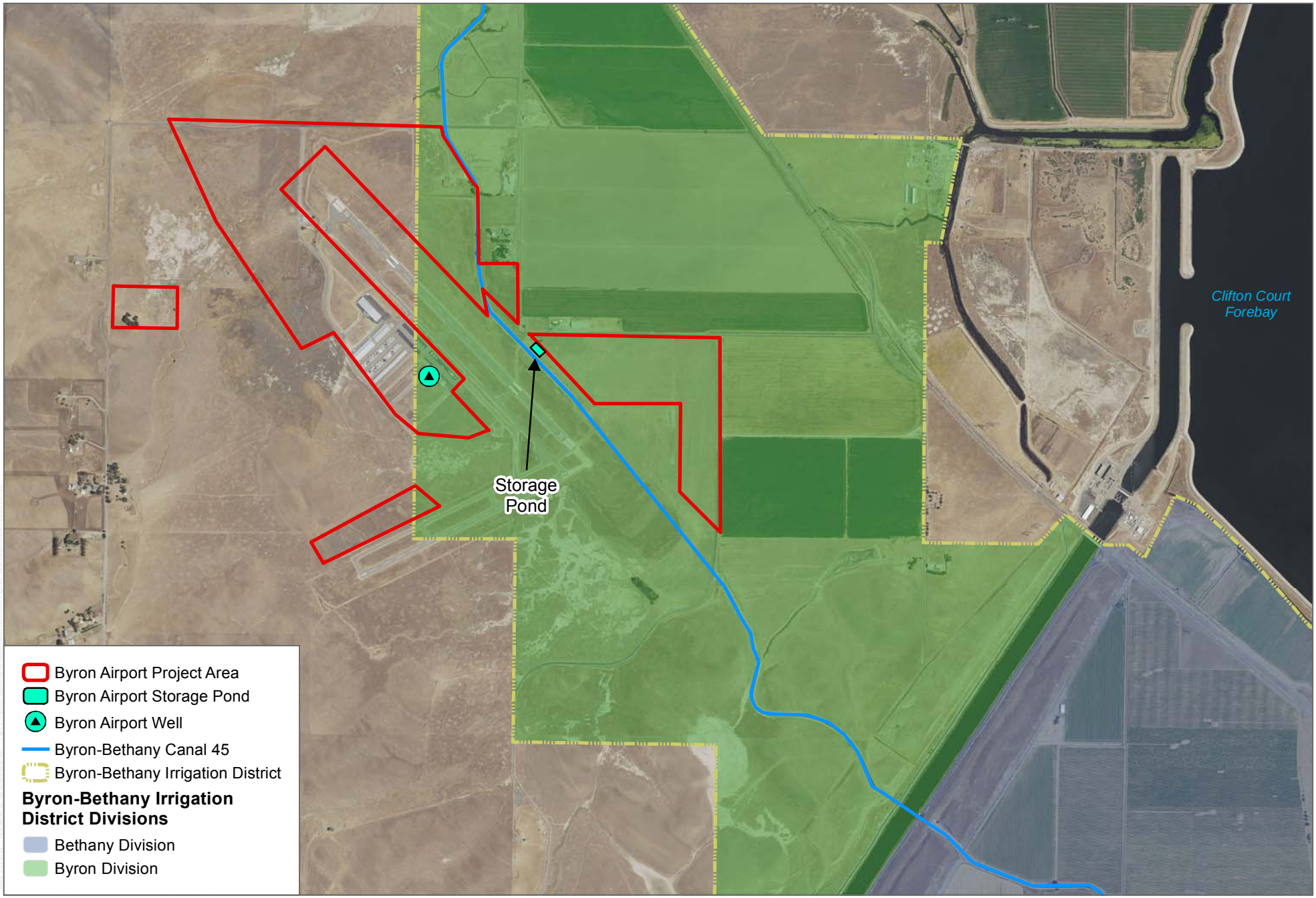

SOURCE: NAIP2014; DWR

DUDEK

0 0.25 0.5 Miles

FIGURE 2

Existing Airport Water Resources

