CITY OF FONTANA

ENVIRONMENTAL CHECKLIST FORM

AND INITIAL STUDY

1. **Project Title:** 8155 Banana Avenue Apartments

2. **Lead Agency Name and Address:**
City of Fontana
Development Services – Planning Department
8353 Sierra Avenue
Fontana, CA 92335

3. **Contact Person and Phone Number:**
Jon Dille
Associate Planner
(909) 350-6681

4. **Project Location:** The Project Site comprises the properties located at 8155, 8161, 8151, and 8171 Banana Avenue, in the city of Fontana, San Bernardino County. The approximately 2.6-acre site is accessible via an approximately 30-foot-wide driveway fronting Banana Avenue, just south of Foothill Boulevard/Route 66. The Assessor's Parcel Numbers (APN) are 0230-041-60, 0230-041-33, 0230-041-61, 0230-041-52, and 0230-041-44. The Project Site is generally located in the western portion of the city of Fontana.

5. **Project Sponsor's Name:**
SA Golden Investments
Saber Awad

6. **General Plan Designation:** Single Family Residential (R-SF)

7. **Zoning:** Single Family (R-1)

8. **Project Description:** SA Golden Investment, Inc. (Applicant) is requesting approval of a General Plan Amendment (GPA) from Single Family Residential (2.1-5 dwelling units [du]/acre) (R-SF) to Multiple Family Medium/High Residential (24.1-39 du/acre) (R-MFMH) and Change of Zone (CZ) from Single Family (2.1-5 du/acre) (R-1) to Route 66 Gateway on all five APNs. (0230-041-60, 0230-041-33, 0230-041-61, 0230-041-52, and 0230-041-44) totaling approximately 2.6 acres. Refer to Figure 1 for area proposed for the GPA and CZ.

Project Features Associated with APN 0230-041-60 and 0230-041-52

The Proposed Project would include the development of a three-story (one, two, and three-bedroom units ranging from 944 SF to 1,333 SF), 24-unit apartment complex on 0.87 acres (0.55 acres, net) of the 2.6 acres located at 8155 Banana Avenue. Development of the proposed 24-unit apartment complex would occur on APN: 0230-041-60 (subject parcel). The Proposed Project would include tenant-covered parking (e.g. two carports), 10 open parking spaces, perimeter screen walls, trash enclosure, site lighting, security cameras, and landscaping. A single-family residence, owned by the Project sponsor, which currently exists on APN: 0230-041-60 would be demolished as part of the Proposed Project development. The Proposed Project would provide 2,544 SF of private open space for the apartment complex. The Proposed Project would provide 23 covered parking spaces among the two carports that will include roof solar panels. The solar panels would be designed to meet the Proposed Project's electricity demand, as required by Title 24, with any remainder being sold back to the grid. The Project easement (driveway) is located on APN 0230-041-52. The driveway would improve the existing easement by grading and laying concrete within the 30-foot-wide easement. The improvements would also include a 4-foot-wide accessible pedestrian path of travel. The driveway would be maintained by the apartment building owner/management. The property would be fenced on all sides with 6-foot-high block wall; refer to Figure 2, Site Plan. There are three trees and three tree stumps [1] on the subject parcels that are proposed for removal. The Proposed Project would provide 14 replacement trees along the proposed apartment building and proposed carport located adjacent to 8151 Banana Avenue

Project Features Associated with APNs 0230-041-33, 0230-041-61, and 0230-041-44

Parcels 0230-041-33, 0230-041-61, and 0230-041-44 are currently developed with existing permitted residential uses. No development is currently proposed on these parcels. However, these parcels are included in the Project Description because they are a part of the requested CZ and GPA. Future development would be subject to CEQA review tiered off this document, as well as applicable mitigation measures provided herein. The GPA would change the existing GP from Single Family Residential (2.1-5 dwelling units [du]/acre) (R-SF) to Multiple Family Medium/High Residential (24.1-39 du/acre) (R-MFMH) and would up zone the existing zoning from Single Family (2.1-5 du/acre) (R-1) to Route 66 Gateway. The CZ and GPA would allow these parcels to be developed in the future with higher density and intensity; refer to Figure 3, Regional Location Map and Figure 4, Project Vicinity.

Any future projects proposed on these parcels would require a site-specific environmental review and appropriate technical studies at the time a specific development project is proposed on these parcels.

Description of the Project Site:

The Project site includes a total of four residential dwelling units among the five parcels. As noted above, development associated with the proposed 24-unit apartment complex and driveway would occur on parcels 0230-041-60, and -52. The Project site is covered by

[1] Landscape Dynamics. Tree Inventory report. October 13, 2022.

gravel, dirt, and landscape trees. There are three trees and three tree stumps [2] on the subject parcels that are proposed for removal. The Proposed Project would provide 14 replacement trees on the subject parcels. Immediately west of the subject parcel is an open yard with parked vehicles. Block walls, wood picket fences, and chain-link fences surround the existing residences. No changes are proposed to these features as development will only occur on APNs 0230-041-60 and 0230-041-52. There are utility lines along the southern and western boundary of the property.

9. Surrounding Land Uses and Setting: The Project Site is located in a developed area of Fontana with existing residential and commercial uses. Adjacent uses and land use designations are shown in the table below.

	Existing Use	Zoning	Land Use Designations
PROJECT SITE	Single-family residences	Single Family (R-1)	Single Family Residential (R-SF)
NORTH	Retail; Fire station	Form-Based District: Route 66 Gateway; Public Facility (P-PF)	Walkable Mixed Use Corridor & Downtown (0.2-2 FAR, 3-39 du/acre (WMXU-1); Public Facility (P-PF)
EAST	School	Public Facility (P-PF)	Public Facility (P-PF)
SOUTH	Apartment complex	Single Family (R-1)	Single Family Residential (R-SF)
WEST	Single-family residences	Form-Based District: Route 66 Gateway	Walkable Mixed Use Corridor & Downtown (0.2-2 FAR, 3-39 du/acre (WMXU-1)

[2] Landscape Dynamics. Tree Inventory report. October 13, 2022.



PROPOSED GENERAL PLAN AMENDMENT & CHANGE OF ZONE

Proposed 3-Story 24-Unit Apartment Building

City of Fontana, California

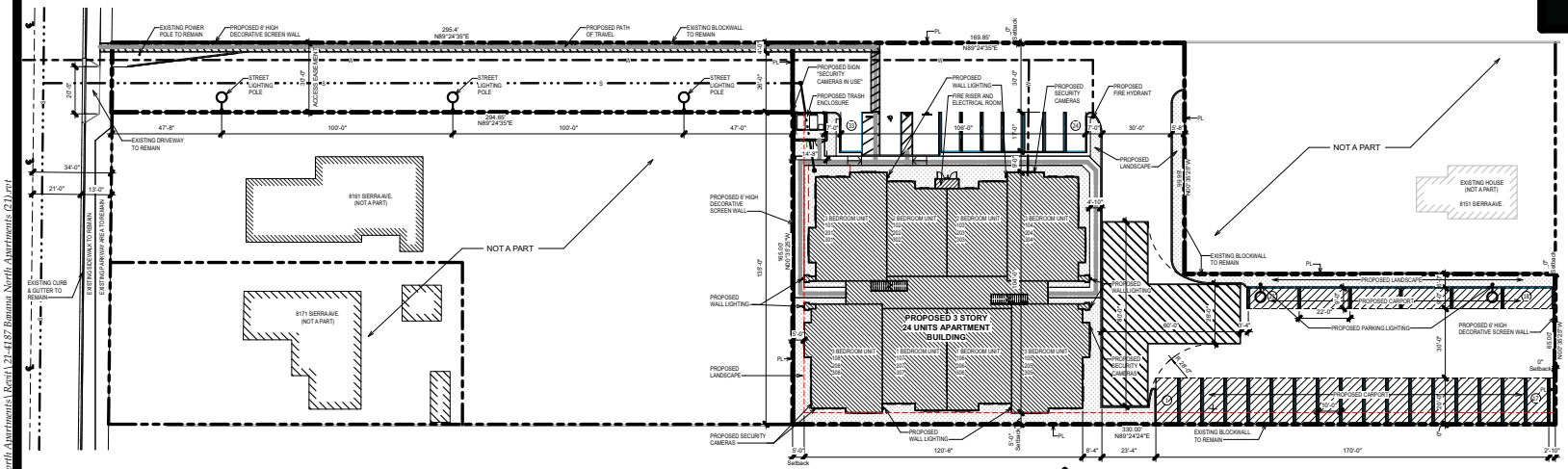
FIGURE 1

Proposed 3 Story 24-Unit Apartment Building for:

SA Golden Investment Inc.

8155 Banana Avenue, Fontana, CA 92335

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688



Site Plan
1" = 20'-0"

OWNER: SA GOLDEN INVESTMENT INC. (909) 519-3346 SABER AWAD ewed@sbcglobal.net

PROJECT ADDRESS: 8155 BANANA AVE. FONTANA, CA 92335

ARCHITECT: ANDRESEN ARCHITECTURE INC. 17087 ORANGE WAY FONTANA, CA 92335

CONTACT: DOUG ANDRESEN (909) 355-6688 doug.andresen@aaifirm.com

APN:	0230-041-60
ACREAGE:	0.87
EXISTING ZONING:	R-1
PROPOSED ZONING:	ROUTE 66 GATEWAY DISTRICT
OCCUPANCY:	GROUP R2
CONSTRUCTION:	TYPE V-B
BUILDING HEIGHT:	38'-0" (70 MAX)
NUMBER OF STORIES:	3-STORIES (5 MAX)
FIRE SPRINKLERS:	REQUIRED
EASEMENTS:	EXISTING ACCESS EASEMENT

PROJECT DESCRIPTION: *PROPOSED 1-STORY 24-UNITS APARTMENT BUILDING. WITH SUPPORTING TENANT COVERED PARKING AND OPEN PARKING, PERIMETER SCREEN WALLS, TRASH ENCLOSURE, SITE LIGHTING, SECURITY CAMERAS AND SITE LANDSCAPING.*

BUILDING TYPE:	COURT
FRONTAGE TYPE:	DOORYARD
GROSS LOT SIZE:	38,160 SF (0.87 AC)
PROPOSED CARPORTS (SOLAR READY):	3,799 SQ. FT.
PROPOSED APARTMENT BUILDING:	10,876 SQ. FT.
TOTAL PROPOSED FOOTPRINT	15,863 SQ. FT.
TOTAL LOT COVERAGE:	**14,662 SF (38.4%)**
NET LOT SIZE:	23,498 SF (100%)
HARDSCAPE AREA:	19,704 SF (83.8 %)
LANDSCAPE AREA:	3,792 SF (16.2 %)
MAXIMUM DENSITY:	39 UNITS/ ACRE
MAXIMUM HEIGHT:	70'

REQUIRED PARKING (FORM-BASED CODE - ROUTE 66 GATEWAY DISTRICT):

1 SPACES / 1 BED (6 UNITS X 1)	6 SPACES
1.5 SPACES REQ / 2+ BED (18 UNITS X 1.5)	27 SPACES
TOTAL REQUIRED PARKING:	33 SPACES

PROPOSED PARKING (FORM-BASED CODE - ROUTE 66 GATEWAY DISTRICT):

OPEN REGULAR 9' x 19'	9 SPACES
OPEN PARALLEL 8' x 22'	1 SPACES
CARPORT PARALLEL 8' x 22'	6 SPACES
ONE CARPORT 10' x 20'	17 SPACES
TOTAL PROPOSED PARKING:	33 SPACES

REQUIRED PRIVATE OPEN SPACE: 64 SF/ UNIT (IF MIN. DIM.)
TOTAL REQUIRED PRIVATE OPEN SPACE: 1,536 SF

PROVIDED PRIVATE OPEN SPACE: VARIES (SEE SITE PLAN)
TOTAL PROPOSED PRIVATE OPEN SPACE: 2,544 SF

Area Schedule - 1-Bed Apartment	
Name	Area
Living	
1-Bed Apt.	844 SF
Non-Living	
Private Open Space	105 SF

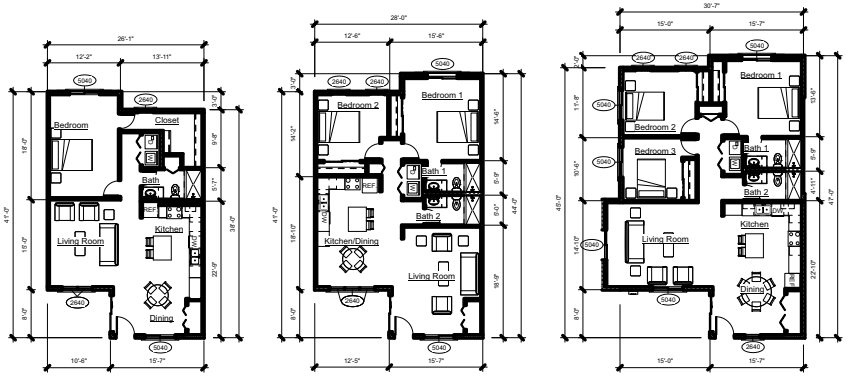
Area Schedule - 2-Bed Apartment	
Name	Area
Living	
2-Bed Apt.	1,090 SF
Non-Living	
Private Open Space	100 SF

Area Schedule - 3-Bed Apartment	
Name	Area
Living	
3-Bed Apt.	1,333 SF
Non-Living	
Private Open Space	120 SF

Area Schedule - 3 Stories Building	
Name	Area
First Floor	
1-Bed Apt.	1,891 SF
2-Bed Apt.	2,179 SF
3-Bed Apt.	5,333 SF
Living	9,403 SF
Hallway	1,049 SF
Private Open Space	890 SF
Non-Living	1,939 SF

Area Schedule - 3 Stories Building	
Name	Area
Second Floor	
1-Bed Apt.	1,814 SF
2-Bed Apt.	2,097 SF
3-Bed Apt.	5,153 SF
Living	9,085 SF
Balcony	335 SF
Hallway	816 SF
Private Open Space	890 SF

Area Schedule - 3 Stories Building	
Name	Area
Non-Living	2,042 SF
Third Floor	
1-Bed Apt.	1,814 SF
2-Bed Apt.	2,097 SF
3-Bed Apt.	5,153 SF
Living	9,084 SF
Balcony	335 SF
Hallway	816 SF
Private Open Space	879 SF
Non-Living	2,031 SF



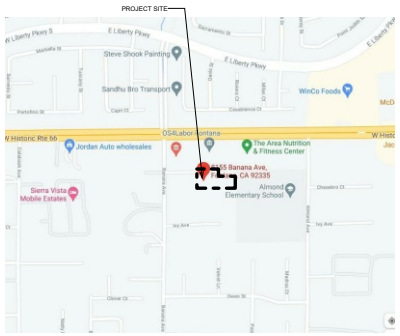
1 Bedroom Unit Typ.
1/8" = 1'-0"

2 Bedroom Unit Typ.
1/8" = 1'-0"

3 Bedroom Unit Typ.
1/8" = 1'-0"

SECURITY FEATURES:

A. ON-SITE MANAGER
B. PARKING LOT LIGHTING
C. 24-HOURS VIDEO SURVEILLANCE



Vicinity Map

Sequence of Drawings - DR	
Number	*Description*
PL1	Site Plan
PL2	Floor Plans
PL3	Floor Plans
PL4	Elevations
CG1	Conceptual Grading Plan
CL1	Conceptual Landscape Plan

Proposed 3 Story 24-Unit Apartment Building for:
SA Golden Investment Inc.
8155 Banana Avenue, Fontana, CA 92335

3 Mar. 2022	22 Dec. 2021 Rev.
21-4187	

ANDRESEN ARCHITECTURE INC. C-14584 12-31-23 RENEWAL STATE OF CALIFORNIA

Site Plan — PL1

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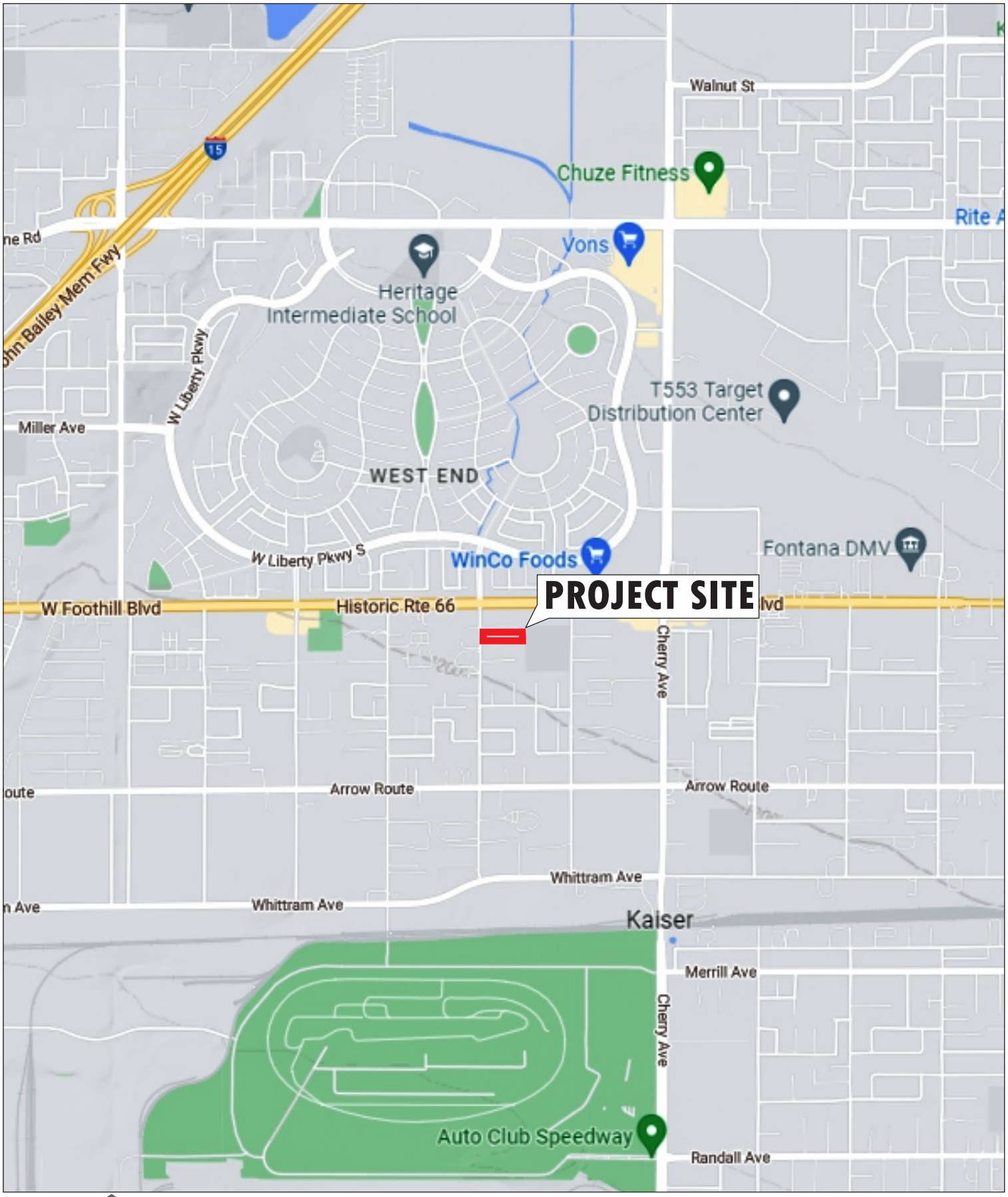
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SITE PLAN

Proposed 3-Story 24-Unit Apartment Building
City of Fontana, California

LILBURN CORPORATION

FIGURE 2



Source: Lilburn Corp., August, 2022.

LILBURN CORPORATION

REGIONAL LOCATION

Proposed 3-Story 24-Unit Apartment Building

City of Fontana, California

FIGURE 3



PROJECT VICINITY

Proposed 3-Story 24-Unit Apartment Building

City of Fontana, California

FIGURE 4

10. Other public agencies whose approval is required:
None required.

11. Related Technical Reports (incorporated by reference): The technical studies/reports referenced herein and listed in the References section at the end of this Initial Study have been used to analyze the Proposed Project. All reports are available for review at City of Fontana Development Services – Planning Department.

12. Evaluation Format: This Initial Study is prepared in compliance with the California Environmental Quality Act (CEQA) Guidelines. This format of the Initial Study is presented as follows: The Proposed Project is evaluated based upon its effect on twenty-one (21) major categories of environmental factors. Each factor is reviewed by responding to a series of questions regarding the impact of the project on each element of the overall factor. The Initial Study Checklist provides a formatted analysis that provides a determination of the effect of the Project on the factor and its elements. The effect of the Project is categorized into one of the following four categories of possible determinations:

Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant	No Impact

Substantiation is then provided to justify each determination. One of the four following conclusions is then provided as a summary of the analysis for each of the major environmental factors.

1. Therefore, no impacts are identified or anticipated, and no mitigation measures are required.
2. Therefore, no significant adverse impacts are identified or anticipated, and no mitigation measures are required.
3. Possible significant adverse impacts have been identified or anticipated and the following mitigation measures are required as a condition of project approval to reduce these impacts to a level below significant. The required mitigation measures are: (List mitigation measures).
4. Significant adverse impacts have been identified or anticipated. An Environmental Impact Report (EIR) is required to evaluate these impacts, which are: (List the impacts requiring analysis within the EIR).

At the end of the analysis the required mitigation measures are restated and categorized as being either self- monitoring or as requiring a Mitigation Monitoring and Reporting Program.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

ENVIRONMENTAL DETERMINATION

On the basis of this Initial Study, the City of Fontana Environmental Review Committee finds:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the Proposed Project would have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the Proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect: 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the Proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Proposed Project, nothing further is required.

Salvador Quintanilla 9/20/2023

Signature Date

Salvador Quintanilla
Printed Name

ENVIRONMENTAL CHECKLIST FORM

I. AESTHETICS – Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) 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 point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

a) **Less Than Significant.** The San Gabriel Mountains are the City's most prominent visual feature, rising dramatically above the community with scenic views toward the mountains.[3] The base of the San Gabriel Mountains is located approximately 4.3 miles north of the Project Site. The property is currently occupied by a single-family residence. The Proposed Project would replace the existing residence with a 38'-high apartment complex (see Figure 5, Elevations). The Project Site is surrounded by single-family residences to the west; a school to the east; an apartment complex to the south; and a fire station and commercial uses to the north. Except for the apartment complex to the south, none of the views of the San Gabriel Mountains from these surrounding properties would be hindered by the Proposed Project due to the height of the proposed apartment structure compared to the distance from and the height of the mountains. Although the Proposed Project may hinder views of the mountains from the apartment complex to the south, this interference is anticipated to be insignificant given that the proposed apartment complex would have a setback of 5 feet from the southern property line, and there is an existing 6-foot block wall separating the two properties. Therefore, less than significant impacts are identified or anticipated, and no mitigation measures are required.

[3] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688



North Elevation
1/8" = 1'-0"



East Elevation
1/8" = 1'-0"



South Elevation
1/8" = 1'-0"



West Elevation
1/8" = 1'-0"

ELEVATIONS

Proposed 3-Story 24-Unit Apartment Building
City of Fontana, California

FIGURE 5

b) **No Impact**. There are no state scenic highways in the vicinity of the Project Site.[4] The nearest state scenic highway is SR-38, located approximately 17 miles east of the Project Site. Therefore, implementation of the Proposed Project would not substantially degrade scenic resources within a state scenic highway. Additionally, the existing on-site structure was not determined to be of historical significance. No impacts are identified or anticipated, and no mitigation measures are required.

c) **Less than Significant.** The Project Site is currently occupied by single-family residences, and surrounded by single-family residences to the west; retail stores and a fire station to the north; a school to the east; and apartment complex to the south. The Project Site consists of dirt, landscape trees, gravel, and weeds. Block walls, wood picket fences, and chain-link fences surround the residences. Immediately west of the subject parcel is an open yard with parked vehicles. The Proposed Project would redevelop the subject parcel with a 3-story, 24-unit apartment complex, providing landscape and hardscape (see Figure 6, Landscape Plan). In addition, the Proposed Project would include a new, building; see Figure 5 – Elevations). Although the Proposed Project would change the existing visual character of the site, the change would not degrade, but rather upgrade the site's visual character through the incorporation of the apartment complex, along with associated amenities such as perimeter landscaping, new asphalt paving on the Proposed Project driveway, and perimeter walls. The Project Site is currently zoned Single Family; the Proposed Project includes a Change of Zone to Route 66 Gateway. Municipal Code (MC) section 30-476 requires that "All new development shall consider and be sensitive to natural features and existing development surrounding the development site. Regarding natural features, significant view sheds shall be preserved and not obscured by buildings or landscaping. Regarding the built environment, new development shall be consistent in scale and massing of buildings on adjacent properties; scale extremes shall be avoided." As discussed in this section, the Proposed Project would complement the surrounding uses and would not block significant view sheds. Therefore, less than significant impacts would occur, and no mitigation measures are required.