Water Supply Assessment - Byron Airport Development Program

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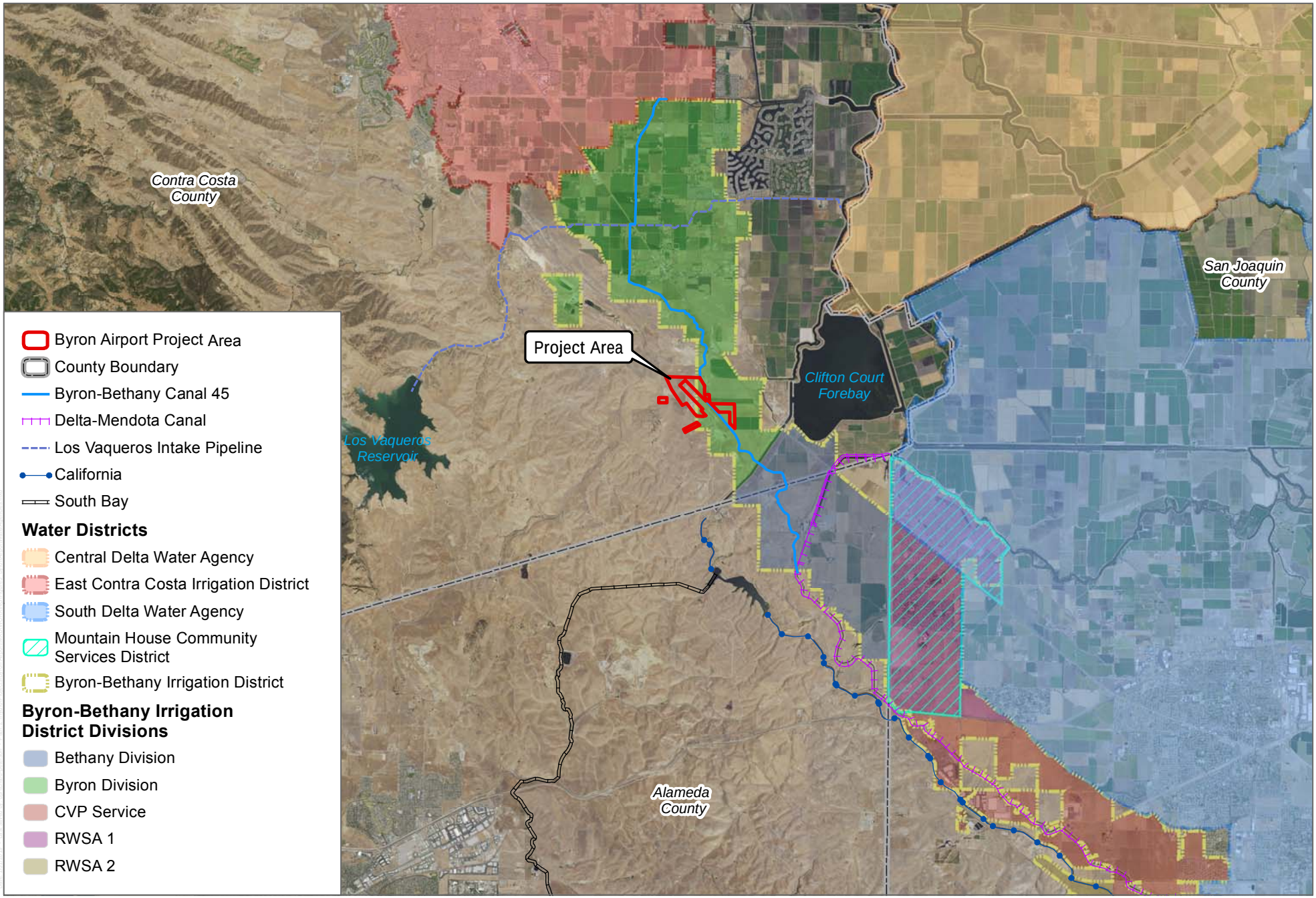

SOURCE: NAIP2014; DWR

DUDEK

0 2 4 Miles

FIGURE 3

Water Agencies and Canals/Aqueducts

Water Supply Assessment - Byron Airport Development Program

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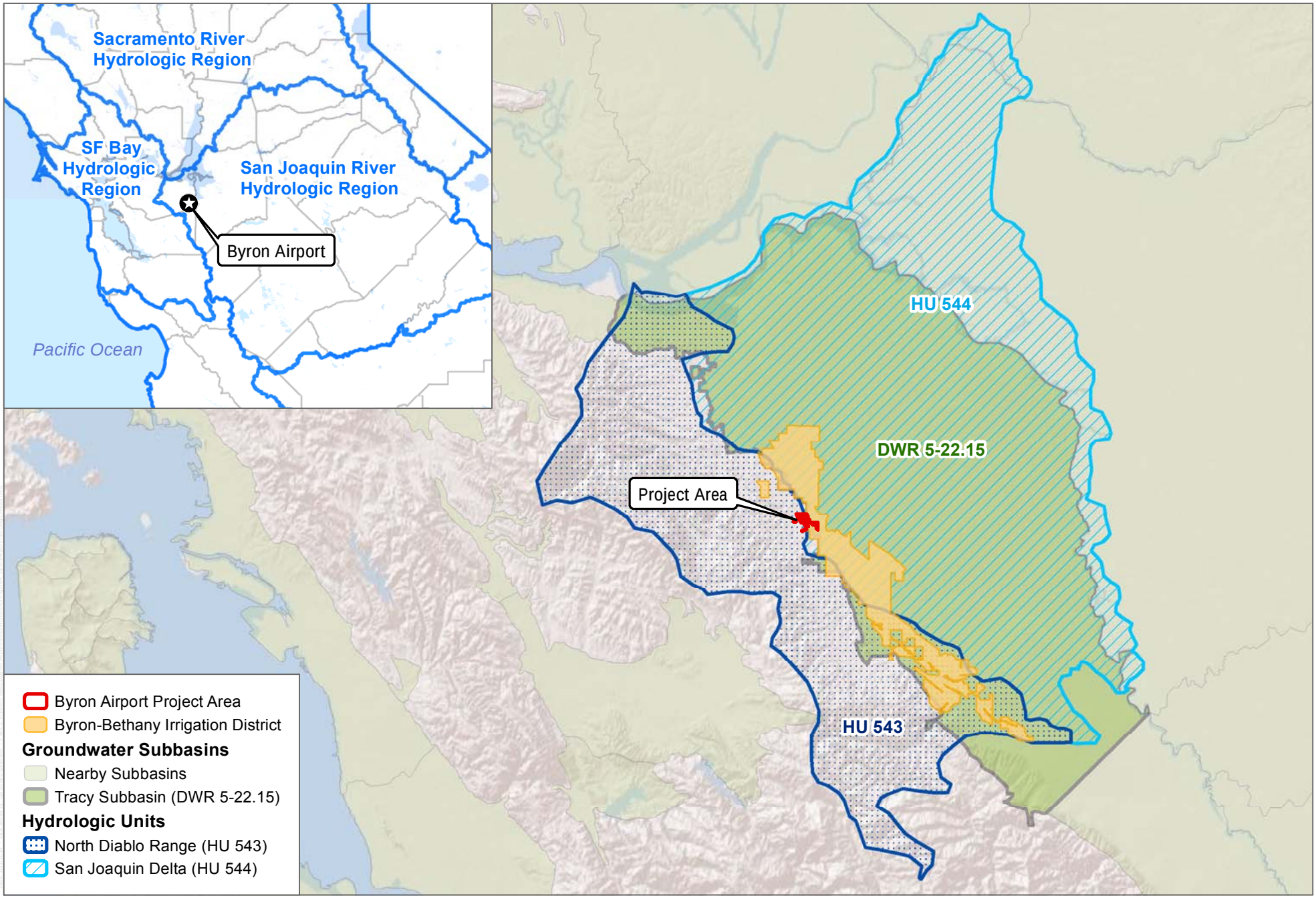