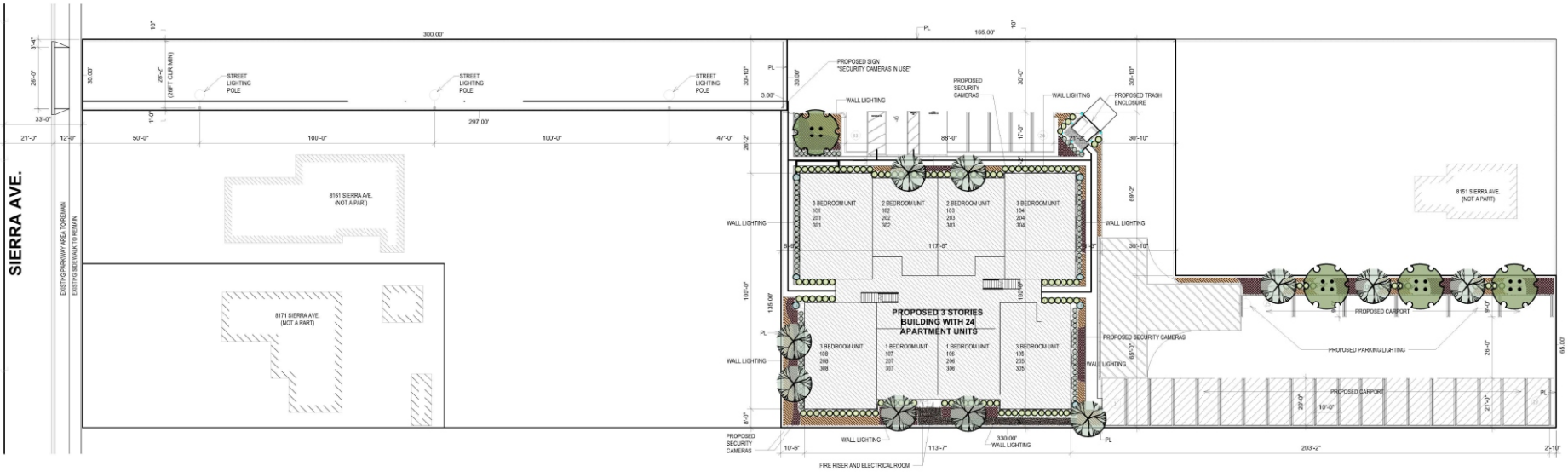
d) **Less than Significant with Mitigation Incorporated.** The Project Site is currently occupied by single-family residences that generate minimal light. As the Proposed Project would provide 23 more units per acre compared to existing conditions on-site, more light from outdoor parking security lighting, and exterior building lighting would be generated. Additionally, three street lighting poles with RSX1 LED lighting delivering 7,000 to 17,000 lumens are proposed along the northerly access easement. Two RSXI LED lights are proposed along the rear parking area. Eight wall packs with WDGE2 LED lighting ranging from 1,200 to 25,000 lumens are proposed on the exterior of the building to provide lighting to perimeter landscaping. However, given that the Project Site is surrounded on all sides by urban development including commercial uses, residential development, a fire station, and a school, the increase in light intensity from the Proposed Project would not be substantial as the current uses in the immediately surrounding area contain outdoor lighting. Furthermore, Banana Avenue consists of street lights, and the intersection of Banana Avenue and Foothill Boulevard includes traffic lights. The minimum standard of

[4] CalTrans. State Scenic Highway Map. https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed September 21, 2022.

one (1) foot candle is required for all entrances, exits, pedestrian paths, parking lots and activities areas, per Fontana MC Section30-697. Consistent with MC Section 30-697, the Proposed Project would direct and shield all lights prevent light or glare from spilling over onto and adversely affecting adjacent properties. To ensure no significant impacts from project lighting occur, Mitigation Measure AES-1 shall be implemented. With compliance with MC Section 30-697 and implementation of Mitigation Measure AES-1, less than significant impacts are anticipated.

Mitigation Measure

AES-1: The Project Applicant shall submit a Photometric Plan that will be reviewed by the City prior to issuance of grading permits. The Photometric Plan shall show that the minimum standard of one foot candle is provided for all entrances, exits, pedestrian paths, parking lots, and activity areas. In addition, the Photometric Plan shall demonstrate that: all areas are illuminated during hours of darkness; all luminaries utilized are vandal-resistant fixtures; the type of lighting is fluorescent, white L.E.D.s or metal halide are used; all lights are directed and shielded to prevent light or glare from spilling over onto and adversely affecting adjacent properties. The Photometric Plan shall be approved by the City to ensure that the minimum lighting standard is met per Police Department security code requirements, and that lighting does not adversely affect adjacent properties or ambient lighting in the Project vicinity.



PRELIMINARY WATER USE CALCULATIONS

Reference Eto 55.6 **Conservation Factor** 0.55

Maximum Allowable Water Allocation Equation: (residential)

MAWA = (ETo) (0.62) [(ETAF x LA) + ((1-ETAF)xSLA)]

Eto	0.62	ETAF	LA	1-ETAF	SLA	87,916 MAWA
55.6	0.62	0.55	4,637	0.45	0	

Estimated Total Water Use (quation:

ETWU = Eto x 0.62 x ETAF x lA **78,937 ETWU**

HYDROZONE MATRIX

ZONE	HYDROZONE BASIS	S.F.	%TOTAL	PLANT TYPE	PLANT FACTOR	IRRIGATION EFFICIENCY	Eto	0.62	ETAF	LA	ETWU	IRRIGATION METHOD
	SHRUBS/TREES	4,637	100%	LOW/MODERATE	0.40	0.81	55.60	0.62	0.49	4637	78,937	Dripline
										ETWU	78,537	
										Total Landscape	4,637	

Note: Landscape to be installed with low-volume drip irrigation and automatic, weather sensing irrigation controller.

NOTE: PLANT QUALITY REQUIREMENTS

ALL PLANT MATERIALS SHALL BE FULL VIGOROUS & HEALTHY NURSERY STOCK - INCLUDING THE TOP OF PLANT AND THE ROOT SYSTEM. ALL PLANT MATERIALS SHALL MEET THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2004) THE LANDSCAPE ARCHITECT MUST BE CONTACTED REGARDING ALL PLANT MATERIALS AS THEY ARRIVE ON-SITE. PRIOR TO THEIR INSTALLATION. THE LANDSCAPE ARCHITECT SHALL APPROVE PLANT MATERIALS FOR INSTALLATION ON-SITE OR SHALL BE SENT REPRESENTATIVE PHOTOGRAPHS OF SAME. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT UNACCEPTABLE PLANT MATERIALS.

UNACCEPTABLE CONDITIONS FOR PLANTS IN GENERAL:
PLANT MATERIALS THAT ARE THE INCORRECT SPECIES. PLANTS MATERIALS WITH APPARENT FUNGAL DISEASE (MILDEW, RUST, BLACK-SPOT, ETC.). PLANTS THAT ARE DEFOLIATED DUE TO STRESS OR DISEASE. FOLIAGE THAT S CHLOROTIC, WIND OR FROST BURNED, OR IN ANY OTHER WAY DAMAGED.

UNACCEPTABLE CONDITIONS FOR ROOT SYSTEMS:
PLANTS WITH EXPOSED ROOTS, GIRDLED ROOTS, OVERGROWN OR UNDERSIZED ROOT SYSTEMS WILL BE CONSIDERED UNACCEPTABLE.

TREE SELECTION:
TREES ARE REQUIRED TO STAND ON THEIR OWN WITHOUT THE SUPPORT OF THE NURSERY STAKE. TREES MUST ALSO BE FREE OF DISEASE, INFESTATIONS, SIGNS OF HEAVY PRUNING WITHIN THE CANOPY, BROKEN PRIMARY LIMBS OR LEADERS, AND DAMAGE. NEW TREES PLANTED WITHIN THE PROJECT AREA ARE TO BE INSTALLED PER THE DETAIL BELOW. THE TREE PIT IS TO BE EXCAVATED TO MEASURE 3 X ROOT BALL AT THE FINISH GRADE SURFACE AND BE TAPERED TO ROOT BALL WIDTH AT PIT BOTTOM. DO NOT OVER-EXCAVATE THE TREE PIT DEPTH. AFTER TREE PLACEMENT THE TREE PIT IS TO BE BACKFILLED WITH CLEAN NATIVE SOIL ONLY. TREES ARE TO BE TRIPLE STAKE AS SHOWN ON DETAILS.

ROOT BARRIER:
USE LINEAL ROOT BARRIER WHEN TREE IS WITHIN 5' MIN. DISTANCE ADJACENT TO HARDSCAPE AREAS. ROOT BARRIERS SHALL BE INSTALLED IN SHEETS PARALLEL WITH HARDSCAPE W/ TOP EDGE PLACED 1" BELOW GRADE. ROOT BARRIER SHALL EXTEND THE EXPECTED LENGTH O' TREE CANOPY AS SHOWN PER PLAN. BARRIERS SHALL BE PLACED AT A SLIGHT ANGLE (75°) WITH BASE OF BARRIER DIRECTED UNDER HARDSCAPE & AWAY FROM TREE.

Planting Legend

	Botanica / Common Name	Kc	Height Width
	Trees:		
	Magnolia grandiflora 'St. Mary' St. Mary Southern Magnolia	0.4 Evergreen	20-25' 15-20'
	Lagertroemia indica 'Natchez' Natchez Crape Myrtle	0.4 Deciduous	20' 20'
	Shrubs		
A	Buxus 'microphylla Japanese Boxwood	0.4	3-4' 2-4'
6	Carissa macrocarpa 'Tomlinson' Tomlinson Natal Plum	0.4	2-3' 3'
D	Euonymus japonicus 'Variegated' Variegated Boxleaf Euonymus	0.4	1-2' 1'
13	Podocarpus elongatus 'Icee Blue' Icee Blue Yellowwood	0.4	15-25'
	Groundcovers		
	Lantana camara 'Robpatrai' Patriot Rainbow Compact Lantana	0.3	12" 15"
	Osteospermum African Daisy	0.3	1-2' 1-2'
	Decomposed Granite Utility access		

GROUND WOOD MULCH

ALL LANDSCAPED SWALE AREAS ARE TO RECEIVE A 3" LAYER OF FOREST FLOOR MULCH OR APPROVED EQUAL.

LANDSCAPE PLAN

Proposed 3-Story 24-Unit Apartment Building

City of Fontana, California

FIGURE 6

II. AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) 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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) 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))?	☐	☐	☐	☒
d) Result in loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒

a) **No Impact**. The Project Site is identified as Urban and Built-Up Land.[5] Urban and Built-Up Land is occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. Examples of this category are residential, industrial commercial, institutional facilities, cemeteries, airports, golf courses, sanitary

[5] California Department of Conservation. California Important Farmland Finder. https://maps.conservation.ca.gov/dlrp/ciff/ Accessed August 2, 2022.

landfills, sewage treatment, and water control structures. Moreover, the Project Site is currently developed with single-family residences. Block walls, wood picket fences, and chain-link fences surround the residences. The Project Site is currently covered by gravel, dirt, and landscape trees. No prime farmland, unique farmland, or farmland of statewide importance occur on the Project Site. The Proposed Project would not convert farmland to a non-agricultural use. Therefore, no impacts would occur, and no mitigation measures are required.

b) **No Impact.** The Project Site is currently zoned Single Family (R-1) and identified as Urban and Built-Up land by the California Department of Conservation (DOC, and not zoned as an agricultural zone. In addition, the Project Site is not enrolled in a Williamson Act contract.[6] Implementation of the Proposed Project would not interfere with such a contract. Therefore, no impacts would occur, and no mitigation measures are required.

c) **No Impact.** Refer to Responses II(a) and II(b), above. The Proposed Project would not conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g), timberland. Therefore, no impacts would occur, and no mitigation measures are required.

d) **No impact.** The Project Site is currently developed with single-family residences. It does not support, nor is it near any forest land. Therefore, implementation of the Proposed Project would not convert forest land to non-forest use. No impacts would occur, and no mitigation measures are required.

e) **No Impact.** The Project Site does not support agricultural uses, or forest land uses that would be lost to non-agricultural or non-forestland as a result of the Proposed Project implementation. Therefore, no impacts would occur, and no mitigation measures are required.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project	☐	☐	☒	☐

[6] San Bernardino County. Countywide Plan Maps. NR-5 "Agricultural Resources." https://www.arcgis.com/apps/webappviewer/index.html?id=fcb9bc427d2a4c5a981f97547a0e3688. Accessed August 2, 2022.

region is non-attainment under an applicable federal or state ambient air quality standard?

c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d)	Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

a) **Less than Significant.** The Project Site is located in the South Coast Air Basin (SCAB). The South Coast Air Quality Management District (SCAQMD) has jurisdiction over air quality issues and regulations within the SCAB. The Air Quality Management Plan (AQMP) for the SCAB establishes a program of rules and regulations administered by the SCAQMD to obtain attainment of the state and federal ambient air quality standards. The SCAB is classified as an "extreme" nonattainment area for the 2015 Ozone National Ambient Air Quality Standards (NAAQS). The most recent AQMP (AQMP 2022) was developed to address the requirements for meeting this standard and was adopted by the SCAQMD on December 2, 2022. The 2022 AQMP incorporates the latest scientific and technological information and planning assumptions, including transportation control measures developed by the Southern California Association of Governments (SCAG) from the 2020 Regional Transportation Plan/Sustainable Communities Strategy, and updated emission inventory methodologies for various source categories. Consistency with the AQMP 2022 for general development projects is determined by demonstrating compliance with local land use plans and/or employment projections.

A project is inconsistent with the AQMP if: (1) it does not conform with the local general plan; or (2) it uses a disproportionately large portion of the forecast growth increment. The AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The Project Site has a General Plan designation of Single Family Residential (R-SF) and zoning of Single Family (R-1). The Proposed Project includes a General Plan Amendment (GPA) to Multiple Family Medium/High Residential and a Change of Zone (CZ) to Route 66 Gateway district.

An evaluation of potential air quality impacts related to the existing use single-family residence on the subject parcel and the proposed 3-story, 24-unit apartment building was prepared. The California Emissions Estimator Model (CalEEMod) recommended by the SCAQMD for all general development projects within the South Coast Air Basin. As approximately 1.5 acres (APNs 0230-041-33, 0230-041-61, and 0230-041-44) are developed with permitted residential uses, the evaluation focuses on the development of the 3-story, 24-unit apartment complex on the 0.87-acre subject parcel. Operational emissions for the Proposed Project and the existing use (single-famly residence) were estimated using CalEEMod version 2022.1. Table 1 and Table 2 illustrate operational emissions associated with the existing use and the Proposed Project with a GPA and CZ. As shown in Table 1 operational impacts resulting from either the existing use or the Proposed Project would not exceed SCAQMD thresholds. Therefore, the Proposed Project

will not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP. As shown in Table 2, Greenhouse Gas Emissions (GHG) for either scenario would not exceed the City's threshold of 3,000 MTCO2e per year (Refer to Section VIII: GHG for additional information). Refer to Appendix A for Proposed Project emissions output and Appendix B for existing single-family residence output.

Table 1
Operational Emissions
(Pounds per Day)

Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Existing Use	0.3	0.1	0.9	0.0	0.1	0.1
Proposed Project	**7.7**	**1.0**	**17.8**	**0.0**	**2.0**	**1.8**
SCAQMD Threshold	55	55	550	150	150	55
Significance	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod.2022.1 Summer Emissions

Table 2
Greenhouse Gas Operational Emissions
(Metric Tons per Year)

Source/Phase	CO_2	CH_4	N_20	R[1]
Existing Use	14.9	0.0	0.0	0.0
$MTCO2e^2$	**15.3**			
Proposed Project	194.0	0.2	0.0	0.3
$MTCO2e^2$	**202**			

Source: CalEEMod.2022.1 Annual Emissions
1) Common refrigerant GHGs used in air conditioning and refrigeration equipment.
2) Excludes construction emissions amortization.

As shown in Table 1, the difference between emissions from the existing use and emissions from the Proposed Project would be minimal.

"Southern California Association of Governments (SCAG) projects that the population in Fontana will grow from 213,000 to 280,000 between 2016 and 2040." Therefore, an increase of 98 residents, based on an average household of 4.07 persons per household[7] would not represent a substantial increase in population and can be considered to be within the City's projected growth estimates. As such, the Proposed Project is considered consistent with SCAG's latest growth forecast. The Proposed Project would not result in a conflict or obstruction to the implementation of the AQMP, as such, a less than singificant impact would occur, and no mitigation measures are required.

[7] City of Fontana. Fontana Forward – General Plan Update 2015-2035. Approved and Adopted by City Council November 13, 2018.

b) **Less than Significant.** The Proposed Project includes the development of a three-story (one, two, and three-bedroom units ranging from 944 SF to 1,333 SF), 24-unit apartment complex on the subject parcel. The existing driveway would be paved with asphalt and approximately 30-feet-wide. No physical changes to APNs 0230-041-33, 0230-041-61, and 0230-041-44 are proposed. The Proposed Project's construction and operational emissions were estimated using CalEEMod version 2022.1. The criteria pollutants estimated for include: reactive organic gases (ROG), nitrogen oxides (NOx), carbon monoxide (CO), sulfur dioxide (SO_2), and fugitive particulates (PM_{10} and $PM_{2.5}$). Two of the analyzed pollutants, ROG and NO_x, are ozone precursors. Both summer and winter season emission levels were estimated.

Construction Emissions

Construction emissions are considered short-term, temporary emissions and were modeled with the following construction parameters: demolition, site preparation, site grading (fine and mass grading), building construction, paving, and architectural coating. Project construction emissions were modeled for the year 2023. However, project construction is now planned to be completed in 2024. The CalEEMod 2023 default emissions are anticipated to be conservative as newer equipment would emit fewer emissions in future years. The CalEEMod is routinely revised to account for current year construction fleets as older fleets are mandated to be discontinued. The modeled emissions generated by construction of the Proposed Project are shown in Table 3 and Table 4, which represent summer and winter construction emissions, respectively

Table 3
Maximum Summer Construction Emissions
(Pounds per Day)

Source/Phase	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Construction During 2023	41.7	6.1	8.7	0.0	0.5	0.3
SCAQMD Threshold	75	100	550	150	150	55
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod.2022.1 Summer Emissions.

Table 4
Maximum Winter Construction Emissions
(Pounds per Day)

Source/Phase	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Construction During 2023	1.3	13.2	12.2	0.0	2.9	1.6
SCAQMD Threshold	75	100	550	150	150	55
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod.2022.1 Winter Emissions.

As shown in Table 3 and Table 4, construction emissions during either summer or winter seasonal conditions would not exceed the SCAQMD thresholds. Although the Proposed Project does not exceed SCAQMD thresholds for construction emissions, the Project Proponent would be required to comply with all applicable SCAQMD rules and regulations

as the SCAB is in non-attainment status for ozone and suspended particulates (PM_{10} and $PM_{2.5}$). Modeling of the estimated emissions incorporates Rule 403 by default as compliance with the rule is required during construction.

Compliance with SCAQMD Rules 402 and 403

Although the Proposed Project does not exceed SCAQMD thresholds for construction emissions, the Project Proponent would be required to comply with all applicable SCAQMD rules and regulations as the SCAB is in non-attainment status for ozone and suspended particulates (PM_{10} and $PM_{2.5}$).

The Project Proponent would be required to comply with Rules 402 nuisance, and 403 fugitive dust, which require the implementation of Best Available Control Measures (BACMs) for each fugitive dust source, and the AQMP, which identifies Best Available Control Technologies (BACTs) for area sources and point sources. The BACMs and BACTs would include, but not be limited to the following:

1. The Project Proponent shall ensure that any portion of the site to be graded shall be pre-watered prior to the onset of grading activities.
   (a) The Project Proponent shall ensure that watering of the site or other soil stabilization method shall be employed on an on-going basis after the initiation of any grading activity on the site. Portions of the site that are actively being graded shall be watered regularly (2x daily) to ensure that a crust is formed on the ground surface and shall be watered at the end of each workday.
   (b) The Project Proponent shall ensure that all disturbed areas are treated to prevent erosion until the site is constructed upon.
   (c) The Project Proponent shall ensure that landscaped areas are installed as soon as possible to reduce the potential for wind erosion.
   (d) The Project Proponent shall ensure that all grading activities are suspended during first and second stage ozone episodes or when winds exceed 25 miles per hour.

During construction, exhaust emissions from construction vehicles and equipment and fugitive dust generated by equipment traveling over exposed surfaces, would increase NO_X and PM_{10} levels in the area. Although the Proposed Project does not exceed SCAQMD thresholds during construction, the Applicant/Contractor would be required to implement the following BMPs as required by SCAQMD:

2. To reduce emissions, all equipment used in grading and construction must be tuned and maintained to the manufacturer's specification to maximize efficient burning of vehicle fuel. Site development will be limited to one acre disturbed per day.
3. The contractor shall utilize (as much as possible) pre-coated building materials and coating transfer or spray equipment with high transfer efficiency, such as high volume, low pressure (HVLP) spray method, or manual coatings application such as paint brush, hand roller, trowel, dauber, rag, or sponge.

4. The contractor shall utilize water-based or low VOC coating per SCAQMD Rule 1113. The following measures shall also be implemented:
    - Use Super-Compliant VOC paints whenever possible.
    - If feasible, avoid painting during peak smog season: July, August, and September.
    - Recycle leftover paint. Take any left-over paint to a household hazardous waste center; do not mix leftover water-based and oil-based paints.
    - Keep lids closed on all paint containers when not in use to prevent VOC emissions and excessive odors.
    - For water-based paints, clean up with water only. Whenever possible, do not rinse the clean-up water down the drain or pour it directly into the ground or the storm drain. Set aside the can of clean-up water and take it to a hazardous waste center (www.cleanup.org).
    - Recycle the empty paint can.
    - Look for non-solvent containing stripping products.
    - Use Compliant Low-VOC cleaning solvents to clean paint application equipment.
    - Keep all paint and solvent laden rags in sealed containers to prevent VOC emissions.
5. The Project Proponent shall ensure that existing power sources are utilized where feasible via temporary power poles to avoid on-site diesel power generation.6. The operator shall maintain and effectively utilize and schedule on-site equipment in order to minimize exhaust emissions from truck idling.
6. The Project Proponent shall ensure that construction personnel are informed of ride sharing and transit opportunities.
7. All buildings on the Project Site shall conform to energy use guidelines in Title 24 of the California Administrative Code as updated to reduce energy consumption and reduce GHG emissions.
8. The operator shall maintain and effectively utilize and schedule on site equipment and delivery trucks in order to minimize exhaust emissions from truck idling.

Operational Emissions

Operational emissions are categorized as energy (generation and distribution of energy to the end use), area (operational use of the project), mobile (vehicle trips), water (generation and distribution of water to the land use), and waste (collecting and hauling waste to the landfill). The Proposed Project will not include the manufacture or production of any products on-site; therefore, no industrial type emissions will be generated. The operational mobile emissions were calculated using CalEEMod defaults for vehicle trips. It was estimated that the Proposed Project would generate approximately 131 daily trips on weekdays, 118 daily trips on Saturdays, and 98.2 daily trips on Sundays. The Proposed

Project's long-term operational emissions have been calculated and are summarized below in Table 5 and Table 6.

Table 5
Summer Operational Emissions Summary
(Pounds per Day)

Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	0.6	0.5	4.2	0.0	0.3	0.1
Area	7.2	0.5	13.6	0.0	1.7	1.7
Energy	0.0	0.1	0.0	0.0	0.0	0.0
Totals	**7.7**	**1.0**	**17.8**	**0.0**	**2.0**	**1.8**
SCAQMD Threshold	55	55	550	150	150	55
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod.2022.1 Summer Emissions.
Emissions represent the daily maximum emissions.

Table 6
Winter Operational Emissions Summary
(Pounds per Day)

Source	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Mobile	0.5	0.5	3.5	0.0	0.3	0.1
Area	7.0	0.5	12.2	0.0	1.7	1.7
Energy	0.0	0.1	0.0	0.0	0.0	0.0
Totals	**7.5**	**1.1**	**15.8**	**0.0**	**2.0**	**1.8**
SCAQMD Threshold	55	55	550	150	150	55
Significant	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod.2022.1 Winter Emissions.
Emissions represent the daily maximum emissions.

As shown, both summer and winter season operational emissions are below SCAQMD thresholds. The Proposed Project does not exceed applicable SCAQMD regional thresholds either during construction or operational activities. The Proposed Project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, a less than significant impact would occur, and no mitigation measures are required.

c) **Less than Significant.** For the purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be a residence, hospital, convalescent facility or anywhere that it is possible for an individual to remain for 24 hours. Additionally, schools, playgrounds, childcare centers, and athletic facilities can also be considered as sensitive receptors. The use of Local Significance Threshold (LSTs) methodology is voluntary, to be implemented at the discretion of local public agencies acting as a lead agency pursuant to CEQA. According to SCAQMD LST methodology, LSTs would apply if the Proposed Project includes stationary sources or attracts mobile sources (such as heavy-duty trucks) that may spend long periods queuing and idling at the site, such as industrial warehouse/transfer facilities. The Proposed Project is the development of a 3-story, 24-unit apartment complex

and does not include such uses. Therefore, no long-term localized significance threshold analysis of operational emissions is warranted.

The LSTs were developed to analyze the significance of potential air quality impacts of Proposed Projects to sensitive receptors (i.e. schools, single family residences, etc.) and provide screening tables for small projects (one, two, or five acres). Projects are evaluated based on geographic location and distance from the sensitive receptor (25, 50, 100, 200, or 500 meters from the site).

The subject parcel is approximately 0.87 acres and therefore the "one-acre" LSTs were utilized for the analysis and represents a worst-case scenario as the larger the site, the larger the screening threshold. The nearest sensitive receptor is the residential development located immediately northeast of the subject parcel; therefore, LSTs are based on a 25-meter distance.

As shown in Table 7, the Proposed Project's construction emissions are not anticipated to exceed the thresholds for LSTs at the nearest sensitive receptor which is the residential development. Although there are other sensitive receptors nearby, such as the school, only the closest is used for the analysis in accordance with SCAQMD recommendations. Therefore, the Proposed Project is not anticipated to expose sensitive receptors to substantial pollutant concentrations. A less than significant impact would occur, and no mitigation measures are required.

Table 7
Localized Significance Thresholds
(Pounds Per Day)

Source	NO_x	CO	PM_{10}		$PM_{2.5}$	
Construction Emissions (Max. from Table 3 and Table 4)	13.2	12.2	2.1		1.6	
LST	118	667	4		3	
Greater Than Threshold	**No**	**No**	**No**	**No**	**No**	**No**

Note: PM10 and PM2.5 emissions are separated into construction and operational thresholds in accordance with the SCAQMD Mass Rate LST Look-up Tables.
Source: CalEEMod.2022.1 Summer & Winter Emissions; SCAQMD Final Localized Significance Threshold Methodology; SCAQMD Mass Rate Look-up Tables for one-acre site in Source Receptor Area No. 34, distance of 25 meters.

d) **Less than Significant.** The Proposed Project is a multiple-family residential development and does not contain land uses typically associated with the emission of objectionable odors. Potential temporary odor sources associated with the Proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities. The Proposed Project would be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. SCAQMD Rule 402 regarding nuisances states: "A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have

a natural tendency to cause, injury or damage to business or property." During operations, project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City of Fontana's solid waste regulations. Therefore, less than significant adverse impacts are identified or are anticipated, and no mitigation measures are required.

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Have substantial adverse effects, 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?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☐	☒
c) 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?	☐	☐	☐	☒
d) 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?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan?	☐	☐	☐	☒

a) **Less than Significant.** Because the City of Fontana is generally highly urbanized, the majority of the City's biological resources occur at its outskirts, in areas free from large-

scale development. Within the City, these areas include the foothills of the San Gabriel Mountains to the north and the Jurupa Hills to the south.[8] According to the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS), 33 sensitive plant species have been recorded in the Cucamonga Peak, Devore, Fontana, and Guasti quadrangles.[9] Open spaces within the City support limited native plant communities, with most vegetation consisting of non-native grasslands interspersed with developed and highly disturbed areas.[10]

The Project Site is located in an urbanized area of the City. It is currently developed with single-family residences. Under existing conditions, the Project Site is currently covered by gravel, dirt, trees, and ruderal vegetation. Immediately west of the subject parcel is an open yard with parked vehicles. As summarized in the Tree Inventory report, dated October 13, 2022, (see Appendix C for report) prepared for the Proposed Project by Landscape Dynamics, the subject parcel includes three trees and three tree stumps. An additional supplemental biological survey was conducted on September 7, 2023 to evaluate the site for the presence of any candidate, sensitive or special status species or their habitat to occur on the Project Site. The survey findings are documented in a letter dated September 7, 2023 from Jennings Environmental and on-file with the City. Jennings concludes that based on the literature review and personal observations made in the immediate vicinity, no State and/or federally-listed threatened or endangered species are documented/or expected to occur within the Project site. Additionally, no plant species with the California Rare Plant Rank (CRPR) of 1 or 2 were observed on-site or documented to occur on-site in the relevant databases. No other sensitive species were observed within the project area or buffer area.

Block walls, wood picket fences, and chain-link fences surround the residences. The Project Site is surrounded by single-family residences to the west; a school to the east; an apartment complex to the south; and a fire station and commercial uses to the north. Therefore, the Proposed Project would not involve habitat modifications or activities that would have adverse effects on biological resources. Less than significant impacts would occur, and no mitigation measures are required.

b) **No Impact.** The CNDDB inventories the occurrences of both aquatic and terrestrial sensitive natural communities in California that are extremely high quality, very limited distribution, or threatened. The CNDDB identifies five sensitive habitats within the Cucamonga Peak, Devore, Fontana, and Guasti quadrangles: California Walnut Woodland, Coastal and Valley Freshwater Marsh, Riversidean Alluvial Fan Sage Scrub, Southern Riparian Forest, and Southern Sycamore Alder Riparian Woodland.[11] None of these habitats occur or are associated within the Project Site or its vicinity. The Project Site is

[8] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[9] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[10] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[11] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

currently developed with single-family residences. Under existing conditions, the Project Site is currently covered by gravel, trees, dirt, and ruderal vegetation.

U.S. Fish and Wildlife Service (USFWS)-designated Critical Habitat occurs for San Bernardino Kangaroo Rat (SBKR) and coastal California gnatcatcher in the foothills of the San Gabriel Mountains in the northern portion of the City, and coastal California gnatcatcher Critical Habitat in the Jurupa Hills in the southern portion of the City. Other Critical Habitat in the vicinity of the City's General Plan Planning Area includes yellow-legged frog (*Rana muscosa*) in Day Canyon Wash and its tributaries in the San Gabriel Mountains, located approximately 3 miles to the west-northwest of the City and for southwestern willow flycatcher (*Empidonax traillii extimus*) and Santa Ana sucker (*Catostomus santaanae*) along the Santa Ana River approximately two miles to the east southeast of the City.[12]

The Project Site is not located in or near these identified sensitive habitats. It is located in an urbanized area of the City. The Project site does not contain any riparian habitat or other sensitive natural community.[13][14] Therefore, no impacts would occur, and no mitigation measures are required.

c) **No Impact.** Refer to Response III(a), above, the Project Site is located in an urbanized area of the City and no riparian or any USFWS-identified wetlands occur onsite.[15] Therefore, implementation of the Proposed Project would cause no impacts, and no mitigation measures are required.

d) **Less than Significant.** Wildlife movement and the fragmentation of wildlife habitat are recognized as critical issues that must be considered in assessing impacts to wildlife. Habitat fragmentation is the division or breaking up of larger habitat areas into smaller areas that may or may not be capable of independently sustaining wildlife and plant populations. Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas.

The Project Site is currently developed with single-family residences. Block walls, wood picket fences, and chain-link fences surround the residences. The Project Site is surrounded by single-family residences to the west; Almond Elementary school to the east; an apartment complex to the south; and a fire station and commercial uses to the north. The Project Site occurs within fully disturbed parcels that are separated from other uses by existing development on all sides. The nearest modeled habitat linkage is approximately

[12] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[13] As seen during the site visit conducted on August 16, 2022.
[14] U.S. Fish and Wildlife Service. Wetlands Mapper. Accessed September 20, 2022. The U.S. Fish and Wildlife Service is the principal federal agency that provides the citizens of the United States and its Trust Territories with current geospatially referenced information on the status, extent, characteristics and functions of wetlands, riparian , deepwater and related aquatic habitats.
[15] U.S. Fish and Wildlife Service. Wetlands Mapper. Accessed September 20, 2022.

2.0-miles north of the Project Site.[16] This modeled habitat linkage is not connected to the Project Site due to existing development that occurs north of the site. Less than significant impacts would occur, and no mitigation measures are required.

e) **Less than Significant.** The Project Site is currently developed with single-family residences. There are trees on APNs 0230-041-33, 0230-041-61, and 0230-041-44; no changes to these parcels are proposed. As the Project Site is disturbed and surrounded by existing development, the Proposed Project would not impact biological resources relative to current conditions. The City General Plan supports tree conservation and planting that enhances shade and drought resistance. There are three trees and three tree stumps [17] on the subject parcel that are proposed for removal. The Tree Inventory report was prepared to determine the required number of replacement trees for protected species pursuant to the City of Fontana's Preservation of Heritage, Significant and Specimen Trees. As concluded in the report, the existing trees are not considered heritage, significant, or specimen trees, however, the Proposed Project would provide 14 replacement trees along the proposed apartment building and proposed carport located adjacent to 8151 Banana Avenue. As such, the Proposed Project would not conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance. Therefore, a less than significant impact would occur, and no mitigation measures are required.

f) **No Impact.** The Project site is not located in a Habitat Conservation Plan, as noted in the City's General Plan.[18] In 2004, the City commissioned the preparation of a Multiple Species Habitat Conservation Plan to address potential impacts to sensitive Riversidean Alluvial Fan Sage Scrub and Riversidean Sage Scrub habitats and special status species that may occur within the North Fontana Conservation Program Area in the San Gabriel Mountains foothills. However, as previously noted, the Project Site is not located in or near the San Gabriel Mountains foothills. Therefore, no impacts are anticipated, and no mitigation measures are required.

V. CULTURAL RESOURCES

Would the project

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐

[16] San Bernardino County. Policy Plan web maps: NR-2 Parks and Open Space Resources. Accessed September 20, 2022.
[17] Landscape Dynamics. Tree Inventory report. October 13, 2022.
[18] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) **Less than Significant with Mitigation.** A Cultural Resources Study, dated October 6, 2022, was prepared for the subject parcel by Brian F. Smith and Associates, Inc. (BFSA) (see Appendix D for report). The purpose of this investigation was to locate and record any cultural resources present within the subject parcel and to subsequently evaluate any resources present. The archaeological investigation of the Proposed Project included the review of an archaeological records search from the South Central Coastal Information Center (SCCIC) at California State University, Fullerton (CSU Fullerton) in order to assess previous archaeological studies and identify any previously recorded archaeological sites within the project boundaries or in the immediate vicinity.

The results of the records search indicate that 17 archaeological resources have been recorded within one mile of the subject parcel, none of which have been recorded within the property. The majority of these resources are historic and include the Kaiser Steel Mill, the Pat Maloy Mine, a concrete watering trough, single- and multiple-family buildings, two motels, a farm/ranch complex, five roads, and a segment of the West Fontana Flood Control Channel. The records search results also indicate that 19 cultural resource studies have been conducted within a one-mile radius of the Project Site, none of which intersect the subject parcel.

The records search and literature review suggest that historic buildings and sites associated with the agricultural history of the Fontana area are the most likely cultural resources to be encountered within the subject parcel. A building can be seen near the center of the property as early as the 1963 Fontana United States Geological Survey (USGS) map. This building is also visible on the 1966 aerial photograph. No additional development is shown on any later photograph or map. The survey resulted in the identification of this building as a historic age single-family residence. In order to determine whether or not the building is eligible for listing, California Register of Historical Resources (CRHR) eligibility criteria were used. Furthermore, BFSA based the review upon the recommended criteria listed in the National Register Bulletin: How to Apply the National Register Criteria for Evaluation. The building was subsequently recorded as Temp-1. A Department of Parks and Recreation site form for the building was submitted to the SCCIC. Once processed, the SCCIC will assign the new resource a permanent site number.

Historical research indicates that the building is not associated with any significant persons or events. None of the individuals who owned or lived in the building were found to be significant and no known important events occurred at the property. The property was acquired by William V. Landecena and Dorothy M. Landecena in 1988. Although the Landecenas were relatively well-known philanthropists, they were locally significant to the

city of Upland, not the city of Fontana, and no indication could be found that they established or operated their charitable foundation out of the 8155 Banana Avenue residence. Therefore, the building has never possessed integrity of association.

The existing residence on APN 0230-041-60 is evaluated as not historically or architecturally significant under any CEQA criteria due to a lack of association with any significant persons or events (refer to Appendix D). Additionally, although it retains some level of integrity, it was never a representative or significant example of the Ranch style. Because the building is not eligible for listing on the CRHR, no mitigation measures are required for any future alterations or planned demolition of the single-family residence which currently exists on APN 0230-041-60.

However, the potential exists that unidentified significant historic deposits may be present that are related to the occupation of this location since the 1960s. Because of this potential to encounter buried historic archaeological deposits, monitoring of grading by a qualified archaeologist is required, as detailed in Mitigation Measure CR-1 below.

Mitigation Measure:

CR-1: An archaeological monitor hired by the Project Applicant shall be present full-time during at the initiation of all soil-disturbing and grading/excavation/trenching activities that could result in impacts to archaeological resources. In the event that cultural resources are discovered by the archaeological monitor, all work shall be suspended 50 feet around the resource(s) until a qualified archaeologist meeting the Secretary of the Interior's Standards assesses the discovery. If the qualified archaeologist determines the resource(s) to be a "unique archaeological resource" consistent with Public Resources Code Section 21083.2 or a "tribal cultural resource" consistent with Public Resources Code Section 21074, a Cultural Resources Management Plan shall be prepared by the qualified archaeologist and submitted to the City Planning Division for approval and subsequent implementation by the Project Applicant and archaeologist.

The qualified archaeologist shall evaluate the significance of the resource.

- The qualified archaeologist shall immediately notify the City of Fontana to discuss the significance determination and shall also submit a letter indicating whether additional mitigation is required.
- If the resource is significant, the qualified archaeologist shall submit an Archaeological Data Recovery Program (ADRP) and obtain written approval from the City of Fontana to implement that program. In the event that prehistoric deposits are discovered, the ADRP should also be reviewed by the Native American consultant/monitor. Impacts to significant

resources must be mitigated before ground-disturbing activities in the area of discovery will be allowed to resume.

- If the resource is not significant, the qualified archaeologist shall submit a letter to the City of Fontana indicating that artifacts will be collected, curated, and documented in the final monitoring report. The letter shall also indicate that that no further work is required.

With the implementation of Mitigation Measure CR-1, less than significant impacts would occur.

b) **Less than Significant with Mitigation.** The results of the records search indicate that 17 resources have been recorded within one mile of the subject parcel, none of which have been recorded within the project. Only one prehistoric resource, a lithic scatter, was identified within a one-mile radius of the subject parcel. The records search results also indicate that 19 cultural resource studies have been conducted within a one-mile radius of the subject parcel, none of which intersect the site. BFSA requested a SLF search from the NAHC. The NAHC noted the results were positive and provided a standard recommendation for contacting certain tribes for additional information. Additional information and mitigation measures for tribal cultural resources are provided in Section XVIII.

The records search and literature review suggest that there is a low potential for prehistoric sites to be contained within the boundaries of the property, however Mitigation Measure CR-1 identified above would address potential impacts associated with unanticipated archaeological finds.

c) **Less than Significant with Mitigation.** The discovery of human remains is always a possibility during ground-disturbing activities at any location. The City will condition the Project so that if human remains are discovered, the contractor shall halt work in that area until a determination can be made regarding the provenance of the human remains; and the procedures set forth in CEQA Section 15064.5(e), the California PRC (Section 5097.98), and the State Health and Safety Code (Section 7050.5) shall be undertaken

VI. ENERGY

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?	☐	☐	☒	☐

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? ☐ ☐ ☒ ☐

a) **Less than Significant.**

Fuel

During construction of the Proposed Project, transportation energy consumption is dependent on the type of vehicles used, number of vehicle trips, vehicle miles traveled, fuel efficiency of vehicles, and travel mode. Temporary transportation fuel use such as gasoline and diesel during construction would result from the use of delivery vehicles and trucks, construction equipment, and construction employee vehicles. Additionally, most construction equipment during grading would be powered by gas or diesel. Based on output from CalEEMod v. 2022, the Proposed Project construction activities would consume an estimated 6763.81 gallons of diesel fuel for operation of heavy-duty equipment. Tables 8 through 11 show the modeled fuel consumption for all construction activities.

Table 8
Construction Equipment Fuel Consumption Estimates

Phase	Number of Days	Offroad Equipment Type	Amount	Hours per Day	Horse Power	Load Factor	Total Fuel Consumption (gal diesel fuel)[1]
Demolition	**10**	Concrete/Industrial Saws	1	8	33	0.73	113.32
	10	Rubber Tired Dozer	1	1	367	0.4	**77.66**
	10	Tractors/Loaders/Backhoes	2	6	84	0.37	**219.30**
Site Preparation	1	Graders	1	8	148	0.41	25.68
	1	Tractors/Loaders/Backhoes	1	8	84	0.37	14.62
Grading	2	Graders	1	6	148	0.41	38.52
	2	Graders	1	6	148	0.41	38.52
	2	Rubber Tired Dozer	1	6	367	0.4	93.19
	2	Tractors/Loaders/Backhoes	1	7	84	0.37	25.59
Building Construction	100	Cranes	1	4	367	0.29	2,252.06
	100	Forklifts	2	6	82	0.2	1,157.18
	100	Tractors/Loaders/Backhoes	2	8	84	0.37	2,924.01
Paving	5	Cement and Motor Mixers	4	6	10	0.56	39.51
	5	Pavers	1	7	81	0.42	70.01
	5	Rollers	1	7	36	0.38	28.15
	5	Tractors/Loaders/Backhoes	1	7	84	0.37	63.96
Architectural Coating	5	Air Compressors	1	6	37	0.48	31.33
						Total Fuel Used in Gallons	**6763.81**

Source: CalEEMod 2022

(1) United States Environmental Protection Agency. 2018. Exhaust and Crankcase Emission Factors for Nonrod Compression-Ignition Engines in MOVES2014b. July 2018. Available at: https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100UXEN.pdf.

Table 9
Construction Worker Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Fuel Consumption (gallons)[1]
Demolition	10	**10**	**18.5**	77.08
Site Preparation	1	5	18.5	3.85
Grading	2	7.5	18.5	11.56
Building Construction	100	17.3	18.5	1333.54
Paving	5	17.5	18.5	67.45
Architectural Coating	5	3.46	18.5	13.34
Total Construction Worker Fuel Consumption				**1429.74**

Source: Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2022 defaults.

(1) United States Department of Transportation, Bureau of Transportation Statistics. 2018. National Transportation Statistics 2018. Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntentire2018q4.pdf.

Table 10
Construction Vendor Fuel Consumption Estimates

Phase	**Number of Days**	**Worker Trips/Day**	**Trip Length (miles)**	**Fuel Used (gallons)**
Demolition	10	--	**10.2**	**0.0**
Site Preparation	1	--	10.2	0.0
Grading	2	--	10.2	0.0
Building Construction	100	2.57	10.2	354.24
Paving	5	--	10.2	0.0
Architectural Coating	5	--	10.2	0.0
Total Construction Vendor Fuel Consumption				354.24

Source: Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2022 defaults.

United States Department of Transportation, Bureau of Transportation Statistics. 2018. National Transportation Statistics 2018. Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntentire2018q4.pdf.

Table 11
Construction Hauling Trucks Fuel Consumption Estimates

Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Fuel Used (gallons)
Demolition	10	1.5	20	50.00
Site Preparation	1	0	20	0.00
Grading	2	6.5	20	43.33
Building Construction	100	2.57	10.2	436.90
Paving	5	0	20	0.00
Architectural Coating	5	0.0	20	0.0
Total Construction Hauling Trucks Consumption				651.47

Source: Assumptions for the vendor trip length and vehicle miles traveled are consistent with CalEEMod 2022 defaults.

United States Department of Transportation, Bureau of Transportation Statistics. 2018. National Transportation Statistics 2018. Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/national-transportation-statistics/223001/ntentire2018q4.pdf.

As shown in Table 9, all construction worker trips are from light duty autos, it is estimated 1,429.74 gallons of fuel will be consumed. Fuel consumption from construction vendor (material deliver) trips is 354.24 gallons, as shown on Table 10. Fuel consumption from hauling trucks is 651.47 gallons, as shown in Table 11. Construction worker, hauling truck, and vendor fuel consumption are based on CalEEMod's default data for vehicles miles traveled (VMT). Construction would represent a "single-event" diesel and gasoline fuel demand and would not require continuous or permanent commitment of these fuel resources. Impacts related to transportation energy use during construction would be temporary and would not require the use of additional use of energy supplies or the construction of new infrastructure.

During operations of the Proposed Project, fuel consumption would result from resident vehicle trips. Project vehicle miles traveled (VMT) were modeled with an automobile fuel efficiency of 24 miles per gallon.[19] The Proposed Project would result in an estimated 15,576 gallons[20] of fuel consumption per year based on 373,830 miles driven.

Trip generation and VMT generated by the Proposed Project were considered less than significant. The Proposed Project does not include uses or operations that would inherently result in excessive or wasteful vehicle trips and VMT, or associated wasteful vehicle energy consumption. It is not expected to result in a substantial demand for energy that would require expanded supplies or the construction of other infrastructure or expansion of existing facilities.

[19] United States Department of Transportation, Bureau of Transportation Statistics. 2018. National Transportation Statistics 2018. Available at: https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and- data/national-transportation-statistics/223001/ntentire2018q4.pdf.
[20] CalEEMod output based on trips generated; represents modeled estimation, not actual consumption.

Electricity

Southern California Edison (SCE) provides electricity to the Project Site. No changes to APNs 0230-041-33, 0230-041-61, and 0230-041-44 are proposed. The subject parcel is occupied by a single-family residence, which consumes approximately 0.00761 gigawatt hours (GWh) annually.[21] The Proposed Project would replace the existing single-family residence with a 3-story, 24-unit apartment complex. The CalEEMod output estimates that the Proposed Project would consume 0.277 GWh annually. Therefore, development of the Proposed Project would cause a permanent increase in demand for electricity when compared to existing conditions. According to the California Energy Commission, the residential sector of the SCE planning area consumed 38,498.76 GWh of electricity in 2020.[22] The increase electricity demand of the Proposed Project would represent approximately 0.008 percent of the overall 2020 SCE residential consumption. However, the Proposed Project would include solar panels to meet electricity demands and would therefore be reliant on SCE only during temporary situations. Therefore, projected electrical demand would not significantly impact SCE's level of service.

Natural Gas

The Project Site is located within the service area of Southern California Gas (SoCal Gas). The existing single-family residence consumes approximately 312.9 therms annually.[23] The Proposed Project's estimated annual natural gas demand is 1,637.38 therms. The Proposed Project will create a permanent increase demand for natural gas. According to the California Energy Commission, the natural gas consumption of the SoCalGas's residential sector was 2,474,195,977 therms in 2020.[24] The Proposed Project's estimated annual natural gas consumption, using the output from CalEEMod, compared to the 2020 annual natural gas consumption of the overall residential sector in the SoCal Gas Planning Area would account for approximately 0.00006 percent of the total natural gas consumption. Therefore, projected natural gas demand would not significantly impact SoCal Gas's level of service.

A less than significant impact would occur, and no mitigation measures are required.

b) **Less than Significant.** As noted above, the Proposed Project's total impact on regional energy supplies would be negligible. Construction impacts would be temporary and would not require the use of additional use of energy supplies or the construction of new infrastructure. The Proposed Project would be required to comply with the latest California Building Code (CBC) and California Green Building Standards Code (CALGreen Code) pertaining to energy and water conservation standards in effect at the time of construction. The Proposed Project would include installation of solar panels, as required by Title 24. The Proposed Project would not conflict with or obstruct a state or local plan for renewable

[21] CalEEMod Output for existing use.
[22] California Energy Commission. https://ecdms.energy.ca.gov/Default.aspx. Accessed October 4 2022.
[23] CalEEMod Output for existing use.
[24] California Energy Commission. https://ecdms.energy.ca.gov/Default.aspx. Accessed October 4, 2022.

energy or energy efficiency. Impacts would be less than significant, and no mitigation is required.

VII. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. 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 or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 181-B of the California Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) 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?	☐	☐	☐	☒

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

a)

i. **Less Than Significant.** A preliminary Soils Evaluation report, dated February 25, 2022, was prepared for the subject parcel by Sampson and Associates (see Appendix E for report). An Infiltration Evaluation report, dated February 25, 2022, was also prepared for the Proposed Project by Sampson and Associates (see Appendix F for report). Both reports are referenced in this Section VII. The nearest fault zone to the subject parcel is Sierra Madre Fault Zone,[25] located approximately 4.0-miles north of the subject parcel.[26] As stated in the Soils Evaluation report, the Southern California region is considered to be tectonically active because of its historically high seismic activity. As such, the Proposed Project can be expected to experience moderate to severe ground shaking during the design life. As noted on page 6, of the Soils Evaluation Report, the effects of seismic shaking can be mitigated through compliance with the latest Uniform Building Code and Structural Engineers Association (SEA) parameters. A Final Geotechnical and Soils Report will be submitted for review and approval by the City Engineer prior to issuance of building permits. Therefore, no significant impacts are identified or anticipated, and no mitigation measures are required.

ii. **Less Than Significant.** The subject parcel is located in an active fault zone region; as such, the Proposed Project can be expected to experience moderate to severe ground shaking during the design life. However, as previously noted, compliance with the latest Uniform Building Code, and the Structural Engineers Association parameters which would be included in the Final Geotechnical and Soils Report, would mitigate the effects of seismic shaking to a less than significant level. No significant impacts are identified or anticipated, and no mitigation measures are required.

iii. **Less Than Significant.** To evaluate the subsurface condition of the subject parcel, a Preliminary Soils Investigation and an Infiltration Investigation were conducted by Sampson Associates in February 2022 (refer to Appendices E and F). Two eight-inch exploratory borings were drilled to maximum depths of five feet. No groundwater or any perched groundwater was observed at the exploratory trenches onsite. As shown on the San Bernardino County Policy Plan, the subject parcel is not located within an area susceptible to liquefaction.[27] As summarized in the Soils Evaluation report, the on-site soils are primarily silty sand/sandy silt which are dense to hard sandy silt/silty sand soils. Considering the depth level to groundwater below grade, the potential for liquefaction is low. As such, a less than significant impact would occur from Proposed Project

[25] City of Fontana. Fontana Forward General Plan Update 2015-2035 – Draft Environmental Impact Report. June 8, 2018.
[26] San Bernardino County. Policy Plan web maps. HZ-1 "Earthquake Fault Zones." Accessed September 19, 2022.
[27] City of Fontana. 2017 Local Hazard Mitigation Plan. Approved and Adopted August 14, 2018.

implementation as it pertains to seismic-related ground failure, including liquefaction, and no mitigation measures are required.

iv. **No Impact.** The subject parcel is not located within an area susceptible to landslides.[28] The property and its immediate surroundings are relatively flat and level. Therefore, the potential for seismically induced landslides is considered negligible. No impacts are anticipated, and no mitigation measures are required.

b) **Less than Significant.** Construction activities could result in soil erosion if the Project Site is not properly designed. The potential impacts of soil erosion would be minimized through the preparation and implementation of a Storm Water Pollution and Prevention Plan (SWPPP) which the Applicant would prepare prior to the commencement of construction activities. The SWPPP would prescribe temporary Best Management Practices (BMPs) to control wind and water erosion during and shortly after the construction of the Proposed Project, such as: stabilizing the site as soon as possible, reducing impervious surfaces and promoting infiltration, and controlling the perimeter of the site. Therefore, less than significant impacts are anticipated, and no mitigation measures are required.

c) **Less than Significant.** As stated previously, the subject parcel is not susceptible to landslides or liquefaction. As summarized in the Soils Evaluation report, the Proposed Project is feasible given that the recommendations in the report are incorporated into the design and construction stages of the project. Compliance with federal, state, and local regulations would minimize the risks associated with the potential risk from landslides, subsidence, liquification, or collapse relative to existing conditions. Therefore, less than significant impacts are anticipated, and no mitigation measures are required.

d) **Less than Significant.** Expansive soils (shrink-swell) are fine grained clay soils generally found in historical floodplains and lakes. Expansive soils are subject to swelling and shrinkage in relation to the amount of moisture present in the soil. As concluded in the Soils Report, the on-site soils have very low potential for expansion. Therefore, less than significant impacts are anticipated, and no mitigation measures are required.

e) **No Impact.** The Proposed Project would connect to the City's existing sewer collection system which includes sewer lines along Banana Avenue. No septic tanks or alternative wastewater disposal are proposed. No impacts would be anticipated, and no mitigation measures are required.

f) **Less Than Significant with Mitigation.** A Paleontological Assessment report, dated September 29, 2022, was prepared for the subject parcel; by BFSA (see Appendix G for report). Based on the Proposed Project's distance from significant fossil localities yielded by older, Pleistocene-aged alluvial deposits, the Holocene deposits at the subject parcel can be considered to have a low potential to yield significant paleontological resources. The existence of Holocene alluvial fan deposits at the subject parcel, and the lack of known fossil specimens or fossil localities from within a several-mile radius encompassing the subject parcel support the recommendation that paleontological monitoring need not be

[28] San Bernardino County. Policy Plan web maps: HZ-2 "Liquefaction & Landslides. Accessed September 19, 2022.

required during earth disturbance activities at the subject parcel. However, if fossils of any sort are discovered during grading and earthmoving activities, a qualified paleontologist must be retained to as described as Mitigation Measure GEO-1 below:

Mitigation Measure:

GEO-1: If paleontological resources are discovered during earth disturbance activities, the discovery shall be cordoned off with a 100-foot radius buffer so as to protect the discovery from further potential damage, and a County-qualified paleontologist contracted by the Project Applicant or Contractor shall be consulted to assess the discovery. If the discovery is determined to be significant by the paleontologist, a Paleontological Resource Impact Monitoring Program (PRIMP) shall be implemented, which will include notification of appropriate personnel involved and monitoring of earth disturbance activities:

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a qualified paleontologist or paleontological monitor. Monitoring will be conducted at the discretion of the qualified paleontologist in areas of grading or excavation in undisturbed sedimentary deposits.
2. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or, if present, are determined on exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery.
3. Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils are collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated, and the fossils are removed to a safe place. On mass grading projects, discovered fossil sites are protected by flagging to prevent them from being overrun by earthmovers (scrapers) before salvage begins. Fossils are collected in a similar manner, with notes and photographs being taken before removing the fossils. Precise location of the site is determined with the use of handheld GPS units. If the site involves remains from a large terrestrial vertebrate, such as large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help remove the jacket to a safe location.