SOURCE: DWR

DUDEK

0 5 10 Miles

FIGURE 4

Hydrologic Areas

Water Supply Assessment - Byron Airport Development Program

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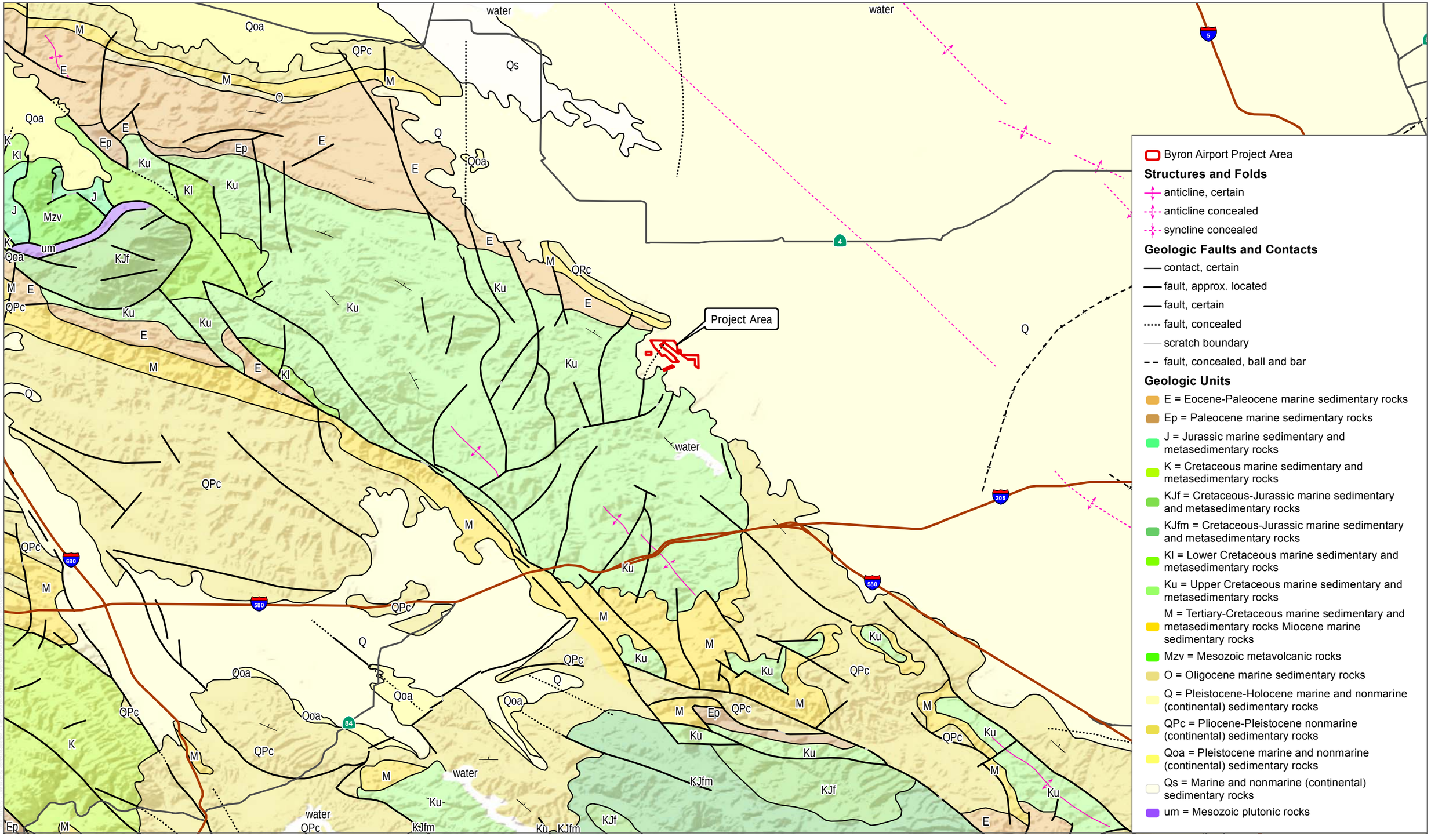