4. Isolated fossils are collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated, and the fossils are removed to a safe place.
5. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, multiple five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
6. In accordance with the "Microfossil Salvage" section of the Society of Vertebrate Paleontology guidelines (2010:7), bulk sampling and screening of fine-grained sedimentary deposits (including carbonate-rich paleosols) must be performed if the deposits are identified to possess indications of producing fossil "microvertebrates" to test the feasibility of the deposit to yield fossil bones and teeth.
7. In the laboratory, individual fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if needed, is stabilized by soaking in an archivally approved acrylic hardener (*e.g.*, a solution of acetone and Paraloid B-72).
8. Recovered specimens are prepared to a point of identification and permanent preservation (not display), including screen-washing sediments to recover small invertebrates and vertebrates. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.
9. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.*, the San Bernardino County Museum) shall be conducted. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. Prior to curation, the lead agency (*e.g.*, the City of Fontana) will be consulted on the repository/museum to receive the fossil material.
10. A final report of findings and significance will be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.*, fossils) that might have been lost or otherwise adversely affected without such a program in place.

Implementation of Mitigation Measure GEO-1 would reduce potential impacts to paleontological resources to a less than significant impact with mitigation.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.	☐	☐	☒	☐

a) **Less than Significant.** Emissions were estimated using CalEEMod version 2022.1 with construction anticipated to begin in 2023. The CalEEMod defaults were used for other parameters which are used to estimate construction emissions, such as the worker and vendor trips and trip lengths. The CalEEMod defaults for vehicle trip generation were utilized. It was estimated that the Proposed Project would generate approximately 131 daily trips on weekdays, 118 daily trips on Saturdays, and 98.2 daily trips on Sundays.

Many gases make up the group of pollutants which contribute to global climate change. However, three gases are currently evaluated and represent the highest concentration of GHG: Carbon dioxide (CO_2), Methane (CH_4), and Nitrous oxide (N_2O). The Proposed Project's emissions were compared to SCAQMD draft screening threshold of 3,000 MTCO2E. A summary of the results is shown below in Table 12 and Table 13.

Table 12
Greenhouse Gas Construction Emissions
(Metric Tons per Year)

Source/Phase	CO_2	CH_4	N_20	R[1]
2023	83.8	0.0	0.0	0.0
Total ($MTCO_2e$)	**84.5**			
Construction Amortized 30 Years	**2.8**			

Source: CalEEMod.2022.1 Annual Emissions.
1) Common refrigerant GHGs used in air conditioning and refrigeration equipment.

Table 13
Greenhouse Gas Operational Emissions
(Metric Tons per Year)

Source/Phase	CO_2	CH_4	N_20	R[1]
Mobile	141	0.0	0.0	0.3
Area	7.8	0.0	0.0	--
Energy	41.8	0.0	0.0	--
Water	2.0	0.0	--	3.1
Waste	1.6	0.2	0.0	--
Refrigeration	--	--	--	0.0
Construction Amortized 30 Years	2.8			
Total ($MTCO_2e$)	**204.8**			
SCAQMD Screening Threshold	**3,000**			
Significant	**No**			

Source: CalEEMod.2022.1 Annual Emissions.
1) Common refrigerant GHGs used in air conditioning and refrigeration equipment.

As shown in Table 12 and Table 13, the Proposed Project's emissions would not exceed SCAQMD's draft screening threshold. Moreover, the Proposed Project includes installation of solar panels, which would reduce the Proposed Project's greenhouse gas emissions. A less than significant impact would occur, and no mitigation measures are required.

b) **Less than Significant.** On September 8, 2016, Governor Brown signed the Senate Bill (SB) 32. SB 32 requires the State to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030. The new legislation builds upon the Assembly Bill (AB) 32 goal of 1990 levels by 2020 and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80 percent below 1990 levels by 2050. AB 1279, the California Climate Crisis Act, is a mandate to achieve net zero GHG as soon as possible, but no later than 2045, and achieve and maintain net negative GHG thereafter, and to ensure that by 2045, statewide anthropogenic GHG are reduced to at least 85% below the 1990 levels.

The Proposed Project does not interfere with the state's implementation of (i) SB 32's target of reducing statewide GHG emissions to 40% below 1990 levels by 2030 or (ii) Executive Order S-3-05's target of reducing statewide GHG emissions to 80% below 1990 levels by 2050 because it does not interfere with the state's implementation of GHG reduction plans described in the California Air Resources Board's (CARB's) Updated Scoping Plan, including the state providing for 12,000 MW of renewable distributed generation by 2020, the California Building Commission mandating net zero energy homes in the building code after 2020, or existing building retrofits under' AB 758' The SCAQMD's thresholds use the California Governor Executive Order S-3-05 goals as the basis for deriving the screening level. The Proposed Project's emissions, as shown in Tables 12 and 13 meet the threshold for compliance with Executive Order S-3-05. The Proposed Project meets the current interim emissions targets/thresholds established by the SCAQMD, the Proposed Project would also be on track to meet the reduction target of

SB 32. Furthermore, all of the post-2020 reductions in GHG emissions are addressed via regulatory requirements at the State level and the Proposed Project will be required to comply with these regulations as they come into effect.

The 3,000 MTCO2e per year threshold is based on a 90 percent emission "capture" rate methodology. Prior to its use by the SCAQMD, the 90 percent emissions capture approach was one of the options suggested by the California Air Pollution Control Officers Association (CAPCOA) in their CEQA & Climate Change white paper (SCAQMD, 2008). A 90 percent emission capture rate means that unmitigated GHG emissions from the top 90 percent of all GHG-producing projects within a geographic area – the SCAB in this instance – would be subject to a detailed analysis of potential environmental impacts from GHG emissions, while the bottom 10 percent of all GHG-producing projects would be excluded from detailed analysis.

The City understands that the 3,000-MTCO2e-per-year threshold for residential/commercial uses was proposed by the SCAQMD a decade ago and was never formally adopted; however, no permanent, superseding policy or threshold has since been adopted. The 3,000-MTCO2e-per-year threshold was developed and recommended by the SCAQMD, an expert agency, based on substantial evidence as provided in the Draft Guidance Document –Interim CEQA Greenhouse Gas Significance Threshold (2008) and subsequent Working Group meetings.

As discussed, the Proposed Project's GHG emissions fall below the Tier 3 SCAQMD draft screening threshold of 3,000 metric tons of CO_2 equivalent per year and the Proposed Project is in compliance with the reduction goals AB 32 and SB 32. Furthermore, consistent with Title 24 requirements, the Proposed Project would provide solar panels to meet demands of the residential use, thereby reducing greenhouse gas emissions resulting from the Proposed Project.

Therefore, construction and operation of the Proposed Project will not conflict with any applicable plan, local or regional greenhouse gas plans. A less than significant impact would occur, and no mitigation measures are required.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Create a significant hazard to the public or the Environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) 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?				
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d)	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 a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e)	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?	☐	☐	☐	☒
f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g)	Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

a, b) **Less Than Significant.** The Proposed Project is the development of a 3-story, 24-unit apartment complex. It does not contain land uses typically associated with hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste.

Construction of the Proposed Project would require the routine transport, use, storage, and disposal of limited quantities of common hazardous materials such as gasoline, diesel fuel, oils, solvents, paint, fertilizers, pesticides, and other similar materials. All materials required during construction would be kept in compliance with State and local regulations and BMPs. Although these materials could be stored on-site during construction activities, the Proposed Project would be required to comply with the guidelines established by the San Bernardino SWPPP. The management of hazardous materials during the Proposed Project's construction phase would not result in a significant impact.

Operations would include standard maintenance (i.e., landscape upkeep, exterior painting and similar activities) involving the use of commercially available products

(e.g., pesticides, herbicides, gas, oil, paint, etc.) the use of which would not create a significant hazard to the public. Impacts from operations would be less than significant.

c) **Less than Significant Impact.** The nearest school to the Project Site is Almond Elementary School, located immediately east of the Project Site. The Proposed Project is a residential development, which does not contain uses typically associated with the generation of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste. If any hazardous materials are used onsite, during construction activities, direct and indirect hazardous materials would be contained on-site through the use of BMPs and compliance with any applicable local, state, and federal laws pertaining to hazardous waste handling (such as General Plan EIR Mitigation Measure HAZ-3 and Title 49, Code of Federal Regulations) and through adherence to the SWPPP. No long-term handling of hazardous materials would occur because the Proposed Project is residential in nature, and not industrial or manufacturing. Therefore, a less than significant impact would occur, and no mitigation measures are required.

d) **No Impact.** The subject parcel and driveway is not included on a list of hazardous material sites as compiled pursuant to Government Code Section 65962.5 and reported in the EnviroStor database.[29] Therefore, no impacts are anticipated, and no mitigation measures are required.

e) **No Impact.** The nearest airport to the subject parcel and driveway is the Ontario International Airport (OIA), which is located approximately 5.5 miles southwest of the Project Site. The subject parcel is not located within an airport runway protection zone, airport safety area, or a low-altitude/high speed military airspace.[30] Therefore, no impacts are anticipated, and no mitigation measures are required.

f) **Less than Significant.** The purpose of the City's Hazard Mitigation Plan (LHMP) is to demonstrate the plan for reducing and/or eliminating risk in City of Fontana.[31] Mitigation generally involves alteration of physical environments, significantly reducing risks and vulnerability to hazards by altering the built environment so that life and property losses can be avoided or reduced. The Fire Department interfaces with different departments within the City to ensure the safety and efficiency of emergency response services. During the City's internal review process, the Proposed Project would be subject to review by the San Bernardino County Fire Department (SBCFD) through the Fontana Fire Protection District (FFPD). The Proposed Project would provide the minimum number of required parking spaces and Proposed Project residents and visitors may be anticipated to also park off-site. The portion of Banana Avenue between Foothill Boulevard and Arrow Boulevard is a collector road,[32] which are roadways that can accommodate 2 or 4 lanes of traffic. This portion of Banana Avenue is a two-lane road and 21-feet-wide from the sidewalk to the

[29] California Department of Toxic Substances Control. EnviroStor Database. Accessed August 2, 2022.
[30] San Bernardino County. Countywide Policy Plan web maps: HZ-9 "Airport Safety & Planning Areas." Accessed August 2, 2022.
[31] City of Fontana. 2017 Local Hazard Mitigation Plan.
[32] City of Fontana. Fontana Forward – General Plan Update 2015-2035. Approved and Adopted by City Council November 13, 2018. Exhibit 9.2 "Hierarchy of Streets in Fontana."

centerline. Therefore, Banana Avenue would be able to accommodate off-site parking. During construction, the contractor would be required to maintain adequate emergency access for emergency vehicles. Project operations would not interfere with an adopted emergency response or evacuation plan. Therefore, less than significant impacts are anticipated, and no mitigation measures are required.

g) **Less than Significant.** The subject parcel and driveway are not located within a High or Very High Fire Hazard Severity Zone.[33] Refer to the Wildfire thresholds below for more information regarding the exposure of people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. A less than significant impact would occur, and no mitigation measures are required.

X. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede substantial groundwater management of the basin?	☐	☐	☒	☐
c) 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:	☐	☐	☒	☐
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii) 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	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐

[33] City of Fontana. 2017 Local Hazard Mitigation Plan. Figure 4-6: Wildfire Hazard Severity Zones. June 2017.

d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e)	Conflict with or obstruct implementation of a water quality control plan or substantial groundwater management plan?	☐	☐	☒	☐

a) **Less than Significant**. A preliminary Water Quality Management Plan (WQMP) was prepared for the Proposed Project by HP Engineering, Inc. (see Appendix H for report). The WQMP is a post-construction management program that ensures the ongoing protection of the watershed basin by requiring structural and programmatic controls. Construction of the Proposed Project would involve, excavation, grading, utility installation, paving, building construction, and landscaping activities, which would result in the generation of potential water quality pollutants such as sediment, silt, debris, chemicals, paints, pesticides/herbicides and other solvents with the potential to adversely affect water quality. As such, short-term water quality impacts have the potential to occur during construction of the Proposed Project in the absence of any protective or avoidance measures. Operational water quality impacts would arise directly from landscaping maintenance and indirectly from stormwater pollutants such as nitrogen, oil and grease, trash/debris, and other organic compounds.

The Proposed Project has been designed to include an underground infiltration chamber to treat the onsite runoff before draining into the City's stormwater drain system. To minimize water quality impacts during construction and operations, the Proposed Project would comply with the WQMP via the San Bernardino County's Municipal Storm Water Management Plan (SWMP) consistent with the General Permit for Stormwater Discharge Associated with Construction Activity (Construction Activity General Permit). The WQMP includes mandatory compliance with BMPs as well as compliance with NPDES Permit requirements. Proposed Project BMPs include, but are not limited to, planting drought resistant plants to reduce irrigation runoff, installation of irrigation timers with rain triggered valve sensors, and inspection and maintenance of all BMPs on a quarterly basis. Review and approval of the WQMP by the City would ensure that all potential pollutants of concern are minimized or otherwise appropriately treated prior to being discharged from the subject parcel and driveway. Therefore, less than significant impacts are anticipated, and no mitigation measures are required.

b) **Less Than Significant.** The Project Site is located within the Fontana Water Company (FWC) service area. FWC operates various pumping, transmission, and treatment facilities to provide water service to its customers. Both local surface water from Lytle Creek and imported State Water Project (SWP) water is treated at FWC's Summit Surface Water Treatment Plant (Summit Plant). Local groundwater is pumped from various wells and disinfected, and in some locations is treated at on-site treatment facilities to remove perchlorate or Volatile Organic Compounds (VOCs).[34] Groundwater is pumped from

[34] West Yost. 2020 Urban Water Management Plan for the San Gabriel Valley Water Company Fontana Water Company Division. June 2021.

FWC-owned and operated wells from the underlying Chino Basin, Rialto-Colton/No Man's Land Basins, and Lytle Basin.

In 2020, FWC had a per capita water use of 149 gallons per person per day.[35] The California Department of Finance estimated that as of January 1, 2016, Fontana had 51,517 households with an average of 4.07 persons per household.[36] The proposed 24 apartment units would result in an estimated population of 98 and a water demand of 14,602 gallons per day (16.35 acre-feet/year). The Proposed Project requires a Change of Zone from Single-Family to Route 66 Gateway District, which allows for multiple-family development for the Project Site (APNs: 0230-041-60, 0230-041-33, 0230-041-61, 0230-041-52, and 0230-041-44); however, development is currently only proposed on APNs: 0230-041-60 and 0230-041-52. Water demand at buildout under the existing land use designation for the proposed area of disturbance would be 8.15 acre-feet/year. Therefore, implementation of the Proposed Project would result in an increase in water demand not anticipated in the General Plan. However, the additional water demand for the Proposed Project would be less than significant in that the FWC groundwater production of approximately 5,865 acre-feet per year is estimated to be available from the combined groundwater basins for pumping and diversion during normal, single-dry and multiple-dry years in 2025, and is expected to increase to 6,310 AFY by 2045. Currently planned sources of supply will further expand FWC's diverse water portfolio and create additional redundancy. Therefore, because groundwater supply is available to meet the Proposed Project's demands, it is not anticipated to substantially decrease groundwater supplies.

Groundwater recharge facilities do not occur in the vicinity. The Proposed Project's demand for domestic water service would not substantially deplete groundwater supplies (refer to Section XIX a). Moreover, implementation of the Proposed Project BMPs would ensure that stormwater discharge does not substantially alter the existing drainage pattern and water quality, thereby allowing runoff from the Proposed Project to be utilized as a resource that can eventually be used for groundwater recharge. Therefore, because storm water flows on-site would be infiltrated, the Proposed Project would not have a substantial impact on groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. Therefore, impacts would be less than significant, and no mitigations are required.

c(i) **Less than Significant.** Erosion is the wearing away of the ground surface as a result of the movement of wind or water, and siltation is the process by which water is affected by fine mineral particles in the water. Soil erosion could occur due to a storm event. Adherence to Proposed Project BMPs, as identified in Form 5-1 of the WQMP (see Appendix H), would prevent substantial soil erosion or the loss of topsoil. Proposed Project BMPs include employing irrigation methods that minimize runoff of excess irrigation water and sweeping

[35] West Yost. 2020 Urban Water Management Plan for the San Gabriel Valley Water Company Fontana Water Company Division. June 2021.
[36] City of Fontana. Fontana Forward – General Plan Update 2015-2035. Approved and Adopted by City Council November 13, 2018.

the parking lot at least four times annually. Therefore, less than significant impacts would occur, and no mitigation measures are required.

c(ii), c(iii), c(iv) **Less than Significant.** Under current conditions, runoff generally drains from northeast to the southwest. The Proposed Project would maintain the same drainage pattern. An underground infiltration chamber is proposed to treat the onsite runoff before draining into the City's stormwater drain system. The proposed underground infiltration chamber is designed to capture 100% of on-site runoff. The Proposed Project is not anticipated to substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site or 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. Therefore, less than significant impact would occur, and no mitigation measures are required.

d) **Less Than Significant**. Due to the inland distance from the Pacific Ocean and any other significant body of water, tsunamis and seiches are not potential hazards at the site. The subject parcel and driveway are located within flood hazard zone X,[37] which is identified as an area with minimal flood hazard by the Federal Emergency Management Agency (FEMA). Therefore, the risk of release of pollutants due to Proposed Project inundation would be negligible. Additionally, no steep slopes are in the Project Site vicinity; therefore, the risk of mudflow is also negligible. Therefore, a less than significant impact would occur, and no mitigation measures are required.

e) **Less than Significant.** The WQMP is a post-construction management program that ensures the ongoing protection of the watershed basin by requiring structural and programmatic controls. Implementation of the Proposed Project BMPs as listen in Form 5-1 of the WQMP (see Appendix H), would ensure that stormwater discharge does not substantially alter the existing drainage pattern and water quality, thereby allowing runoff from the Proposed Project to be utilized as a resource that can eventually be used for groundwater recharge. An underground infiltration chamber is proposed to treat the onsite runoff before draining into the City's stormwater drain system. The Proposed Project would not otherwise substantially degrade water quality as appropriate measures relating to water quality protection would be implemented. Therefore, a less than significant impact would occur, and no mitigation measures are required.

[37] Federal Emergency Management Agency. National Flood Hazard Layer. Accessed August 4, 2022.

XI. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Physically divide an established community?	☐	☐	☒	☐
b) 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?	☐	☐	☒	☐

a) **Less than Significant.** As noted in the Project description, the Project Site is occupied by single-family residences, and covered by gravel, dirt, and landscape trees. Immediately west of the subject parcel is an open yard with parked vehicles. The Project site is surrounded by single-family residences to the west; a school to the east; an apartment complex to the south; and a fire station and commercial uses to the north. The approximately 30-foot-wide driveway would be paved with asphalt, inclusive of a 4-foot-wide accessible path of travel. The Proposed Project would not interfere with access to the residences onsite nor would it interfere with movement and access to adjacent properties. The physical division of an established community is typically associated with construction of a linear feature, such as a major highway or railroad tracks, or removal of a means of access, such as a local road or bridge, which would impair mobility in an existing community or between a community and an outlying area. The Proposed Project would neither physically divide an established community nor cause a significant environmental impact due to conflict with any land use plans or policies. Therefore, a less than significant impact would occur, and no mitigation measures are required.

b) **Less Than Significant.** The subject parcel would be disturbed with the demolition of the existing single-family residence and grading activities to provide the space for the construction of the proposed 3-story, 24-unit apartment complex on APN: 0230-041-60 and APN: 0230-041-52, which is the easement used as the main ingress and egress driveway to the site. This driveway would be upgraded with new asphalt, landscaping, and a pedestrian walkway along the norther property line. The Proposed Project includes a request for a CZ to Route 66 Gateway District. The Proposed Project is permitted within the Route 66 Gateway District. The Proposed Project would be subject to the development standards established by the Route 66 Gateway District. Approval of the requested CZ will remove any conflict with land use plans or regulations.

Aside from the proposed GPA and CZ on all parcels, including APNs: 0230-041-33, 0230-041-61, and 0230-041-44, no physical changes to these parcels are proposed as part of this Proposed Project. However, any proposed future development on these parcels would be subject to the appropriate project-level CEQA compliance, as requested by the City at the

time a specific project is proposed on these parcels. Therefore, a less than significant impact would occur, and no mitigation measures are required.

XII. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) 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?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒

a, b) **No Impact.** The subject parcel and driveway are located within a Mineral Resource Zone-3 (MRZ-3) for aggregate resources.[38] An MRZ-3 zone is an area containing known or inferred mineral occurrences of undetermined mineral resource significance. An area with undetermined mineral significance would not be valuable to the region or residents of the State until its mineral significance is confirmed. Furthermore, the subject parcel and driveway are located in a fully developed and previously disturbed site, currently developed with residential uses. It is surrounded by residential uses to the west, and south; a residential development and school to the east; and commercial and fire department use to the north. Furthermore, there is no locally important mineral resource recovery sites delineated in the City's General Plan. Therefore, since the Proposed Project is not designated for mineral resource recovery, does not contain any known mineral resources, nor would not impact known mineral resources that would be of value to the region and the residents of the state. Similarly, the Proposed Project would not impact a locally important mineral resources recovery site, no impact would occur.

[38] San Bernardino County. Countywide Policy Plan web maps: NR-4 "Mineral Resources Zone." Accessed August 4, 2022.

XIII. NOISE

Would the project result in:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) 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?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) 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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

a) **Less than Significant.** The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written dB(A) or dBA. The greatest source of noise in Fontana is from vehicles—cars, trucks, and buses—on city streets, especially arterials. The City's major streets, such as Sierra Avenue, Foothill Boulevard and other arterials have higher noise levels than residential blocks.[39] South Fontana is subject to more noise than other parts of the city, but the highest levels are less than 60 dBA, below the City's 65dBA threshold for external noise impacts on residential areas.[40] The Project Site currently does not generate any noise.

Construction

The Proposed Project is in an area primarily consisting of residential and commercial land uses. Residences, which qualify as noise-sensitive land uses, would be exposed to noise generated from construction activities. Construction activities would include demolition, site preparation, grading, building construction, paving, and architectural coating. The City's Municipal Code Section 18-63 limit the hours of construction to between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays, except in the case of urgent necessity or otherwise approved by the City of Fontana. These permitted hours of construction are required in recognition that

[39] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[40] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

construction activities undertaken during permitted hours are a typical part of living in an urban environment. Construction activities for the proposed project would be conducted during allowable hours, per the Fontana Municipal Code. Additionally, construction would be temporary as the noise from the construction equipment would cease once project construction is completed.

The City also provides guidance that residential land uses and areas should be protected from excessive noise from non-transportation sources including equipment. Typical construction equipment including backhoes, loaders, compressors, rollers, and trucks would be used during project construction to clear the development site, construct the structures, and pave the parking lot. Although noise levels would fluctuate and depend on variables such as the type of equipment, horsepower of the equipment, and atmospheric conditions, the construction equipment would typically generate noise levels ranging from approximately 74 dBA[2] to 90 dBA L_{eq}[3] at 50 feet, with a decrease by 6 dBA for each doubling of distance from the source. Ambient noise levels surrounding the project site range between 37.6 dBA L_{min} and 86 dBA L_{max} with a peak of 73.2 dBA.

Construction activities for the proposed project would be conducted during allowable hours, and thus exempt from the City's noise standards. Accordingly, with compliance with the Fontana Municipal Code, construction noise impacts would be less than significant. Nonetheless, the proposed project would implement best management practices to minimize noise generated during construction of the project to the furthest extent possible. These would include shutting off idling equipment, maximizing the distance between construction equipment staging areas and occupied residential areas, use of electric air compressors and similar power tools, equipping construction equipment with properly operating and maintained mufflers and other State-required noise attenuation devices, placing stationary construction equipment such that emitted noise is directed away from sensitive noise receivers, and designing haul routes such that the routes do not pass sensitive land uses or residential dwellings. Construction impacts would be less than significant.

Operation

The Project Site is currently occupied by a single-family residence with existing noise sources that include pedestrian traffic, air conditioning units, and vehicle movements. The Proposed Project is the development of a 3-story, 24-unit apartment complex. The primary source of noise generated by the Proposed Project would be on-site traffic. The most prominent source of mobile traffic noise in the project vicinity is along Foothill Boulevard. As the proposed project would result in 24 additional multi-family residential units, it would result in some additional traffic on adjacent roadways, thereby potentially increasing vehicular noise in the vicinity of existing and proposed land uses. Noise levels associated with vehicle movements are not however expected to be significant as the Proposed Project is anticipated to generate approximately 131 daily trips on weekdays, 118 daily trips on

[2] dBA is measured using the A-weighted decibel scale.

[3] L_{eq} is known as the equivalent sound level, which is commonly used to describe the "average" noise levels within the environment.