SOURCE: California Geologic Survey 2010

DUDEK

0 2 4 Miles

FIGURE 5

Geologic Map

Water Supply Assessment - Byron Airport Development Program

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APPENDIX A

Well Completion Report

ORIGINAL
File with DWR

Page 1 of 1

Owner's Well No. _____

Date Work Began 6-3-94 , Ended 6-8-94

Local Permit Agency Contra Costa Environmental Health

Permit No. D94-0033 Permit Date 5-25-94

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 462871

DWR USE ONLY — DO NOT FILL IN
01S03E16
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DEPTH TO FIRST WATER 18 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	18	brown clay
18	25	brown sand
25	58	sandy clay
58	78	black clay
78	94	brown sandy clay
94	122	brown sand few pebbles
122	158	black clay
158	176	gray sand
176	200	gray clay

TOTAL DEPTH OF BORING 200 (Feet)

TOTAL DEPTH OF COMPLETED WELL 180 (Feet)

WELL OWNER

Name _____

Mailing Address _____

CITY _____

Address Vasco Road

City Byron

County Contra Costa 07

APN Book 003 Page 040 Parcel 001

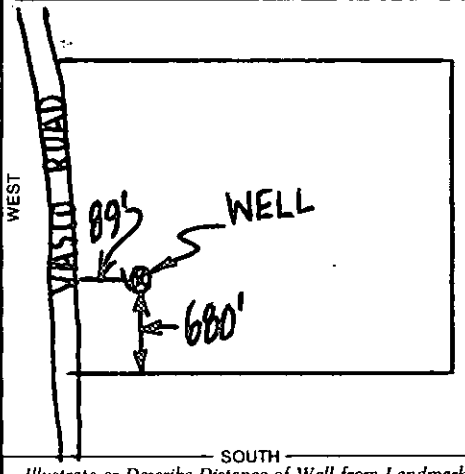
or Township _____ Range _____ Section _____

or Latitude _____ DEG. MIN. SEC. NORTH Longitude _____ DEG. MIN. SEC. WEST

LOCATION SKETCH

NORTH

Test Well #2 Completed Well#1



SOUTH

Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

X NEW WELL

MODIFICATION/REPAIR

___ Deepen

___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)

___ MONITORING

WATER SUPPLY

___ Domestic

___ Public

___ Irrigation

___ Industrial

___ "TEST WELL"

___ CATHODIC PROTECTION

___ OTHER (Specify)

DRILLING METHOD Rotary Fluid FLUID bentonite

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 58 (Ft.) & DATE MEASURED 6-8-94

ESTIMATED YIELD* 20 (GPM) & TEST TYPE air lift

TEST LENGTH 4 (Hrs.) TOTAL DRAWDOWN 175 (Ft.)

** May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CON-DUCTOR	FILL PIPE	MATERIAL/ GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	200	9								
+2	2		X				plastic	5	SDR-21	
+1	80		X				plastic	4½	F480	
80	140			X			plastic	4½	F480	.032
140	160		X				plastic	4½	F480	
160	180			X			plastic	4½	F480	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
+4"	3	X			concrete
3	52		X		grout
52	180			X	pea gravel

ATTACHMENTS (✓)

___ Geologic Log

___ Well Construction Diagram

___ Geophysical Log(s)

___ Soil/Water Chemical Analyses

___ Other _____

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME HUCKFELDT WELL DRILLING
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

ADDRESS 2110 Penny Lane CITY Napa STATE CA ZIP 94559

Signed _____ WELL DRILLER/AUTHORIZED REPRESENTATIVE

DATE SIGNED 6-9-94

C-57 LICENSE NUMBER 439-746

DWR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

1487