Saturdays, and 98.2 daily trips on Sundays. The noise from pedestrian traffic and air conditioning units would be similar to the same noise sources and noise levels at the adjacent school. The proposed apartment complex is not anticipated to generate any significant noise that would be incompatible with the adjacent school and surrounding residential developments which currently generate operational noise. Therefore, less than significant impacts are identified or anticipated, and no mitigation measures are required.

b) **Less than Significant with Mitigation Incorporated.** Groundborne vibration and groundborne noise would originate from earth moving equipment used during the construction phase of the Proposed Project. Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction activity has the potential to result in cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile (California Department of Transportation, 2020). The City of Fontana Municipal Code does not address vibration, however Section 83.01.090(a) of the County of San Bernardino Development Code prohibits the creation of ground vibration that can be felt without the aid of instruments at or beyond the lot-line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths (0.2) inches per second measured at or beyond the lot-line. The existing residential use on-site does not include the use of any heavy equipment and therefore no vibration occurs under existing conditions.

The Project Site is currently developed with a single-family residence that does not generate any ground-borne vibration. Ground-borne vibration levels resulting from Proposed Project construction activities occurring at the Project Site would be temporary and construction activities, including grading, are anticipated to generate low levels of ground-borne vibration within the Project Site. Bulldozers, and other heavy-tracked construction equipment (expected to be used for this project) generate approximately 0.089 peak particle velocity (PPV) inches per second of ground-borne vibration when measured at 25 ft.

The closest existing off-site structures are the apartment buildings located approximately 10 feet to the south of the Proposed Project's southern property line. The City's Municipal Code Section 18-63 limits the hours of construction to between the hours of 7:00 a.m. and 6:00 p.m. on weekdays and between the hours of 8:00 a.m. and 5:00 p.m. on Saturdays. Therefore, groundborne vibration resulting from project construction would be temporary and short-term and based on equipment use, would generate approximately 0.089 peak particle velocity (PPV) inches per second of ground-borne vibration when measured at 25 ft. Construction and demolition-related ground vibration would be allowed as long as activities occur within the City-allowed construction period. To provide more specific performance standards, Mitigation Measure N-1 shall be implemented.

Groundborne vibration is not anticipated during operations of the Proposed Project. Project generated traffic on nearby roads also would not generate vibration because of the types of surrounding roadways and the project's generation of primarily passenger vehicles.

Equipment use would be limited to landscape maintenance. There would be no use of equipment that would cause any vibration.

Mitigation Measure

N-1: The project shall not create ground vibration that can be felt without the aid of instruments at or beyond the lot-line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths (0.2) inches per second measured at or beyond the lot-line. The Contractor shall ensure that large mobile equipment (greater than 80,000 pounds), jack-hammering, and loaded trucks shall not be used within 50 feet of sensitive receivers if occupied at the time of Project construction. Instead, smaller rubber-tired mobile equipment (less than 80,000 pounds) or equivalent alternative equipment shall be used within this area during Project construction to reduce noise and vibration levels below human annoyance thresholds.

With implementation of Mitigation Measure N-1, generation of excessive groundborne vibration or groundborne noise levels would not be significant.

c) **No Impact.** The nearest airport to the Project Site is the OIA, which is located approximately 5.5 miles south of the Project Site. The Project Site is not located within an airport runway protection zone, airport safety area, or a low-altitude/high speed military airspace.[41] Therefore, the Proposed Project would not expose people residing or working in the project area to excessive noise levels. No impacts are identified or anticipated, and no mitigation measures are required.

XIV. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) 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)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

a) **Less Than Significant.** The Proposed Project requests a CZ from Single-Family (R-1) to Route 66 Gateway District, which allows for multiple-family development on all five

[41] San Bernardino County. Countywide Policy Plan web maps: HZ-9 "Airport Safety & Planning Areas." Accessed August 2, 2022.

Project site parcels. However, the Proposed Project development of the proposed apartment complex would only occur on APN: 0230-041-60 and -52. The Proposed Project proposes a higher density residential use, which would result in unplanned population growth within the City. Southern California Association of Governments (SCAG) projects that the population in Fontana will grow from 213,000 to 280,000 between 2016 and 2040.[42] Under the current zoning designation of Single Family (R-1), the subject parcel can have a maximum of 4 dwelling units. As stated previously, as of January 1, 2016, Fontana had 51,517 households with an average of 4.07 persons per household.[43] Therefore, if the subject parcel was developed to its maximum allowed potential of 4 dwelling units, the site would generate approximately 16 residents. In comparison, the proposed 3-story, 24-unit apartment complex is anticipated to result in an estimated population of 98, an additional 82 residents compared to the population generated under the current zoning designation. The addition of residents to the local area would account for approximately 0.0012% of the projected 25-year growth in Fontana. Therefore, although the Proposed Project would induce unplanned population growth, it would not be substantial. As such, a less than significant impact would occur, and no mitigation measures are required.

b) **Less than** Significant**.** The Proposed Project would demolish the existing single-family residence on the subject parcel; however, the Project would replace the single-family residence with a multi-family residential development providing 24 multi-family dwelling units which more than makes up for the single-family residence that would be demolished. Therefore, implementation of the Proposed Project would not require construction of replacement housing elsewhere as the Proposed Project itself is providing replacement housing in place. Therefore, a less than significant impact would occur, and no mitigation measures are required.

XV. PUBLIC SERVICES

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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:				
Fire Protection?	☐	☐	☒	☐

[42] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[43] City of Fontana. Fontana Forward – General Plan Update 2015-2035. Approved and Adopted by City Council November 13, 2018.

Police Protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other Public Facilities?	☐	☐	☒	☐

a)

Fire Protection

Less than Significant. The FFPD provides emergency, preventive, and administrative services across 52.4 square miles within the city limits and the sphere of influence through a contract with the SBCFD. Development of the Proposed Project may incrementally increase the demand for fire protection services as would increase the local area's population by approximately 98 additional residents. Fontana Fire Station 73, located at 8143 Banana Avenue, is located contiguous to the north of the Project Site. Fire Station 73 is staffed with one captain, one engineer, one firefighter medic, and one firefighter.[44] Average travel time between Station 73 and the Project Site would be less than one minute. Therefore, no new facilities are required to serve the Proposed Project. Additionally, the Proposed Project would be subject to Development Impact Fees (DIF) for fire facilities which provide for additional fire protection facilities as needed based on population growth. Specific facilities the City determines at present to be funded are listed in Appendix I – Public Facilities Needs List, Section D. The Proposed Project is required to meet minimum fire safety requirements of Title 24 which helps to support fire suppression activities, including building construction, automatic fire sprinkler systems, fire hydrants, and paved fire access. Therefore, a less than significant impact would occur, and no mitigation are required.

Police Protection

Less than Significant. The Proposed Project would be located within Watch Area 2 of the Area Commander Program and would be serviced by the City of Fontana Police Department (FPD). The nearest police station is the FPD headquarters located on 17005 Upland Avenue, approximately 4.3 miles east of the Project Site. The FPD currently has 188 sworn officers providing law enforcement services 24 hours a day, 365 days a year.[45] Development of the Proposed Project may incrementally increase the demand for police protection services due to the increase in local population. In its review of new development plans, the FPD evaluates project plans to determine safety requirements applicable to each project and to ensure compliance with these requirements. This review would ensure that proposed developments would not reduce the staffing, response times, or existing service levels within the City.[46] Additionally, the Project applicant would be

[44] City of Fontana. Fire Station 73. https://www.fontana.org/639/Stations-Equipment. Accessed August 5, 2022.
[45] City of Fontana. Police Department. https://www.fontana.org/2509/About-Us. Accessed August 5, 2022.
[46] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

required to pay applicable DIF. The DIF would help offset the cost of providing police services on a project-by-project basis. See Appendix I, Section F for list of potential police facilities that the Proposed Project's DIF would assist in funding. Therefore, a less than significant impact would occur, and no mitigation measures are required.

Schools

Less than Significant. The Project Site is located within the Fontana Unified School District (FUSD). As stated in the General Plan Draft EIR, there is excess capacity to accommodate nearly 8,000 elementary school students, 53 6-8 graders and more than 3,000 high school age children beyond the 2022/2023 plan year.[47] The Proposed Project would increase the population in the local area and would consequently add students to the local school system. On average, each household in Fontana generates 0.7 schoolchildren.[48] The Proposed Project is anticipated to generate approximately 17 students.

FUSD monitors growth in within district boundaries and updates their facilities plans as needed. Through this monitoring, they identify the need for new facilities, including locations, timing, and funding. At the same time, they will continue to collect DIF from new developments occurring within the City. FUSD expects to build a new middle school and one or two elementary schools in the next decade, depending on the pace of development.[49] The Project Applicant will be required to pay approximately $133,123[50] in development impact fees.[51] Pursuant to Education Code Section 17620, collection of fees by school districts is sufficient in mitigating for any potential impacts to school facilities that result from long-term growth in the community. Therefore, with payment of applicable DIF, the Proposed Project would have a less than significant impact, and no mitigation measures are required.

Parks

Less than Significant. The City's Community Services Department is responsible for parks, recreation, and programming. The performance objective or standard for parks and recreation is 5 acres of parkland for every 1,000 residents (two acres of community parks for every 1,000 residents and three acres of neighborhood parks for every 1,000 residents).[52] The Proposed Project would generate 98 residents. As of July 1, 2022, the City was estimated to have a population of approximately 212,475.[53] With a standard of 5 acres per 1,000 residents, the City would need 1,062 acres of park land for the most

[47] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[48] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[49] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[50] Developer fee is $4.08 per square foot for residential projects within Fontana Unified School District.
[51] Fontana Unified School District. Developer Fees. https://www.fusd.net/Page/639. Accessed August 8, 2022.
[52] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.
[53] https://www.census.gov/quickfacts/fact/table/fontanacitycalifornia/PST045222

recent estimated population. As of 2018, the City had approximately 1,621 acres total in parks and land for public use, which is more than what would be required for the current population. Therefore, based on the most recent population estimates and the number of residents generated by the Proposed Project, there would not be a need for new or altered parks with implementation of the Proposed Project. The City currently collects 3 acres of parkland or in-lieu fees from new residential subdivisions for every 1,000 residents in accordance with California Government Code Section 66477 (Quimby Act). Additional sources for the City to obtain parkland include general fund revenues, developer impact fees, state and federal grants, user group contributions, school district joint use contributions, and concessions.

According to the Fontan General Plan, Park Development Fees serve to provide facilities for recreation to enhance the community's appeal and quality of life. The Park Fee Study includes a component for development of new park and recreation facilities and programs to serve City residents through 2035. New development within the City generates an increased demand for park and recreation facilities from population and growth. Increased demand necessitates the improvement/enhancement of existing facilities. Fees collected from new development are used exclusively for the improvement of park and recreation facilities on the Needs List. See Appendix I, Section B for list of potential park facilities on the Needs List that the Proposed Project's DIF would assist in funding. The Proposed Project's payment of Development Impact Fees[54] will ensure that less than significant impacts occur.

Other Public Facilities

Less than Significant. Public facilities in Fontana include parks; sports centers; community centers; cultural centers; a nature center; public services facilities (including city hall, the community services department building, and the public works center); veterans' resource center; auditorium and the library.[55] Development of the Proposed Project would increase demand for these public facilities. However, as the Proposed Project would generate 98 residents to the local area, the increase in demand would be insignificant and would not prompt a need for new facilities. Furthermore, the Project Applicant would pay DIFs, collected by the City to improve, maintain, and construct new public facilities as necessary and in accordance with the City's Master Plan. See Appendix I, Sections C and E for list of potential public and library service facilities that the Proposed Project's DIF would assist in funding. Therefore, a less than significant impact would occur, and no mitigation measures are required.

[54] City of Fontana. *Development Fees.* https://www.fontana.org/DocumentCenter/View/2271/Development-Impact-Fees?bidId=. Accessed August 4, 2023.
[55] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environmental Impact Report. June 8, 2018.

XVI. RECREATION

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) **Less than Significant.** The City of Fontana maintains over 40 parks, sports facilities, and community centers.[56] Patricia Murray Park is located approximately 0.9-mile west of the Project Site. Therefore, the estimated 98 residents of the Proposed Project are anticipated to increase the use of this park. The performance objective or standard for parks and recreation is 5 acres of parkland for every 1,000 residents (two acres of community parks for every 1,000 residents and three acres of neighborhood parks for every 1,000 residents).[57] The Proposed Project would generate 98 residents. As of July 1, 2022, the City was estimated to have a population of approximately 212,475.[58] With a standard of 5 acres per 1,000 residents, the City would need 1,062 acres of park land for the most recent estimated population. As of 2018, the City had approximately 1,621 acres total in parks and land for public use, which is more than what would be required for the current population. Therefore, based on the most recent population estimates and the number of residents generated by the Proposed Project, there would not be a need for new or altered parks with implementation of the Proposed Project.

The City currently collects 3 acres of parkland or in-lieu fees from new residential subdivisions for every 1,000 residents in accordance with California Government Code Section 66477 (Quimby Act). Additional sources for the City to obtain parkland include general fund revenues, DIFs, state and federal grants, user group contributions, school district joint use contributions, and concessions. See Appendix I, Section B for list of potential park facilities on the Needs List that the Proposed Project's DIF would assist in funding. Collection of the DIFs[59] would ensure a less than significant impact to parks would occur.

[56] City of Fontana. Facilities & Parks. https://www.fontana.org/156/Facilities-Parks. Accessed August 5, 2022.
[57] Stantec Consulting, Inc. Fontana Forward – Fontana General Plan Update 2015-2035. Draft Environ, mental Impact Report. June 8, 2018.
[58] https://www.census.gov/quickfacts/fact/table/fontanacitycalifornia/PST045222
[59] https://www.fontana.org/DocumentCenter/View/2271/Development-Impact-Fees?bidId=

According to the Fontan General Plan, Park Development Fees serve to provide facilities for recreation to enhance the community's appeal and quality of life. The Park Fee Study includes a component for development of new park and recreation facilities and programs to serve City residents through 2035. New development within the City generates an increased demand for park and recreation facilities from population and growth. Increased demand necessitates the improvement/enhancement of existing facilities. Fees collected from new development are used exclusively for the improvement of park and recreation facilities on the Needs List. The Proposed Project's payment of Development Impact Fees will ensure that less than significant impacts occur.

b) **Less than Significant.** The Proposed Project is the development of a 3-story, 24-unit apartment complex with associated residential amenities such as vehicle parking, landscaping, security lighting, among others. The Proposed Project does not include recreational facilities. As the Proposed Project would add approximately 98 residents to the local population, it would not require the construction or expansion of recreational facilities to meet demands of residential development. Therefore, less than significant adverse impacts are identified or anticipated, and no mitigation measures are required.

XVII. TRANSPORTATION

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle lanes and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☒	☐

a) **Less Than Significant.** The Community and Mobility element of the General Plan is focused on connecting neighborhoods and city destinations by expanding transportation choice in Fontana. While the Community and Mobility element supports continuing programs to improve travel by cars and trucks, it provides guidance on expanding the options for transit and "active transportation" (pedestrian and bicycle mobility) for Fontana. It is aligned with the Southern California Association of Governments (SCAG) 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy concepts of

Neighborhood Mobility Areas and Livable Corridors. The following analysis details Proposed Project consistency with the applicable Community and Mobility element goals and proposed actions:

Goal 1: The City of Fontana has a comprehensive and balanced transportation system with safety and multimodal accessibility the top priority of citywide transportation planning, as well as accommodating freight movement.
Policy: Make safety and multimodal accessibility the top priority of citywide transportation planning.
Policy: Make land use decisions that support walking, bicycling, and public transit use, in alignment with the 2014-2040 Regional Transportation Plan and Sustainable Communities Strategy.
Consistency: There is an Omnitrans Route 66 bus stop on the intersection of Banana Avenue and Foothills Boulevard, approximately 700 feet via Banana Avenue from the Project Site. Furthermore, there are existing sidewalks along Banana Avenue and existing Class I bike lanes along Foothill Boulevard. The driveway would be paved with asphalt and include an accessible path of travel. Therefore, public transit, walking, and bicycling would be available to Proposed Project residents.

Goal 3: Local transit within the City of Fontana is a viable choice for residents, easily accessible and serving destinations throughout the city.
Policy: Promote concentrated development patterns in coordination with transit planning to maximize service efficiency and ridership.
Consistency: The Proposed Project requires a GPA to change the existing designation from Single Family Residential to Multiple Family Medium/High Residential. As stated previously, there is an Omnitrans Route 66 bus stop at the intersection of Banana Avenue and Foothills Boulevard; therefore, transit facilities would be readily accessible to Proposed Project residents.

Goal 4: Fontana's neighborhood streets maintain a residential character and support a range of transportation options.
Policy: Balance neighborhood traffic circulation needs with the goal of creating walkable and bike friendly neighborhoods.
Consistency: The Project Site is located in a primarily residential area mixed with commercial development. The Proposed Project would introduce approximately 98 residents to an area that provides a range of alternative transportation options, such as walking, biking, and public transit.

The Proposed Project is not anticipated to conflict with the Community and Mobility element of the General Plan. The Proposed Project would not conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, a less than significant impact would occur, and no mitigation measures are required.

b) **Less than Significant**. SB 743 was adopted in 2013 requiring the Governor's Office of Planning and Research (OPR) to identify new metrics for identifying and mitigating

transportation impacts within CEQA. For land use projects, OPR has identified Vehicle Miles Traveled (VMT) as the new metric for transportation analysis under CEQA. The regulatory changes to the CEQA guidelines that implement SB 743 were approved on December 28th, 2018, with an implementation date of July 1st, 2020 as the new metric.

The City of Fontana's Traffic Impact Analysis (TIA) Guidelines for VMT and Level of Service (LOS) Assessment October 2020) includes screening thresholds that can be used to identify when a proposed land use project can be presumed to result in a less than significant impact without conducting a more detailed analysis.[60] Projects that generate fewer than 500 average daily trips (ADT) would not cause a substantial increase in the total citywide or regional VMT and are therefore presumed to have a less than significant impact on VMT.[61] Projects which generate less than 500 ADT include multi-family residential development with 68 dwelling units or fewer.[62] As the Proposed Project proposes 24 units, the "Project net daily trips less than 500 ADT" screening threshold has been satisfied.

Based on the City guidelines, specific projects would be screened out of requiring a VMT analysis or would be deemed to cause a less than significant impact, including projects which generate less than 500 ADT. As such, the Proposed Project would be exempt from requiring a VMT analysis. Hence, based on the City established guidelines and thresholds, the Proposed Project is presumed to have a less than significant VMT impact, and no mitigations are required.

c) **No Impact.** The Proposed Project would provide main ingress and egress to the site via the existing driveway serving the Project Site. The design features of the Proposed Project do not include any hazardous or incompatible structural or roadway features that would substantially increase hazards and no incompatible uses would be incorporated. Therefore, implementation of the Proposed Project would not generate a significant amount of traffic that could result in road hazards. In addition, the Site Plan is subject to approval by the Fontana Fire Protection District. Therefore, no impacts are anticipated, and no mitigation measures are required.

d) **Less than Significant.** Access to Project Site is currently provided via an existing 30-foot-wide driveway on Banana Avenue which runs parallel to the neighboring property driveway west of the parcel. The driveway would be repaved with asphalt and include a 4-foot-wide accessible path of travel. The remaining 26-foot-wide driveway approach would be wide enough to allow for reciprocal access. During construction, the contractor would be required to maintain adequate emergency access for emergency vehicles. Proposed Project operations would not interfere with an adopted emergency response or

[60] The City of Fontana Traffic Engineering Division. Traffic Impact Analysis (TIA) Guidelines. https://www.fontana.org/DocumentCenter/View/35928/TIA-Guidelines---VMT-Assessment. Page 10-11. October 21, 2020.
[61] The City of Fontana Traffic Engineering Division. Traffic Impact Analysis (TIA) Guidelines. https://www.fontana.org/DocumentCenter/View/35928/TIA-Guidelines---VMT-Assessment. Page 13. October 21, 2020.
[62] The City of Fontana Traffic Engineering Division. Traffic Impact Analysis (TIA) Guidelines. https://www.fontana.org/DocumentCenter/View/35928/TIA-Guidelines---VMT-Assessment. Page 14. October 21, 2020.

evacuation plan and the driveway would provide adequate emergency vehicle access. Therefore, a less than significant impact would occur, and no mitigation measures are required.

XVIII. TRIBAL CULTURAL RESOURCES

a)	Would the project 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?				
	i) 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?	☐	☒	☐	☐
	ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivisiI(c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivIon (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

a)

i) Less Than Significant with Mitigation. The results of the BFSA's records search indicate that one prehistoric resource, a lithic scatter, was identified within a one-mile radius of the subject parcel. The records search results also indicate that 19 cultural resource studies have been conducted within a one-mile radius of the subject parcel, none of which intersect the subject parcel. BFSA also requested a SLF search from the Native American Heritage Commission (NAHC). The NAHC noted the results were positive and recommended contacting certain tribes for additional information.

The records search and literature review, combined with the extensive nature of past ground disturbances and the lack of natural resources often associated with prehistoric sites, suggest that there is a low potential for prehistoric sites to be contained within the boundaries of the property. Archaeological monitoring of grading is recommended, as described for Mitigation Measure CR-1, to prevent the inadvertent destruction of any potentially important cultural deposits that were not observed or detected during the current cultural resources study (see Appendix D). The monitoring program will include Native American observers in the event that prehistoric deposits are discovered.

On December 12, 2022, the City provided notification to the following tribes in accordance with AB52: the Gabrieleno Band of Mission Indians – Kizh Nation (Gabrieleno), Soboba Band of Luiseno Indians (Soboba), San Manuel Band of Mission Indians (San Manuel), Torres Martinez Desert Cahuilla Indians, and San Gabriel Band of Mission Indians. The City also provided notification letters in accordance with SB 18 (provided in Confidential Appendix J – available at City office). The Augustine Band of Cahuilla Indians provided a response to the City in a letter dated December 13, 2022; no follow-up was required (correspondence provided in Confidential Appendix J– available at City office).

The consultation period has ended. Tribes' requests for additional project information, coordination, or consultation with the Lead Agency, and/or Native American monitoring, have been acknowledged at the conclusion of the AB52 and SB18 consultation with the City.

With implementation of Mitigation Measure CR-1 identified above, potential impacts to Tribal Cultural Resources are anticipated to be less than significant.

ii) **Less Than Significant with Mitigation.** California Assembly Bill 52 (AB52) was approved by Governor Brown on September 25, 2014. AB52 specifies that CEQA projects with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource may have a significant effect on the environment. As such, the bill requires lead agency consultation with California Native American tribes traditionally and culturally affiliated with the geographic area of a proposed project, if the tribe requested to the lead agency, in writing, to be informed of proposed projects in that geographic area. The legislation further requires that the tribe-requested consultation be completed prior to determining whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

Senate Bill 18 (SB 18) requires cities and counties to conduct consultations with California Native American tribes before the local officials adopt or amend their general plans. These consultations are for preserving or mitigating impacts to Native American historic, cultural, sacred sites, features, and objects located within the city or county.

On December 12, 2022, the City provided notification to the following tribes in accordance with AB52: the Gabrieleno Band of Mission Indians – Kizh Nation (Gabrieleno), Soboba Band of Luiseno Indians (Soboba), San Manuel Band of Mission Indians (San Manuel), Torres Martinez Desert Cahuilla Indians, and San Gabriel Band of Mission Indians. The City also provided notification letters in accordance with SB 18 (Tribal Consultation List provided in Confidential Appendix J – available at City office). The Augustine Band of Cahuilla Indians provided a response to the City in a letter dated December 13, 2022; no follow-up was required (correspondence provided in Confidential Appendix J – available at City office).

The consultation period has ended. Tribes' requests for additional project information, coordination, or consultation with the Lead Agency, and/or Native American monitoring,

have been acknowledged at the conclusion of the AB52 and SB18 consultation with the City.

The following Mitigation Measures shall be implemented if Tribal Cultural Resources are discovered:

Mitigation Measures:

TCR-1: Prior to the initiation of ground-disturbing activities, the developer and contractor shall notify field personnel (i.e. construction workers) to the possibility of buried historical or Tribal Cultural Resource deposits. Prior to the start of grading, a preconstruction meeting will be required to review the monitoring program with the contractor's construction crew and provide Cultural Sensitivity Training. The training will include a presentation of various cultural and historic artifacts (such as pottery, shells, fragments of stone tools and metates) as well as a discussion of uncovering potential human remains. Actions to be taken should an such resources be found are presented. The training will also focus on the treatment of sensitive fossils or prehistoric artifacts if discovered. Worker attendance will be documented with sign-in sheets and a report will be prepared by the archaeologist conducting the training session.

TCR-2: If an inadvertent discovery of human remains occurs, the archaeological monitor/consultant hired by the Project Applicant (as identified in Mitigation Measure CR-1) will immediately divert work at minimum of 150-feet and place an exclusion zone around the discovery location. The monitor/consultant(s) will then notify the onsite lead/construction manager, who will then notify the consulting Tribes (all tribes that were contacted for consultation), the qualified lead archaeologist, and the County coroner, pursuant to the State Health and Safety Code §7050.5, and that code will be enforced for the duration of the Project. Work will continue to be diverted while the coroner determines whether the remains are human and subsequently Native American. The discovery is to be kept confidential and secure to prevent any further disturbance. If the finds are determined to be Native American, the coroner will notify the NAHC as mandated by state law who will then appoint a Most Likely Descendent (MLD).

TCR-3: For a Native American Tribal representative designated MLD, their burial policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. The MLD will work with the Coroner, NAHC, landowner, and Lead Agency regarding culturally appropriate practices and recommended next steps.

TCR-4: Prior to the continuation of ground disturbing activities, the landowner shall arrange a designated site location within the footprint of the Proposed Project for the respectful reburial of the human remains and/or ceremonial objects. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The MLD tribe will make every effort to recommend diverting the Proposed Project and keep the remains in situ and protected, and the landowner/applicant shall make every effort to comply with these recommendations. If the Proposed Project cannot be diverted, it may be determined that burials will be removed. The MLD Tribe will work closely with the qualified archaeologist to ensure that the excavation is treated carefully, ethically, and respectfully. If data recovery is approved by the MLD tribe, documentation shall be taken that includes, at a minimum, detailed descriptive notes and sketches. Additional types of documentation shall only occur once approved by the MLD tribe for data recovery purposes. Cremations will either be removed in bulk or by any means necessary to ensure completely recovery of all material. If the discovery of human remains includes four or more burials, the location is considered a cemetery and a separate treatment plan shall be created. Once complete, a final report of all activities is to be submitted to the MLD tribe and the NAHC. The tribes do not authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

Each occurrence of human remains and associated funerary objects that requires data recovery will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects, and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within 6 months of recovery. The site of reburial/repatriation shall be on the Project Site but at a location agreed upon between the MLD tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered and their location shall remain confidential.

TCR-5: Upon discovery of any tribal cultural or archaeological resources, construction activities shall cease within the immediate vicinity of the find (60-foot buffer) until the find can be assessed. The landowner, City of Fontana, and consulting Tribes shall be notified of the discovery. All tribal cultural and archaeological resources unearthed by project construction activities shall be evaluated by the qualified archaeologist and by a member of the consulting Tribes. If the resources are Native American in origin, the Tribal representatives shall coordinate with the landowner regarding treatment and curation of these resources. Typically, the tribes will request preservation in place or reburial onsite, though will recommend data recovery if other options are exhausted. Work may continue on other parts of the Proposed Project while evaluation and, if necessary, additional protective mitigation takes place (CEQA Guidelines Section15064.5(f)). If a resource is determined by the qualified archaeologist to constitute a “historical resource” or “unique archaeological resource”, time allotment

and funding sufficient to allow for implementation of avoidance measures, or appropriate mitigation, must be available.

TCR-6: For unique archaeological resources, preservation in place (i.e., avoidance) is the preferred manner of treatment. If preservation in place is not feasible, treatment may include implementation of archaeological data recovery excavations to remove the resource along with subsequent laboratory processing and analysis. All analysis proposals will be reviewed and approved by the consulting Tribes. Any historic archaeological material that is not Native American in origin shall be curated at a public, non-profit institution with a research interest in the materials within the County, if such an institution agrees to accept the material. If no institution accepts the archaeological material that is not Native American in origin, they shall be offered to the consulting Tribe or a local school or historical society in the area for educational purposes.

TCR-7: Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in PRC 5097.98, are also to be treated according to this statute. Health and Safety Code 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and excavation halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC and PRC 5097.98 shall be followed.

TCR-8: Archaeological and Native American monitoring and excavation during construction Projects will be consistent with current professional archaeological standards. No disturbance, physical modification, or separation of human remains and associated funerary objects shall be taken. Principal personnel must meet the Secretary of Interior standards for archaeology and have a minimum of 10 years of experience as a principal investigator working with Native American archaeological sites in southern California. The qualified archaeologist shall ensure that all other personnel are appropriately trained and qualified.

With implementation of Mitigation Measures TCR-1 through TCR-8 identified above, potential impacts to Native American tribal resources are anticipated to be less than significant.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
d) 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?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) **Less Than Significant.** The Project Site is located within the Fontana Water Company (FWC) service area. The Proposed Project would include the development of on-site water delivery infrastructure connected to existing water FWC water mains in Banana Avenue. The Proposed Project would be served by the City of Fontana for sewer service. The Project Applicant would construct sewer laterals connecting to the existing sewer lines in Banana Avenue. The environmental impacts from the construction of water and sewer service lines are negligible.

Wastewater treatment services are provided by a regional authority, the Inland Empire Utilities Authority (IEUA). Wastewater collected in Fontana's sewer system is directed to and treated at IEUA's Regional Plants 1 and 4 (RP-1 and RP-4). The treatment capacity of

RP-1 is 44 million gallons per day (gpd) and the treatment capacity of RP-4 is 14 million gpd,[63] both of these plants have available capacity.

The Proposed Project would be serviced by Southern California Edison (SCE), which provides electrical service to the general area. There are existing utility poles along the southern boundary of the subject parcel which the Proposed Project would connect to. Southern California Gas (SoCalGas) would provide natural gas for the Proposed Project. There are existing natural gas distribution lines in Banana Avenue that the Proposed Project would connect to.

The Proposed Project would maintain the same drainage pattern that currently exists at the subject parcel. An underground infiltration chamber is proposed to treat the onsite runoff before draining into the City's stormwater drain system. The proposed underground infiltration chamber is designed to capture 100% of on-site runoff.

The Project Site is located within AT&T's service area and currently serviced by existing telecommunication facilities. Therefore, the Proposed Project would not require construction or expansion of such facilities.

The Proposed Project is not anticipated to require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electrical power, natural gas, or telecommunications facilities that could cause significant environmental effects. Less than significant impacts are identified or are anticipated, and no mitigation measures are required.

b) **Less than Significant.** The Project Site is served by FWC. FWC forecasts a 30 percent curtailment to its adjustable water rights in 2025. The curtailment is anticipated to reduce by 2 percent every five years thereafter to reflect a coordinated plan to recharge the basin over the 25-year planning horizon. Groundwater production of approximately 5,865 acre-feet per year (AFY) is estimated to be available from the combined basins for pumping and diversion by FWC during normal, single-dry and multiple-dry years in 2025 and is expected to increase to 6,310 AFY by 2045.

Planned sources of supply will further expand FWC's diverse water portfolio and create additional redundancy. Under existing supply conditions, FWC first maximizes both surface water supply from Lytle Creek, when available, and groundwater production rights from the Lytle, Rialto-Colton, and No-Man's Land Basins, pursuant to long-standing agreements. The deficit between water supply and demand after utilization of the previously-listed supplies is served by imported water. Any deficit remaining between FWC water supply and demand is met using Chino Basin groundwater. The Chino Basin is expected to provide sufficient supply to serve the balance of future projected demands in normal year, single-dry year, and multiple-dry year scenarios.[64]

[63] Inland Empire Utilities Authority. Regional Water Recycling Plants No. 1 and 4. Accessed August 22. 2022.
[64] West Yost. 2020 Urban Water Management Plan for the San Gabriel Valley Water Company Fontana Water Company Division. June 2021.

As summarized in the Urban Water Management Plan (UWMP), FWC's supplies are adequate to meet projected normal year, single dry year, and multiple year demands.[65] As shown in Tables 14, 15, and 16, water supplies would equal water demand for each scenario.

Table 14
Normal Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 *(Opt)*
Supply totals *(autofill from Table 6-9)*	45,593	46,909	48,665	50,442	51,943
Demand totals *(autofill from Table 4-3)*	45,593	46,909	48,665	50,442	51,943
Difference	0	0	0	0	0
NOTES: Volumes are in AF.					

Table 15
Single Dry Year Supply and Demand Comparison

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	34,006	34,987	36,297	37,623	38,742
Demand totals*	34,006	34,987	36,297	37,623	38,742
Difference	0	0	0	0	0
NOTES: Volumes are in AF.					

[65] West Yost. 2020 Urban Water Management Plan for the San Gabriel Valley Water Company Fontana Water Company Division. June 2021.

Table 16
Multiple Dry Years Supply and Demand Comparison

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	42,886	44,124	45,776	47,447	48,859
	Demand totals	42,886	44,124	45,776	47,447	48,859
	Difference	0	0	0	0	0
Second year	Supply totals	41,415	42,610	44,206	45,820	47,183
	Demand totals	41,415	42,610	44,206	45,820	47,183
	Difference	0	0	0	0	0
Third year	Supply totals	34,074	35,057	36,369	37,697	38,819
	Demand totals	34,074	35,057	36,369	37,697	38,819
	Difference	0	0	0	0	0
Fourth year	Supply totals	34,006	34,987	36,297	37,623	38,742
	Demand totals	34,006	34,987	36,297	37,623	38,742
	Difference	0	0	0	0	0
Fifth year	Supply totals	36,526	37,580	38,987	40,411	41,613
	Demand totals	36,526	37,580	38,987	40,411	41,613
	Difference	0	0	0	0	0
NOTES: Volumes are in AF.						

To reflect the lasting impacts of the 2012-2016 drought conditions on future projected water demands, FWC selected a baseline demand of 165 gallons per capita per day (GPCD) to project future water demands from 2025 through 2045. The Proposed Project is estimated to generate 82 more residents than were estimated in the UWMP and have a water demand of 13,530 additional gallons per day. The Proposed Project requires a CZ from Single-Family to Route 66 Gateway District, which allows for multiple-family development. The increase of 82 residents would not be a substantial increase in population and is within the projected growth estimates relative to projected water demands.

FWC serves most of the City of Fontana. According to the existing General Plan, most land uses are anticipated to remain unchanged within the City. However, specific projects, like the Proposed Project, are anticipated to request permit to allow specific sites throughout the City to allow for higher density developments. These types of project would be assessed by the City on a project by project basis. FWC has opted to conservatively project future water use based on projected future population and assuming current per capita water consumption patterns.[66] Therefore, the increase in water demand from the Proposed Project is not anticipated to have a significant impact on water supplies during normal, dry and multiple dry years. A less than significant impact would occur, and no mitigation measures are required.

[66] West Yost. 2020 Urban Water Management Plan for the San Gabriel Valley Water Company Fontana Water Company Division. June 2021.

c) **Less Than Significant**. The City owns Fontana's sanitary sewer system of over 250 miles of sewer lines and six sewage pump stations. While Fontana owns this infrastructure, the wastewater treatment services are supplied by a regional authority, the Inland Empire Utilities Authority (IEUA). Wastewater in Fontana is directed to and treated at Regional Plants 1 and 4 (RP-1 and RP-4). The treatment capacity of RP-1 is 44 million gallons per day (gpd) and the treatment capacity of RP-4 is 14 million gpd,[67] both of these plants have available capacity. The Proposed Project would be reviewed by the City and the applicable wastewater providers to determine that sufficient sewer capacity exists to serve the additional population that would be generated by the Proposed Project. A less than significant impact would occur, and no mitigation measures are required.

d) **Less than Significant.** Solid waste disposal services for Fontana are provided by Burrtec Waste Industries, a private company under franchise agreement with the City of Fontana. Burrtec also operates Fontana's curbside recycling (including green waste recycling) program. All solid waste would be taken to the Mid-Valley Landfill, located at 2390 Alder Avenue in Rialto, California. Its maximum permitted capacity is 101,300,000 cubic yards. It has a maximum permitted throughput of 7,500 tons per day. As of June 30, 2019, it has a remaining capacity of 61,219,377 cubic yards.[68] Proposed Project construction would generate demolition as well as construction waste requiring disposal at local landfills. Materials generated during construction would include paper, cardboard, metal, plastics, glass, concrete, lumber scraps and other materials. Section 4.408 of the 2019 California Green Building Standards Code requires that at least 65% of the nonhazardous construction and demolition waste from residential construction operations be recycled and/or salvaged for reuse. Project construction would include recycling and/or salvaging at least 65% of construction and demolition waste in accordance with the 2022 CALGreen. According to CalRecycle's estimated solid waste generation rates, multi-family residences generate approximately 207 pounds of solid waste per day, based on the proposed 24 units, or approximately 0.10 ton per day, based on 8.6 pounds per unit per day.[69] Therefore, the Proposed Project's solid waste generation contribution to these landfills would be negligible and would not exceed the daily permitted capacities of these facilities. Therefore, a less than impact would occur, and no mitigation measures are required.

e) **Less than Significant.** AB 1826 requires local jurisdictions to implement an organic waste recycling program to divert organic waste generated by businesses (including multifamily buildings of five or more units, but not including household waste from the units). The Proposed Project would adhere the California Integrated Waste Management Act of 1989 (AB 939), AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991), and any other applicable local, State, and federal solid waste management regulations. Therefore, a less than significant impact would occur, and no mitigation measures are required.

[67] Inland Empire Utilities Authority. Regional Water Recycling Plants No. 1 and 4. Accessed August 22. 2022.
[68] CalRecycle. Solid Waste Information System database. Accessed August 22, 2022.
[69] CalRecycle. Estimated Solid Waste Generation Rates. Accessed August 22, 2022.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) 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?	☐	☐	☒	☐
c) 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 ongoing impacts to the environment?	☐	☐	☒	☐
d) 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?	☐	☐	☐	☒

a) **Less than Significant.** The Project site, including the subject parcel and driveway are not located within a High nor Very High Fire Hazard Severity Zone.[70][71] The purpose of the Hazard Mitigation Plan is to demonstrate the plan for reducing and/or eliminating risk in City of Fontana.[72] Mitigation generally involves alteration of physical environments, significantly reducing risks and vulnerability to hazards by altering the built environment so that life and property losses can be avoided or reduced. The SBCFD interfaces with different departments within the City to ensure the safety and efficiency of emergency response services. During the City's internal review process, the Proposed Project would be subject to review by the SBCFD through the FFPD. As discussed previously, under proposed conditions, the Proposed Project 30-foot driveway would be wide enough to allow for reciprocal access.

Additionally, the portion of Banana Avenue between Foothill Boulevard and Arrow Boulevard would be able to accommodate off-site parking by Proposed Project residents

[70] City of Fontana. 2017 Local Hazard Mitigation Plan. Figure 4-6: Wildfire Hazard Severity Zones. June 2017.
[71] CalFire. FHSZ viewer https://egis.fire.ca.gov/FHSZ/. Accessed April 20, 2023.
[72] City of Fontana. 2017 Local Hazard Mitigation Plan.

and visitors. During construction, the contractor would be required to maintain adequate emergency access for emergency vehicles. Therefore, the Proposed Project would not interfere with an adopted emergency response or evacuation plan. A less than significant impact would occur, and no mitigation measures are required.

b) **Less than Significant.** The Project site, including the subject parcel and driveway are not located within a High nor Very High Fire Hazard Severity Zone.[73] The property is located in an urbanized area and completely surrounded by existing development. It is not located adjacent to or near wildlands. The proposed residential development includes 19,704 SF of hardscape and 3,792 SF landscape. The Proposed Project would provide buildings with fire safety and fire suppression design elements, and proper landscaping, thereby reducing the risk of wildfire. The Proposed Project would comply with the latest California Fire Code. Therefore, the Proposed Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. A less than significant impact would occur, and no mitigation measures are required.

c) **Less than Significant.** The Proposed Project may include the installation of utilities; however, installation, operation and maintenance of utilities would be in compliance with fire safety regulations that require utility inspections[74] and preparation of Wildfire Mitigation Plans.[75] As noted above, the subject parcel and driveway are not located within a High nor Very High Fire Hazard Severity Zone and no aspects of the Proposed Project would exacerbate fire risks that could result in temporary or ongoing impacts to the environment.[76] Therefore, a less than significant impact would occur, and no mitigation measures are required.

d) **No Impact.** The Project site, including the subject parcel and driveway are located within flood hazard zone X,[77] which are areas with minimal flood hazard. Furthermore, it is not located within a High or Very High Fire Hazard Severity Zone. The property is located in an urbanized area and completely surrounded by existing development on relatively flat terrain. The subject parcel and driveway are not located adjacent to or near wildlands. Therefore, the Proposed Project would not expose persons or structures to post-fire slope instability or post-fire drainage. Therefore, no impact would occur, and no mitigation measures are required.

[73] City of Fontana. 2017 Local Hazard Mitigation Plan. Figure 4-6: Wildfire Hazard Severity Zones. June 2017.
[74] General Order 95 Rule 31.2 and General Order 165
[75] California Office of Energy and Infrastructure Safety. Wildfire Mitigation Plans https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/. Accessed April 20, 2023.
[76] City of Fontana. 2017 Local Hazard Mitigation Plan. Figure 4-6: Wildfire Hazard Severity Zones. June 2017.
[77] Federal Emergency Management Agency. National Flood Hazard Layer. Accessed August 4, 2022.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE:

	Potentially Significant Impact	Less than Significant with Mitigation.	Less than Significant	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐
d) Does the project have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals?				

a) **Less than Significant with Mitigation**. The Project Site is located in an urbanized area of the City. The Project Site is currently fully developed with single-family residences. Under existing conditions, the Project Site is currently covered by gravel, trees, dirt, and ruderal vegetation and four residential dwelling units. Block walls, wood picket fences, and chain-link fences surround the residences. Immediately west of the subject parcel is an open yard with parked vehicles.

The Project Site is surrounded by single-family residences to the west; a school to the east; an apartment complex to the south; and a fire station and commercial uses to the north. The Proposed Project would redevelop the subject parcel with a 3-story, 24-unit apartment complex and a 30-foot-wide driveway on APNs:0230-041-60, and -52, in compliance with the development standards set forth for the Route 66 Gateway zoning district. The remaining three parcels would not see any development as part of this Proposed Project and would only be subject to the requested CZ and GPA. Therefore, the Proposed Project

would not involve habitat modifications or activities that would have adverse effects on biological resources.

The Proposed Project will demolish one historic age building; however, as the cultural resource report (provided as Appendix D to this initial study) evaluated the structure. Based on the CRHR eligibility criteria, the cultural resources report concludes that this structure does not meet the significance criteria; as such, it is not considered a historic building of significance. As such, impacts to this structure are considered less than significant. However, mitigation measures are recommended because grading has the potential to discover inadvertent/undocumented historic features or deposits associated with the historic occupation of the property since the 1960s. To minimize impacts to historic and tribal cultural resources, with implementation of Mitigation Measures CR-1 and TCR-1 through TCR-8 identified, the Proposed Project would have a less than significant impact.

b) **Less than Significant.** Cumulative impacts are defined as two or more individual affects that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the development when added to the impacts of other closely related past, present, and reasonably foreseeable or probable future developments. Cumulative impacts can result from individually minor, but collectively significant, developments taking place over a period. The CEQA Guidelines, Section 15130 (a) and (b), states:

(a) Cumulative impacts shall be discussed when the project's incremental effect is cumulatively considerable.

(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided of the effects attributable to the project. The discussion should be guided by the standards of practicality and reasonableness.

Air Quality

In accordance with the SCAQMD methodology, emissions that exceed the regional significance thresholds would cumulatively contribute to the nonattainment designations of the SCAB. Development of the Proposed Project will be conditioned to comply with current SCAQMD rules and regulations to minimize impacts to air quality as discussed. The Proposed Project does not exceed applicable SCAQMD regional thresholds either during construction or operational activities. In addition, the difference between emissions from the existing use and emissions from the Proposed Project would be minimal. In addition, an increase of 98 residents, based on an average household of 4.07 persons per household.[78] would not be substantial increase in population and is within the City's project growth estimates. As such, the Proposed Project is consistent with SCAG's latest growth forecasts. The Proposed Project would not violate any air quality standard or contribute

[78] City of Fontana. Fontana Forward – General Plan Update 2015-2035. Approved and Adopted by City Council November 13, 2018.

substantially to an existing or projected air quality violation. Therefore, cumulative impacts are anticipated to be less than significant.

Greenhouse Gas

Greenhouse gas (GHG) emissions are cumulative in nature, in that, no one single project can measurably contribute to climate change and its affects (global average change in temperature, rising sea levels etc.). The direct or indirect GHG impacts are therefore not evaluated on a local level, but whether or not the GHG emissions resulting from the project are cumulative; that is, they add considerably to an increase in GHGs as compared to the existing environmental setting based on: 1) an established significance threshold(s); or 2) 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 greenhouse gas emissions.

The Proposed Project does not interfere with the state's implementation of (i) SB 32's target of reducing statewide GHG emissions to 40% below 1990 levels by 2030 or (ii) Executive Order S-3-05's target of reducing statewide GHG emissions to 80% below 1990 levels by 2050 because it does not interfere with the state's implementation of GHG reduction plans described in the California Air Resources Board's (CARB's) Updated Scoping Plan. The Proposed Project's total net operational GHG emissions would not exceed SCAQMD's draft screening threshold. It would be in compliance with the reduction goals AB 32 and SB 32. Therefore, the Proposed Project's incremental contribution to greenhouse gas emissions and their effects on climate change would not be cumulatively considerable.

c) **Less than Significant**. The Southern California region is considered to be tectonically active because of its historically high seismic activity. As such, the Proposed Project can be expected to experience moderate to severe ground shaking during the design life. The effects of seismic shaking can be mitigated through compliance with the latest Uniform Building Code, the recommendations listed in the geotechnical report, and the Structural Engineers Association parameters. With adherence to the City of Fontana Development Code, the Proposed Project is not anticipated to result in a safety hazard for people residing or working at the subject parcel. The development of the Proposed Project would not cause adverse impacts on humans, either directly or indirectly.

d) **Less than Significant.** The Proposed Project is the development of a 3-floor, 24-unit apartment complex on a property currently developed as a single-family residence. The apartment complex would include roof solar panels to meet the Proposed Project's electricity demands. The solar panels would support Senate Bill 100, which sets a 2045 goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources. As provided in the analyses of all environmental resources herein, with implementation of mitigation measures no significant impacts would occur prohibiting the achievement of the City's long-term environmental goals. Therefore, the Proposed Project would not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.

SECTION 4
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Sampson and Associates. Preliminary Soils Evaluation. February 25, 2022.

APPENDIX A
CALEEMOD FOR PROPOSED

Banana Ave. Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

3.3. Site Preparation (2023) - Unmitigated

3.5. Grading (2023) - Unmitigated

3.7. Building Construction (2023) - Unmitigated

3.9. Paving (2023) - Unmitigated

3.11. Architectural Coating (2023) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.2. Unmitigated

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Banana Ave.
Lead Agency	City of Fontana
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	6.40
Location	34.105371891544934, -117.496129578816
County	San Bernardino-South Coast
City	Fontana
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5285
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	24.0	Dwelling Unit	0.25	10,876	0.00	0.00	79.0	—
Parking Lot	12.7	1000sqft	0.30	0.00	3,792	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.5	6.12	8.65	0.01	0.53	0.32	1,640	0.07	0.03	1.31	1,652
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.33	13.2	12.2	0.02	6.14	3.18	2,279	0.13	0.09	0.04	2,309
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.42	1.99	2.66	< 0.005	0.20	0.12	506	0.02	0.01	0.18	510
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.36	0.48	< 0.005	0.04	0.02	83.8	< 0.005	< 0.005	0.03	84.5

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2023	14.5	6.12	8.65	0.01	0.53	0.32	1,640	0.07	0.03	1.31	1,652
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2023	1.33	13.2	12.2	0.02	6.14	3.18	2,279	0.13	0.09	0.04	2,309

Average Daily	—	—	—	—	—	—	—	—	—	—	—
2023	0.42	1.99	2.66	< 0.005	0.20	0.12	506	0.02	0.01	0.18	510
Annual	—	—	—	—	—	—	—	—	—	—	—
2023	0.08	0.36	0.48	< 0.005	0.04	0.02	83.8	< 0.005	< 0.005	0.03	84.5

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.19	1.03	17.8	0.04	2.03	1.75	1,877	1.89	0.06	3.82	1,946
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.02	1.05	15.8	0.04	2.03	1.75	1,814	1.89	0.06	0.17	1,880
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.24	0.58	5.27	0.01	0.41	0.18	1,172	1.26	0.05	1.61	1,221
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.11	0.96	< 0.005	0.08	0.03	194	0.21	0.01	0.27	202

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.54	0.45	4.17	0.01	0.31	0.06	945	0.05	0.04	3.74	963
Area	6.65	0.51	13.6	0.03	1.71	1.68	658	0.67	0.01	—	677
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253

Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	7.19	1.03	17.8	0.04	2.03	1.75	1,877	1.89	0.06	3.82	1,946
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.50	0.49	3.53	0.01	0.31	0.06	885	0.05	0.05	0.10	901
Area	6.52	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253
Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	7.02	1.05	15.8	0.04	2.03	1.75	1,814	1.89	0.06	0.17	1,880
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.47	0.47	3.48	0.01	0.29	0.06	851	0.05	0.04	1.54	867
Area	0.77	0.04	1.77	< 0.005	0.12	0.12	47.3	0.05	< 0.005	—	48.6
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253
Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	1.24	0.58	5.27	0.01	0.41	0.18	1,172	1.26	0.05	1.61	1,221
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.09	0.09	0.64	< 0.005	0.05	0.01	141	0.01	0.01	0.25	143
Area	0.14	0.01	0.32	< 0.005	0.02	0.02	7.83	0.01	< 0.005	—	8.05
Energy	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	41.8	< 0.005	< 0.005	—	42.0
Water	—	—	—	—	—	—	2.04	0.03	< 0.005	—	3.09
Waste	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51
Refrig.	—	—	—	—	—	—	—	—	—	0.01	0.01

Total	0.23	0.11	0.96	< 0.005	0.08	0.03	194	0.21	0.01	0.27	202

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	4.99	5.91	0.01	0.21	0.20	852	0.03	0.01	—	855
Demolition	—	—	—	—	0.13	0.02	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.16	< 0.005	0.01	0.01	23.3	< 0.005	< 0.005	—	23.4
Demolition	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	3.87	< 0.005	< 0.005	—	3.88
Demolition	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.70	0.00	0.01	0.00	135	0.01	< 0.005	0.02	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.14	0.08	< 0.005	0.01	< 0.005	107	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	0.00	3.74	< 0.005	< 0.005	0.01	3.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.94	< 0.005	< 0.005	< 0.005	3.09
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.62	< 0.005	< 0.005	< 0.005	0.63
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.49	< 0.005	< 0.005	< 0.005	0.51

3.3. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.02	5.57	0.01	0.27	0.25	858	0.03	0.01	—	861
Dust From Material Movement	—	—	—	—	0.53	0.06	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	2.35	< 0.005	< 0.005	—	2.36
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.39	< 0.005	< 0.005	—	0.39
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.35	0.00	< 0.005	0.00	67.3	< 0.005	< 0.005	0.01	68.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.19	< 0.005	< 0.005	< 0.005	0.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.03	< 0.005	< 0.005	< 0.005	0.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.6	11.4	0.02	0.60	0.55	1,713	0.07	0.01	—	1,719
Dust From Material Movement	—	—	—	—	5.31	2.57	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.06	< 0.005	< 0.005	< 0.005	9.39	< 0.005	< 0.005	—	9.42
Dust From Material Movement	—	—	—	—	0.03	0.01	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.55	< 0.005	< 0.005	—	1.56
Dust From Material Movement	—	—	—	—	0.01	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.52	0.00	0.01	0.00	101	< 0.005	< 0.005	0.01	102
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.61	0.33	< 0.005	0.04	0.02	465	0.05	0.07	0.03	488
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.56	< 0.005	< 0.005	< 0.005	0.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.55	< 0.005	< 0.005	< 0.005	2.68
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.09	< 0.005	< 0.005	< 0.005	0.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.42	< 0.005	< 0.005	< 0.005	0.44

3.7. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	0.26	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	0.26	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.16	1.62	1.92	< 0.005	0.08	0.07	357	0.01	< 0.005	—	359
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.30	0.35	< 0.005	0.01	0.01	59.2	< 0.005	< 0.005	—	59.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	1.60	0.00	0.01	0.00	254	0.01	0.01	1.09	258
Vendor	< 0.005	0.10	0.05	< 0.005	0.01	< 0.005	81.3	0.01	0.01	0.22	85.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.20	0.00	0.01	0.00	233	0.01	0.01	0.03	235
Vendor	< 0.005	0.10	0.05	< 0.005	0.01	< 0.005	81.3	0.01	0.01	0.01	85.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.35	0.00	< 0.005	0.00	64.6	< 0.005	< 0.005	0.13	65.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	22.3	< 0.005	< 0.005	0.03	23.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.06	0.00	< 0.005	0.00	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	3.69	< 0.005	< 0.005	< 0.005	3.86
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	4.61	5.32	0.01	0.22	0.20	823	0.03	0.01	—	826
Paving	0.16	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.07	< 0.005	< 0.005	< 0.005	11.3	< 0.005	< 0.005	—	11.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.87	< 0.005	< 0.005	—	1.87
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	1.62	0.00	0.01	0.00	257	0.01	0.01	1.10	261
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	0.00	3.27	< 0.005	< 0.005	0.01	3.32

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.93	1.15	< 0.005	0.04	0.03	134	0.01	< 0.005	—	134
Architectural Coatings	14.3	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	1.83	< 0.005	< 0.005	—	1.84
Architectural Coatings	0.20	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.30	< 0.005	< 0.005	—	0.30

Architectural Coatings	0.04	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.32	0.00	< 0.005	0.00	50.8	< 0.005	< 0.005	0.22	51.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.65	< 0.005	< 0.005	< 0.005	0.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	0.54	0.45	4.17	0.01	0.06	0.02	945	0.05	0.04	3.74	963
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.54	0.45	4.17	0.01	0.06	0.02	945	0.05	0.04	3.74	963
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.50	0.49	3.53	0.01	0.06	0.02	885	0.05	0.05	0.10	901
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.50	0.49	3.53	0.01	0.06	0.02	885	0.05	0.05	0.10	901
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.09	0.09	0.64	< 0.005	0.01	< 0.005	141	0.01	0.01	0.25	143
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.09	0.09	0.64	< 0.005	0.01	< 0.005	141	0.01	0.01	0.25	143

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	151	0.01	< 0.005	—	152
Parking Lot	—	—	—	—	—	—	16.7	< 0.005	< 0.005	—	16.7
Total	—	—	—	—	—	—	168	0.01	< 0.005	—	168
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	151	0.01	< 0.005	—	152
Parking Lot	—	—	—	—	—	—	16.7	< 0.005	< 0.005	—	16.7
Total	—	—	—	—	—	—	168	0.01	< 0.005	—	168
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	25.0	< 0.005	< 0.005	—	25.1
Parking Lot	—	—	—	—	—	—	2.76	< 0.005	< 0.005	—	2.77
Total	—	—	—	—	—	—	27.8	< 0.005	< 0.005	—	27.9

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	14.1	< 0.005	< 0.005	—	14.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	14.1	< 0.005	< 0.005	—	14.1

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	6.27	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Consumer Products	0.23	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.12	0.01	1.36	< 0.005	< 0.005	< 0.005	3.64	< 0.005	< 0.005	—	3.65
Total	6.65	0.51	13.6	0.03	1.71	1.68	658	0.67	0.01	—	677
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	6.27	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Consumer Products	0.23	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—
Total	6.52	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Annual	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.08	0.01	0.15	< 0.005	0.02	0.02	7.42	0.01	< 0.005	—	7.64
Consumer Products	0.04	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.17	< 0.005	< 0.005	< 0.005	0.41	< 0.005	< 0.005	—	0.41

Total	0.14	0.01	0.32	< 0.005	0.02	0.02	7.83	0.01	< 0.005	—	8.05

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	11.8	0.20	< 0.005	—	18.2
Parking Lot	—	—	—	—	—	—	0.47	< 0.005	< 0.005	—	0.47
Total	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	11.8	0.20	< 0.005	—	18.2
Parking Lot	—	—	—	—	—	—	0.47	< 0.005	< 0.005	—	0.47
Total	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1.96	0.03	< 0.005	—	3.01
Parking Lot	—	—	—	—	—	—	0.08	< 0.005	< 0.005	—	0.08
Total	—	—	—	—	—	—	2.04	0.03	< 0.005	—	3.09

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	—	—	—	—	—	—	—	—	—	0.08	0.08

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	—	—	—	—	—	—	—	—	—	0.08	0.08
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.01	0.01
Total	—	—	—	—	—	—	—	—	—	0.01	0.01

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description

Demolition	Demolition	3/1/2023	3/15/2023	5.00	10.0	—
Site Preparation	Site Preparation	3/16/2023	3/17/2023	5.00	1.00	—
Grading	Grading	3/18/2023	3/20/2023	5.00	2.00	—
Building Construction	Building Construction	3/21/2023	8/8/2023	5.00	100	—
Paving	Paving	8/9/2023	8/16/2023	5.00	5.00	—
Architectural Coating	Architectural Coating	8/17/2023	8/24/2023	5.00	5.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	1.00	367	0.40
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42

Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	1.50	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	6.50	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	17.3	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	2.57	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT

Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	3.46	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	22,024	7,341	0.00	0.00	784

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,300	—
Site Preparation	—	—	0.50	0.00	—

Grading	100	—	1.50	0.00	—
Paving	0.00	0.00	0.00	0.00	0.30

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Parking Lot	0.30	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	131	118	98.2	45,302	1,077	972	810	373,830
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	1
Gas Fireplaces	20
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	2
Conventional Wood Stoves	0
Catalytic Wood Stoves	1
Non-Catalytic Wood Stoves	1
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
22023.899999999998	7,341	0.00	0.00	784

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	103,588	532	0.0330	0.0040	264,892
Parking Lot	11,448	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	1,000,348	0.00
Parking Lot	0.00	60,896

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	5.36	0.00
Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	21.7	annual days of extreme heat
Extreme Precipitation	5.25	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	93.5
AQ-DPM	89.8
Drinking Water	66.7
Lead Risk Housing	48.2
Pesticides	0.00
Toxic Releases	75.3
Traffic	70.0
Effect Indicators	—
CleanUp Sites	86.3
Groundwater	30.9
Haz Waste Facilities/Generators	97.5
Impaired Water Bodies	0.00
Solid Waste	95.4
Sensitive Population	—
Asthma	72.1
Cardio-vascular	85.8

Low Birth Weights	31.5
Socioeconomic Factor Indicators	—
Education	79.1
Housing	48.1
Linguistic	73.7
Poverty	73.3
Unemployment	85.8

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	19.81265238
Employed	14.93648146
Median HI	31.91325549
Education	—
Bachelor's or higher	4.824842808
High school enrollment	17.87501604
Preschool enrollment	64.42961632
Transportation	—
Auto Access	92.6344155
Active commuting	46.54176825
Social	—
2-parent households	66.99602207
Voting	15.74489927
Neighborhood	—
Alcohol availability	51.89272424

Park access	21.5193122
Retail density	38.36776594
Supermarket access	40.97266778
Tree canopy	5.51777236
Housing	—
Homeownership	52.16219684
Housing habitability	24.6888233
Low-inc homeowner severe housing cost burden	17.34890286
Low-inc renter severe housing cost burden	82.47144874
Uncrowded housing	10.95855255
Health Outcomes	—
Insured adults	8.392146798
Arthritis	41.4
Asthma ER Admissions	18.4
High Blood Pressure	53.6
Cancer (excluding skin)	68.9
Asthma	21.6
Coronary Heart Disease	40.3
Chronic Obstructive Pulmonary Disease	27.0
Diagnosed Diabetes	27.5
Life Expectancy at Birth	23.5
Cognitively Disabled	24.2
Physically Disabled	50.9
Heart Attack ER Admissions	7.0
Mental Health Not Good	19.7
Chronic Kidney Disease	27.1
Obesity	22.5

Pedestrian Injuries	90.7
Physical Health Not Good	21.1
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	50.7
Current Smoker	20.8
No Leisure Time for Physical Activity	23.4
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	39.2
Elderly	91.2
English Speaking	19.9
Foreign-born	77.9
Outdoor Workers	50.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	77.1
Traffic Density	71.4
Traffic Access	46.8
Other Indices	—
Hardship	86.0
Other Decision Support	—
2016 Voting	29.4

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	93.0

Healthy Places Index Score for Project Location (b)	19.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Per Site Plan

APPENDIX B
CALEEMOD FOR EXISTING

Banana Ave. Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

1.2. Land Use Types

1.3. User-Selected Emission Reduction Measures by Emissions Sector

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

2.2. Construction Emissions by Year, Unmitigated

2.4. Operations Emissions Compared Against Thresholds

2.5. Operations Emissions by Sector, Unmitigated

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

3.3. Site Preparation (2023) - Unmitigated

3.5. Grading (2023) - Unmitigated

3.7. Building Construction (2023) - Unmitigated

3.9. Paving (2023) - Unmitigated

3.11. Architectural Coating (2023) - Unmitigated

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

4.3. Area Emissions by Source

4.3.2. Unmitigated

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

5. Activity Data

5.1. Construction Schedule

5.2. Off-Road Equipment

5.2.1. Unmitigated

5.3. Construction Vehicles

5.3.1. Unmitigated

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

5.6.2. Construction Earthmoving Control Strategies

5.7. Construction Paving

5.8. Construction Electricity Consumption and Emissions Factors

5.9. Operational Mobile Sources

5.9.1. Unmitigated

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.2. Architectural Coatings

5.10.3. Landscape Equipment

5.11. Operational Energy Consumption

5.11.1. Unmitigated

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

5.13. Operational Waste Generation

5.13.1. Unmitigated

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

5.18.2. Sequestration

5.18.2.1. Unmitigated

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Banana Ave.
Lead Agency	City of Fontana
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.80
Precipitation (days)	6.40
Location	34.105371891544934, -117.496129578816
County	San Bernardino-South Coast
City	Fontana
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5285
EDFZ	10
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	24.0	Dwelling Unit	0.25	10,876	0.00	0.00	79.0	—
Parking Lot	12.7	1000sqft	0.30	0.00	3,792	0.00	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	14.5	6.12	8.65	0.01	0.53	0.32	1,640	0.07	0.03	1.31	1,652
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.33	13.2	12.2	0.02	6.14	3.18	2,279	0.13	0.09	0.04	2,309
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.42	1.99	2.66	< 0.005	0.20	0.12	506	0.02	0.01	0.18	510
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.36	0.48	< 0.005	0.04	0.02	83.8	< 0.005	< 0.005	0.03	84.5

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
2023	14.5	6.12	8.65	0.01	0.53	0.32	1,640	0.07	0.03	1.31	1,652
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
2023	1.33	13.2	12.2	0.02	6.14	3.18	2,279	0.13	0.09	0.04	2,309

Average Daily	—	—	—	—	—	—	—	—	—	—	—
2023	0.42	1.99	2.66	< 0.005	0.20	0.12	506	0.02	0.01	0.18	510
Annual	—	—	—	—	—	—	—	—	—	—	—
2023	0.08	0.36	0.48	< 0.005	0.04	0.02	83.8	< 0.005	< 0.005	0.03	84.5

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.19	1.03	17.8	0.04	2.03	1.75	1,877	1.89	0.06	3.82	1,946
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	7.02	1.05	15.8	0.04	2.03	1.75	1,814	1.89	0.06	0.17	1,880
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.24	0.58	5.27	0.01	0.41	0.18	1,172	1.26	0.05	1.61	1,221
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.23	0.11	0.96	< 0.005	0.08	0.03	194	0.21	0.01	0.27	202

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.54	0.45	4.17	0.01	0.31	0.06	945	0.05	0.04	3.74	963
Area	6.65	0.51	13.6	0.03	1.71	1.68	658	0.67	0.01	—	677
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253

Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	7.19	1.03	17.8	0.04	2.03	1.75	1,877	1.89	0.06	3.82	1,946
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.50	0.49	3.53	0.01	0.31	0.06	885	0.05	0.05	0.10	901
Area	6.52	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253
Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	7.02	1.05	15.8	0.04	2.03	1.75	1,814	1.89	0.06	0.17	1,880
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.47	0.47	3.48	0.01	0.29	0.06	851	0.05	0.04	1.54	867
Area	0.77	0.04	1.77	< 0.005	0.12	0.12	47.3	0.05	< 0.005	—	48.6
Energy	< 0.005	0.07	0.03	< 0.005	0.01	0.01	253	0.02	< 0.005	—	253
Water	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Waste	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Refrig.	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	1.24	0.58	5.27	0.01	0.41	0.18	1,172	1.26	0.05	1.61	1,221
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.09	0.09	0.64	< 0.005	0.05	0.01	141	0.01	0.01	0.25	143
Area	0.14	0.01	0.32	< 0.005	0.02	0.02	7.83	0.01	< 0.005	—	8.05
Energy	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	41.8	< 0.005	< 0.005	—	42.0
Water	—	—	—	—	—	—	2.04	0.03	< 0.005	—	3.09
Waste	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51
Refrig.	—	—	—	—	—	—	—	—	—	0.01	0.01

Total	0.23	0.11	0.96	< 0.005	0.08	0.03	194	0.21	0.01	0.27	202

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	4.99	5.91	0.01	0.21	0.20	852	0.03	0.01	—	855
Demolition	—	—	—	—	0.13	0.02	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.16	< 0.005	0.01	0.01	23.3	< 0.005	< 0.005	—	23.4
Demolition	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	3.87	< 0.005	< 0.005	—	3.88
Demolition	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.70	0.00	0.01	0.00	135	0.01	< 0.005	0.02	136
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.14	0.08	< 0.005	0.01	< 0.005	107	0.01	0.02	0.01	113
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	0.00	3.74	< 0.005	< 0.005	0.01	3.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.94	< 0.005	< 0.005	< 0.005	3.09
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.62	< 0.005	< 0.005	< 0.005	0.63
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.49	< 0.005	< 0.005	< 0.005	0.51

3.3. Site Preparation (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.02	5.57	0.01	0.27	0.25	858	0.03	0.01	—	861
Dust From Material Movement	—	—	—	—	0.53	0.06	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	2.35	< 0.005	< 0.005	—	2.36
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.39	< 0.005	< 0.005	—	0.39
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.35	0.00	< 0.005	0.00	67.3	< 0.005	< 0.005	0.01	68.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.19	< 0.005	< 0.005	< 0.005	0.19
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.03	< 0.005	< 0.005	< 0.005	0.03
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.28	12.6	11.4	0.02	0.60	0.55	1,713	0.07	0.01	—	1,719
Dust From Material Movement	—	—	—	—	5.31	2.57	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.06	< 0.005	< 0.005	< 0.005	9.39	< 0.005	< 0.005	—	9.42
Dust From Material Movement	—	—	—	—	0.03	0.01	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.55	< 0.005	< 0.005	—	1.56
Dust From Material Movement	—	—	—	—	0.01	< 0.005	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.05	0.52	0.00	0.01	0.00	101	< 0.005	< 0.005	0.01	102
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.01	0.61	0.33	< 0.005	0.04	0.02	465	0.05	0.07	0.03	488
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.56	< 0.005	< 0.005	< 0.005	0.57
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.55	< 0.005	< 0.005	< 0.005	2.68
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.09	< 0.005	< 0.005	< 0.005	0.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.42	< 0.005	< 0.005	< 0.005	0.44

3.7. Building Construction (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	0.26	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.93	7.00	0.01	0.28	0.26	1,305	0.05	0.01	—	1,309
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.16	1.62	1.92	< 0.005	0.08	0.07	357	0.01	< 0.005	—	359
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.30	0.35	< 0.005	0.01	0.01	59.2	< 0.005	< 0.005	—	59.4
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	1.60	0.00	0.01	0.00	254	0.01	0.01	1.09	258
Vendor	< 0.005	0.10	0.05	< 0.005	0.01	< 0.005	81.3	0.01	0.01	0.22	85.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.09	0.11	1.20	0.00	0.01	0.00	233	0.01	0.01	0.03	235
Vendor	< 0.005	0.10	0.05	< 0.005	0.01	< 0.005	81.3	0.01	0.01	0.01	85.1
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.03	0.35	0.00	< 0.005	0.00	64.6	< 0.005	< 0.005	0.13	65.5
Vendor	< 0.005	0.03	0.01	< 0.005	< 0.005	< 0.005	22.3	< 0.005	< 0.005	0.03	23.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.06	0.00	< 0.005	0.00	10.7	< 0.005	< 0.005	0.02	10.9
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	3.69	< 0.005	< 0.005	< 0.005	3.86
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Paving (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.53	4.61	5.32	0.01	0.22	0.20	823	0.03	0.01	—	826
Paving	0.16	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.07	< 0.005	< 0.005	< 0.005	11.3	< 0.005	< 0.005	—	11.3
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.87	< 0.005	< 0.005	—	1.87
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.10	0.09	1.62	0.00	0.01	0.00	257	0.01	0.01	1.10	261
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	0.00	3.27	< 0.005	< 0.005	0.01	3.32

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.54	< 0.005	< 0.005	< 0.005	0.55
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Architectural Coating (2023) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.15	0.93	1.15	< 0.005	0.04	0.03	134	0.01	< 0.005	—	134
Architectural Coatings	14.3	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	1.83	< 0.005	< 0.005	—	1.84
Architectural Coatings	0.20	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.30	< 0.005	< 0.005	—	0.30

Architectural Coatings	0.04	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.32	0.00	< 0.005	0.00	50.8	< 0.005	< 0.005	0.22	51.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.65	< 0.005	< 0.005	< 0.005	0.66
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	0.54	0.45	4.17	0.01	0.06	0.02	945	0.05	0.04	3.74	963
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.54	0.45	4.17	0.01	0.06	0.02	945	0.05	0.04	3.74	963
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.50	0.49	3.53	0.01	0.06	0.02	885	0.05	0.05	0.10	901
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.50	0.49	3.53	0.01	0.06	0.02	885	0.05	0.05	0.10	901
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	0.09	0.09	0.64	< 0.005	0.01	< 0.005	141	0.01	0.01	0.25	143
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.09	0.09	0.64	< 0.005	0.01	< 0.005	141	0.01	0.01	0.25	143

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	151	0.01	< 0.005	—	152
Parking Lot	—	—	—	—	—	—	16.7	< 0.005	< 0.005	—	16.7
Total	—	—	—	—	—	—	168	0.01	< 0.005	—	168
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Apartments Mid Rise	—	—	—	—	—	—	151	0.01	< 0.005	—	152
Parking Lot	—	—	—	—	—	—	16.7	< 0.005	< 0.005	—	16.7
Total	—	—	—	—	—	—	168	0.01	< 0.005	—	168
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	25.0	< 0.005	< 0.005	—	25.1
Parking Lot	—	—	—	—	—	—	2.76	< 0.005	< 0.005	—	2.77
Total	—	—	—	—	—	—	27.8	< 0.005	< 0.005	—	27.9

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.03	< 0.005	0.01	0.01	84.9	0.01	< 0.005	—	85.1
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	14.1	< 0.005	< 0.005	—	14.1
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	14.1	< 0.005	< 0.005	—	14.1

4.3. Area Emissions by Source

4.3.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	6.27	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Consumer Products	0.23	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.12	0.01	1.36	< 0.005	< 0.005	< 0.005	3.64	< 0.005	< 0.005	—	3.65
Total	6.65	0.51	13.6	0.03	1.71	1.68	658	0.67	0.01	—	677
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Hearths	6.27	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Consumer Products	0.23	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.02	—	—	—	—	—	—	—	—	—	—
Total	6.52	0.50	12.2	0.03	1.71	1.68	654	0.67	0.01	—	674
Annual	—	—	—	—	—	—	—	—	—	—	—
Hearths	0.08	0.01	0.15	< 0.005	0.02	0.02	7.42	0.01	< 0.005	—	7.64
Consumer Products	0.04	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.17	< 0.005	< 0.005	< 0.005	0.41	< 0.005	< 0.005	—	0.41

Total	0.14	0.01	0.32	< 0.005	0.02	0.02	7.83	0.01	< 0.005	—	8.05

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	11.8	0.20	< 0.005	—	18.2
Parking Lot	—	—	—	—	—	—	0.47	< 0.005	< 0.005	—	0.47
Total	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	11.8	0.20	< 0.005	—	18.2
Parking Lot	—	—	—	—	—	—	0.47	< 0.005	< 0.005	—	0.47
Total	—	—	—	—	—	—	12.3	0.20	< 0.005	—	18.7
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1.96	0.03	< 0.005	—	3.01
Parking Lot	—	—	—	—	—	—	0.08	< 0.005	< 0.005	—	0.08
Total	—	—	—	—	—	—	2.04	0.03	< 0.005	—	3.09

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	9.51	0.95	0.00	—	33.3
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51
Parking Lot	—	—	—	—	—	—	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	1.57	0.16	0.00	—	5.51

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	—	—	—	—	—	—	—	—	—	0.08	0.08

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.08	0.08
Total	—	—	—	—	—	—	—	—	—	0.08	0.08
Annual	—	—	—	—	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	—	—	—	0.01	0.01
Total	—	—	—	—	—	—	—	—	—	0.01	0.01

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description

Demolition	Demolition	3/1/2023	3/15/2023	5.00	10.0	—
Site Preparation	Site Preparation	3/16/2023	3/17/2023	5.00	1.00	—
Grading	Grading	3/18/2023	3/20/2023	5.00	2.00	—
Building Construction	Building Construction	3/21/2023	8/8/2023	5.00	100	—
Paving	Paving	8/9/2023	8/16/2023	5.00	5.00	—
Architectural Coating	Architectural Coating	8/17/2023	8/24/2023	5.00	5.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Rubber Tired Dozers	Diesel	Average	1.00	1.00	367	0.40
Demolition	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Site Preparation	Graders	Diesel	Average	1.00	8.00	148	0.41
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Grading	Graders	Diesel	Average	1.00	6.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	4.00	367	0.29
Building Construction	Forklifts	Diesel	Average	2.00	6.00	82.0	0.20
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Paving	Cement and Mortar Mixers	Diesel	Average	4.00	6.00	10.0	0.56
Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42

Paving	Rollers	Diesel	Average	1.00	7.00	36.0	0.38
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	10.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	1.50	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	5.00	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	7.50	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	6.50	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	17.3	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	2.57	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT

Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	17.5	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	3.46	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	22,024	7,341	0.00	0.00	784

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	1,300	—
Site Preparation	—	—	0.50	0.00	—

Grading	100	—	1.50	0.00	—
Paving	0.00	0.00	0.00	0.00	0.30

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Parking Lot	0.30	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	131	118	98.2	45,302	1,077	972	810	373,830
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	1
Gas Fireplaces	20
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	2
Conventional Wood Stoves	0
Catalytic Wood Stoves	1
Non-Catalytic Wood Stoves	1
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
22023.899999999998	7,341	0.00	0.00	784

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	103,588	532	0.0330	0.0040	264,892
Parking Lot	11,448	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	1,000,348	0.00
Parking Lot	0.00	60,896

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	5.36	0.00
Parking Lot	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	21.7	annual days of extreme heat
Extreme Precipitation	5.25	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	2	1	1	3
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack	N/A	N/A	N/A	N/A
Air Quality	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.

The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	95.3
AQ-PM	93.5
AQ-DPM	89.8
Drinking Water	66.7
Lead Risk Housing	48.2
Pesticides	0.00
Toxic Releases	75.3
Traffic	70.0
Effect Indicators	—
CleanUp Sites	86.3
Groundwater	30.9
Haz Waste Facilities/Generators	97.5
Impaired Water Bodies	0.00
Solid Waste	95.4
Sensitive Population	—
Asthma	72.1
Cardio-vascular	85.8

Low Birth Weights	31.5
Socioeconomic Factor Indicators	—
Education	79.1
Housing	48.1
Linguistic	73.7
Poverty	73.3
Unemployment	85.8

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	19.81265238
Employed	14.93648146
Median HI	31.91325549
Education	—
Bachelor's or higher	4.824842808
High school enrollment	17.87501604
Preschool enrollment	64.42961632
Transportation	—
Auto Access	92.6344155
Active commuting	46.54176825
Social	—
2-parent households	66.99602207
Voting	15.74489927
Neighborhood	—
Alcohol availability	51.89272424

Park access	21.5193122
Retail density	38.36776594
Supermarket access	40.97266778
Tree canopy	5.51777236
Housing	—
Homeownership	52.16219684
Housing habitability	24.6888233
Low-inc homeowner severe housing cost burden	17.34890286
Low-inc renter severe housing cost burden	82.47144874
Uncrowded housing	10.95855255
Health Outcomes	—
Insured adults	8.392146798
Arthritis	41.4
Asthma ER Admissions	18.4
High Blood Pressure	53.6
Cancer (excluding skin)	68.9
Asthma	21.6
Coronary Heart Disease	40.3
Chronic Obstructive Pulmonary Disease	27.0
Diagnosed Diabetes	27.5
Life Expectancy at Birth	23.5
Cognitively Disabled	24.2
Physically Disabled	50.9
Heart Attack ER Admissions	7.0
Mental Health Not Good	19.7
Chronic Kidney Disease	27.1
Obesity	22.5

Pedestrian Injuries	90.7
Physical Health Not Good	21.1
Stroke	34.3
Health Risk Behaviors	—
Binge Drinking	50.7
Current Smoker	20.8
No Leisure Time for Physical Activity	23.4
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	39.2
Elderly	91.2
English Speaking	19.9
Foreign-born	77.9
Outdoor Workers	50.5
Climate Change Adaptive Capacity	—
Impervious Surface Cover	77.1
Traffic Density	71.4
Traffic Access	46.8
Other Indices	—
Hardship	86.0
Other Decision Support	—
2016 Voting	29.4

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	93.0

Healthy Places Index Score for Project Location (b)	19.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	Per Site Plan

APPENDIX C
EXISTING TREE REPORT MAO

LANDSCAPE DYNAMICS
URBAN | ECOSYSTEM | SOLUTIONS

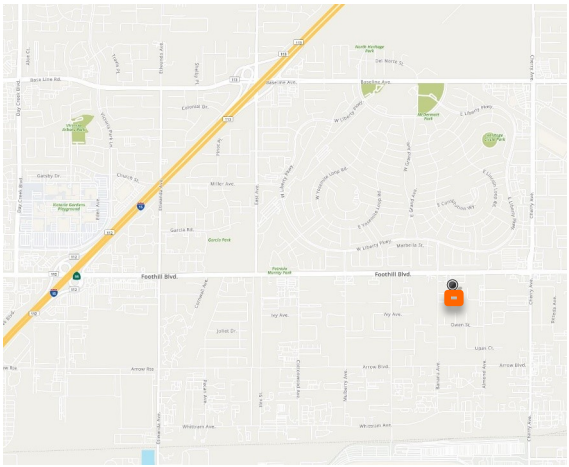
Report Date:
October 13, 2022

Client:
Saber Awad
SA Golden Investment Inc.
saberawad3346@gmail.com
(909) 519-3346

Tree Assessment Site:
8155 Banana Avenue
APN 023-004-160

Report Content:

Pages	1	General
Page	2	Observations and Inventory Table
Pages	3-4	Existing tree photos
Page	5	Preservation Ordinance Excerpts
Attached:		Tree Location Map



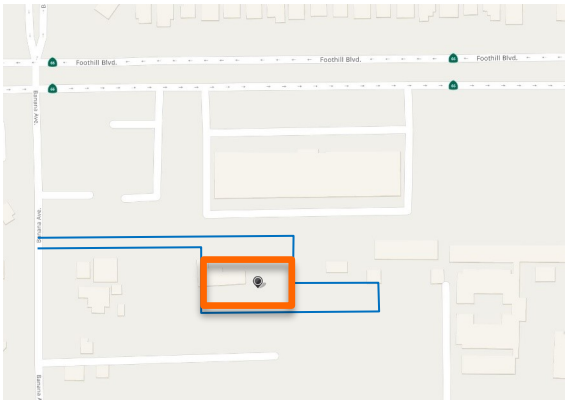
Project Vicinity Map

General:

Landscape Dynamics was contracted to perform and prepare an inventory of existing trees (including identification of tree species, diameter at breast height (DBH), and condition/health) within the limits of the proposed project at the above mentioned location.

The site visit and assessment was completed on July 8, 2022.

The primary task associated with the field review of the trees on site was to determine the required number of replacement trees for protected species pursuant to the City of Fontana's Preservation of Heritage, Significant and Specimen Trees.



Property Location

Please feel free to contact us with any questions.

Greg Zoll, Landscape Dynamics
Landscape Architect, Certified Arborist
(951) 264-4839
CLA# 5204 ISA #WE-9711A

Observations:

Landscape Dynamics conducted the tree inventory by walking the site and locating all of trees located within the limits of the proposed project. Each tree was cataloged with the tree species, diameter at breast height (DBH), and condition/health. A Tree Inventory and Replacement Table is included within this report, along with a location map for each tree / tree grouping.

Of the trees inventoried, none are considered to be heritage, significant, or specimen trees as defined by the tree preservation ordinance. The project will, however, require removal of the all of trees within the site, either due to health condition or location.

The replacement trees, if required per the ordinance, are provided in the Tree Inventory Table below; these quantities were calculated per the 'Other Tree Replacement Table No.s III and IV' within the ordinance. A Summary of Required Replacements is below.

Pictures of the existing trees are provided on the following pages.

Tree Inventory and Replacement Table

Tree #	DBH	Health	Species	Replace. Qty	Replace. Size
1	16.5"	85%	Quercus imbricaria / Shingle Oak	4	48" box
2	6", 8", 4", 5"	70%	Olea europaea / Olive	4	36" box
3	(2) 3" sprouts	45%	Callistemon citrunus	1	15 gal
S1	Stump		Pinus sp.	1	15 gal
S2	Stump, sprouting		Olea sp.	1	15 gal
S3	Stump		Pinus sp.	1	15 gal

Summary of Total Required Replacements

Container Size	Quantity
15-gallon	4
36" Box	4
48" Box	4

Photos of Protected Trees



Tree No. 1



Tree No. 1



Tree No. 2



Tree No. 2

Photos of Protected Trees



Tree No. 3



Tree No. 3



Stump No. S1



Stump No. S2



Stump No. S3

Preservation Ordinance Excerpts that pertain to this project:

City of Fontana Chapter 28, Article III Preservation of Heritage, Significant and Specimen Trees

PURPOSE: *This article is adopted to establish regulations for the preservation and protection of heritage, significant and/or specimen trees within the city located on both private and public property. The city council finds that such trees are worthy of preservation in order to enhance the scenic beauty of the city, provide wind protection, prevent soil erosion, promote urban forestation, conserve the city's tree heritage for the benefit of all, and thereby promote the public health, safety and welfare.*

Protected tree *means any heritage, significant or specimen tree subject to this article or other such tree identified by a federal or state agency as endangered or sensitive species.*

Tree replacement and permit not required.

No permit or replacement shall be required for:

(4) Removal of trees which are determined to be diseased and/or dead by a certified arborist and approved by the staff.

(6) Removal of trees which are determined to be within the ultimate right-of-way as shown within the circulation element of the city's general plan.

Tree replacement or relocation.

(c) All other trees which are not heritage, significant, or specimen tree shall be replaced. The size of the replacement tree(s) shall be based on a scale of ten percent to 100 percent. Staff may require that the ratings be performed by a certified arborist.

Other Tree Replacement Table No. III for Trees Under Seven Inches in Diameter

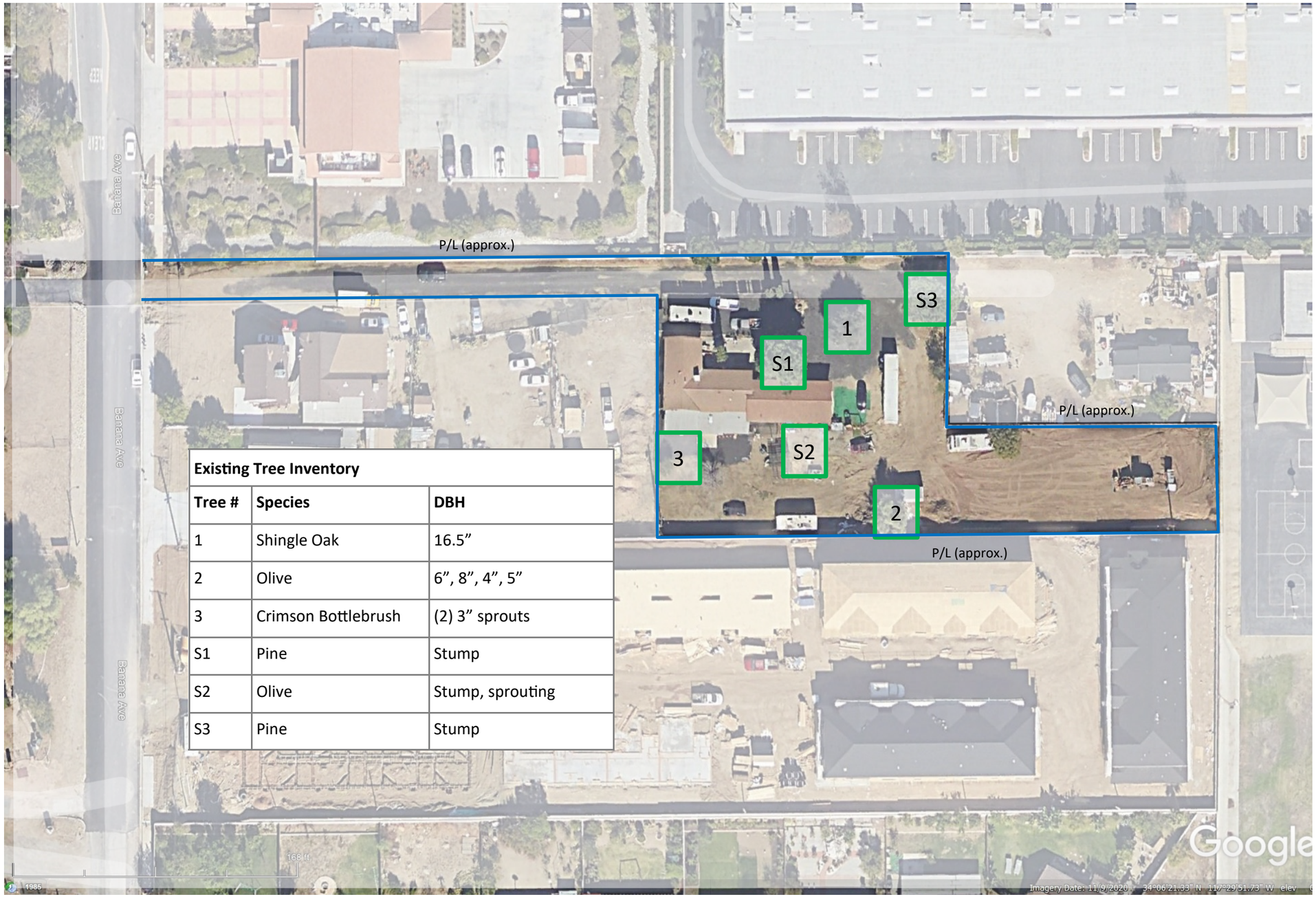
Trunk Diameter (Approximate)/Replace With

Scale Rating (10% to 100%)		0.75"/	2"/	3.25"/	4.5"/	6"/
Very poor	Below 45%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Poor	45%— 55%	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.	1/15 gal.
Average	60%— 70%	1/15 gal.	1/15 gal.	1/24" box	1/36" box	1/48" box
Very good	75%— 85%	1/15 gal.	1/24" box	1/36" box	1/48" box	2/48" box
Excellent	90%—100%	1/15 gal.	1/24" box	1/36" box	2/48" box	3/48" box

Other Tree Replacement Table No. IV for Trees Seven Inches in Diameter or Greater

Scale Rating (10% to 100%)		Number Removed	Replace With	Minimum Size
Very poor	Below 45%	1	1	15 gallon
Poor	45%—55%	1	1	15 gallon
Average	60%	1	4	24" box
	65%	1	4	24" box
	70%	1	4	36" box
Very good	75%	1	4	36" box
	80%	1	4	48" box
	85%	1	4	48" box

(f) A tree that is determined by a certified arborist to be firewood harvested or stump regrowth shall be removed and replaced with one 15-gallon tree of a species to be determined by the staff.



Existing Tree Inventory		
Tree #	**Species**	**DBH**
1	Shingle Oak	16.5”
2	Olive	6”, 8”, 4”, 5”
3	Crimson Bottlebrush	(2) 3” sprouts
S1	Pine	Stump
S2	Olive	Stump, sprouting
S3	Pine	Stump

APPENDIX D
CULTURAL RESOURCES STUDY

CULTURAL RESOURCES STUDY FOR THE 8155 BANANA AVENUE PROJECT

CITY OF FONTANA, SAN BERNARDINO COUNTY, CALIFORNIA

APN 0230-041-60

Lead Agency:

City of Fontana
Community Development Department
8353 Sierra Avenue
Fontana, California 92335

Preparer:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064



Signature

Project Proponent:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

November 18, 2022

Archaeological Database Information

Authors: Irem Oz and Brian F. Smith

Consulting Firm: Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064
(858) 679-8218

Client/Project Proponent: Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

Report Date: November 18, 2022

Report Title: Cultural Resources Study for the 8155 Banana Avenue Project, City of Fontana, San Bernardino County, California (APN 0230-041-60)

Type of Study: Phase I Cultural Resources Survey and Historic Structure Evaluation

New Sites: Temp-1 (8155 Banana Avenue)

USGS Quadrangle: *Fontana, California* (7.5 minute)

Acreage: 0.87 acre

Key Words: Survey; historic building at 8155 Banana Avenue recorded as Temp-1; monitoring of grading is recommended; historic building not significant and preservation not recommended.

Table of Contents

Section	Description	Page
MANAGEMENT SUMMARY/ABSTRACT		*vi*
1.0	INTRODUCTION	1.0–1
	1.1 Project Description	1.0–1
	1.2 Environmental Setting	1.0–1
	1.3 Cultural Setting – Archaeological Perspectives	1.0–5
	1.3.1 Introduction	1.0–6
	1.3.2 Results of the Archaeological Records Search	1.0–17
	1.4 Applicable Regulations	1.0–18
	1.4.1 California Environmental Quality Act	1.0–18
2.0	RESEARCH DESIGN	2.0–1
3.0	ANALYSIS OF PROJECT EFFECTS	3.0–1
	3.1 Methods	3.0–1
	3.1.1 Archival Research	3.0–1
	3.1.2 Survey Methods	3.0–1
	3.1.3 Historic Structure Assessment	3.0–1
	3.2 Results of the Field Survey	3.0–2
	3.3 Historic Structure Analysis	3.0–4
	3.3.1 History of the Project Area	3.0–7
	3.3.2 Description of Surveyed Resource	3.0–8
	3.3.3 Significance Evaluation	3.0–26
	3.4 Discussion/Summary	3.0–43
4.0	INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION	4.0–1
	4.1 Resource Importance	4.0–1
	4.2 Impact Identification	4.0–1
5.0	MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS	5.0–1
	5.1 Mitigation Measures	5.0–1
	5.2 Mitigation Monitoring and Reporting Program	5.0–1
6.0	LIST OF PREPARERS AND ORGANIZATIONS CONTACTED	6.0–1
7.0	REFERENCES CITED	7.0–1

List of Appendices

Appendix A – Resumes of Key Personnel
Appendix B – Site Record Form*
Appendix C – Archaeological Records Search Results*
Appendix D – NAHC Sacred Lands File Search Results*
Appendix E – Historic Documents

** Deleted for public review and bound separately in the Confidential Appendix*

List of Figures

Figure **Description** **Page**

Figure 1.1–1 General Location Map 1.0–2
Figure 1.1–2 Project Location Map (USGS) 1.0–3
Figure 1.1–3 Site Plan 1.0–4
Figure 3.2–1 Cultural Resource Location Map 3.0–5
Figure 3.3–1 Historic Structure Location Map 3.0–6

List of Plates

Plate **Description** **Page**

Plate 3.2–1 Overview of the project from the southeast corner, facing west 3.0–2
Plate 3.2–2 Overview of the project from the northwest corner showing Site Temp-1, facing southeast 3.0–3
Plate 3.2–3 View of the soil stockpiles in the southwest corner of the project, facing northeast 3.0–3
Plate 3.2–4 Overview of the project from the northeast corner, facing southwest 3.0–4
Plate 3.3–1 William V. Landecena (left) 3.0–7
Plate 3.3–2 Aerial Overview of the 8155 Banana Avenue Building 3.0–10
Plate 3.3–3 South Façade of the 8155 Banana Avenue Residence, Facing North 3.0–11
Plate 3.3–4 South Façade of the 8155 Banana Avenue Residence, Showing the Main Entry Door, Facing North 3.0–12
Plate 3.3–5 South Façade of the 8155 Banana Avenue Residence, Facing North 3.0–13
Plate 3.3–6 South Façade of the 8155 Banana Avenue Residence, Facing Northeast 3.0–14

List of Plates (continued)

Plate	Description	Page
Plate 3.3–7	South Façade of the 8155 Banana Avenue Attached Garage and Pergola, Facing North	3.0–15
Plate 3.3–8	South Façade of the 8155 Banana Avenue Attached Garage and Pergola, Facing Northwest	3.0–16
Plate 3.3–9	East Façade of the 8155 Banana Avenue Attached Garage, Facing Northwest	3.0–17
Plate 3.3–10	East Façade of the 8155 Banana Avenue Attached Garage, Showing the Garage Door, Facing West	3.0–18
Plate 3.3–11	North and East Façades of the 8155 Banana Avenue Residence, Showing the Semi-Enclosed Courtyard, Facing Southwest	3.0–19
Plate 3.3–12	North Façade of the 8155 Banana Avenue Attached Garage, Facing South	3.0–20
Plate 3.3–13	North Façade of the 8155 Banana Avenue Attached Garage (Left) and North and East Façades of the Residence (Right), Facing Southwest	3.0–21
Plate 3.3–14	North Façade (Left) and East Façade of the North Wing (Right) of the 8155 Banana Avenue Residence, Facing South	3.0–22
Plate 3.3–15	North Façade of the North Wing of the 8155 Banana Avenue Residence, Facing South	3.0–23
Plate 3.3–16	West Façade of the 8155 Banana Avenue Residence, Facing Northeast	3.0–24
Plate 3.3–17	North Façade of the 8155 Banana Avenue Residence, Facing Southeast	3.0–25
Plate 3.3–18	1959 Aerial Photograph	3.0–29
Plate 3.3–19	1966 Aerial Photograph	3.0–30
Plate 3.3–20	1976 Aerial Photograph	3.0–31
Plate 3.3–21	1980 Aerial Photograph	3.0–32
Plate 3.3–22	1985 Aerial Photograph	3.0–33
Plate 3.3–23	1989 Aerial Photograph	3.0–34
Plate 3.3–24	1994 Aerial Photograph	3.0–35
Plate 3.3–25	2002 Aerial Photograph	3.0–36
Plate 3.3–26	2004 Aerial Photograph	3.0–37
Plate 3.3–27	2005 Aerial Photograph	3.0–38
Plate 3.3–28	2009 Aerial Photograph	3.0–39
Plate 3.3–29	Current Aerial Photograph	3.0–40

List of Tables

Table	Description	Page
Table 1.3–1	Archaeological Sites Located Within One Mile of the 8155 Banana Avenue Project	1.0–17

MANAGEMENT SUMMARY/ABSTRACT

In response to a requirement by the City of Fontana, Brian F. Smith and Associates, Inc. (BFSA) conducted a cultural resources survey of the 0.87-acre 8155 Banana Avenue Project. This project is located southeast of the intersection of Foothill Boulevard and Banana Avenue in the city of Fontana, San Bernardino County, California (Assessor's Parcel Number [APN] 0230-041-60). On the U.S. Geological Survey 7.5-minute, 1:24,000-scale *Fontana, California* topographic quadrangle map, the project is situated within Section 10, Township 1 South, Range 6 West (projected), San Bernardino Baseline and Meridian. The proposed project consists of the construction of a three-story, 24-unit apartment building with supporting tenant covered and open parking, perimeter screen walls, trash enclosures, on-site lighting, security cameras, and site landscaping.

The purpose of this investigation was to locate and record any cultural resources present within the project and subsequently evaluate any resources as part of the City of Fontana's environmental review process conducted in compliance with the California Environmental Quality Act (CEQA). The archaeological investigation of the project included the review of an archaeological records search from the South Central Coastal Information Center (SCCIC) at California State University, Fullerton (CSU Fullerton) in order to assess previous archaeological studies and identify any previously recorded archaeological sites within the project boundaries or in the immediate vicinity. BFSA also requested a Sacred Lands File (SLF) review by the Native American Heritage Commission (NAHC).

The archaeological survey, which was conducted on August 16, 2022, was completed in order to determine if cultural resources exist within the property and if the project represents a potential adverse impact to cultural resources. The survey resulted in the identification of one historic single-family residence located at 8155 Banana Avenue which was recorded as Temp-1. According to the proposed development plan, the 8155 Banana Avenue Project will impact the identified cultural resource site. Based upon the results of the field survey and records searches, from the perspective of the CEQA review of the proposed development, Site Temp-1 has been evaluated as not significant. While the building is historic in age, it was not designed by an architect of importance, it does not possess any architecturally important elements, and the owners and occupants were not historically significant to the community. Based upon the conclusions reached during the current evaluation, no mitigation measures are recommended for the historic building at Temp-1. No impacts to significant resources are associated with the proposed development of the property.

Although the historic building was evaluated as not CEQA-significant, the potential exists that unidentified significant historic deposits may be present that are related to the occupation of this location since the 1960s. Because of this potential to encounter buried cultural deposits, monitoring of grading by a qualified archaeologist is recommended. As no Native American prehistoric sites have been recorded within one mile of the property, Native American monitoring

would not be required during grading unless and until a discovery of a prehistoric site or deposit occurs, at which time a Native American monitor should be incorporated into the monitoring program. Should potentially significant cultural deposits be discovered, mitigation measures will be implemented to reduce the effects of the grading impacts. A Mitigation Monitoring and Reporting Program (MMRP) has been provided in this report (see Section 5.0). As part of this study, a copy of this report will be submitted to the SCCIC at CSU Fullerton.

1.0 INTRODUCTION

1.1 Project Description

The archaeological survey program for the 8155 Banana Avenue Project was conducted in order to comply with CEQA and City of Fontana environmental guidelines. The project is located southeast of the intersection of Foothill Boulevard and Banana Avenue at 8155 Banana Avenue in the city of Fontana, San Bernardino County, California (Figure 1.1–1). The property, which includes APN 0230-041-60, is located on the 7.5-minute USGS *Fontana, California* topographic quadrangle in Section 10, Township 1 South, Range 6 West (Figure 1.1–2). The project proposes to grade the entire 0.87-acre property for the construction of a three-story, 24-unit apartment building with supporting tenant covered parking, open parking, perimeter screen walls, on-site lighting, security cameras, and site landscaping (Figure 1.1–3).

The project is currently developed with a single-family residence and attached garage constructed in 1961 and associated hardscape and landscaping. The historic single-family residence is located at 8155 Banana Avenue and has been recorded as Temp-1.

The property was previously graded for the development of the residence and ground visibility during the survey was limited by the presence of the residence as well as equipment and soil stock storage associated with a project located on an adjacent parcel. The decision to request this investigation was based upon the cultural resource sensitivity of the locality, as suggested by known site density and predictive modeling. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns, which in this particular case include the project's proximity to Lytle Creek and the terrestrial ecosystems surrounding the creek, which are part of an environmental setting that supported a significant prehistoric population for over 10,000 years.

1.2 Environmental Setting

The 8155 Banana Avenue Project is generally located in southwestern San Bernardino County in the city of Fontana. The subject property is part of the Chino Basin, south of the San Gabriel Mountains, north of the Jurupa Mountains, and west of the San Bernardino Mountains. The San Gabriel Mountains extend east from Newhall Pass in Los Angeles County to the Cajon Pass in San Bernardino County. These mountains are part of the Transverse Ranges with peaks exceeding 9,000 feet above mean sea level (AMSL). The project is situated on an alluvial fan at the western margin and southern end of Lytle Creek.

The general project area is characterized by relatively flat land (with elevations ranging from 1,203 to 1,207 feet AMSL) that was previously used as an orchard and rural ranch. No natural features that are often associated with prehistoric sites, such as bedrock outcrops or natural sources of water, are visible on aerial photographs or maps of the project area.

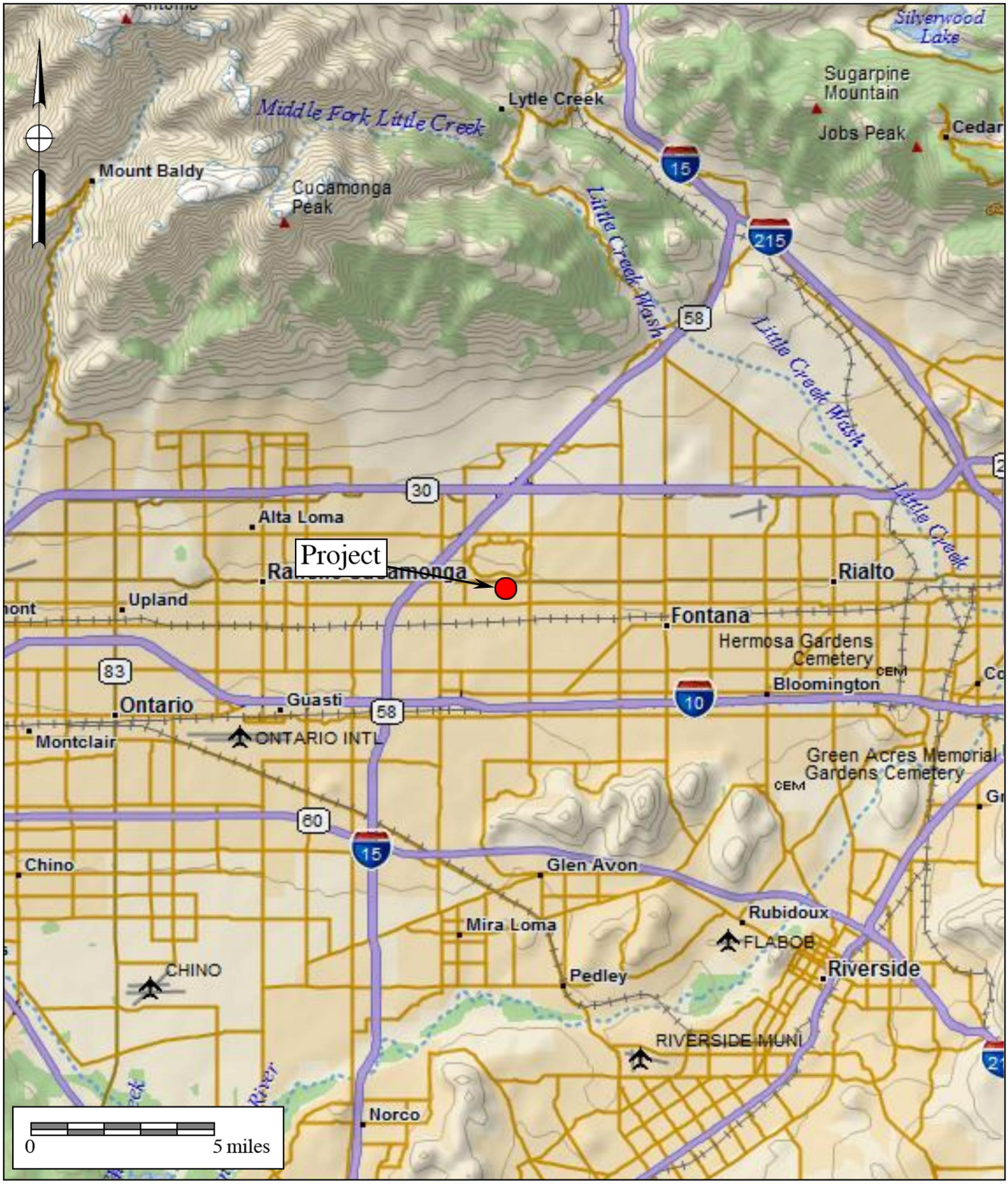


Figure 1.1–1

General Location Map

The 8155 Banana Avenue Project

DeLorme World Base Map Service (1:250,000 series)

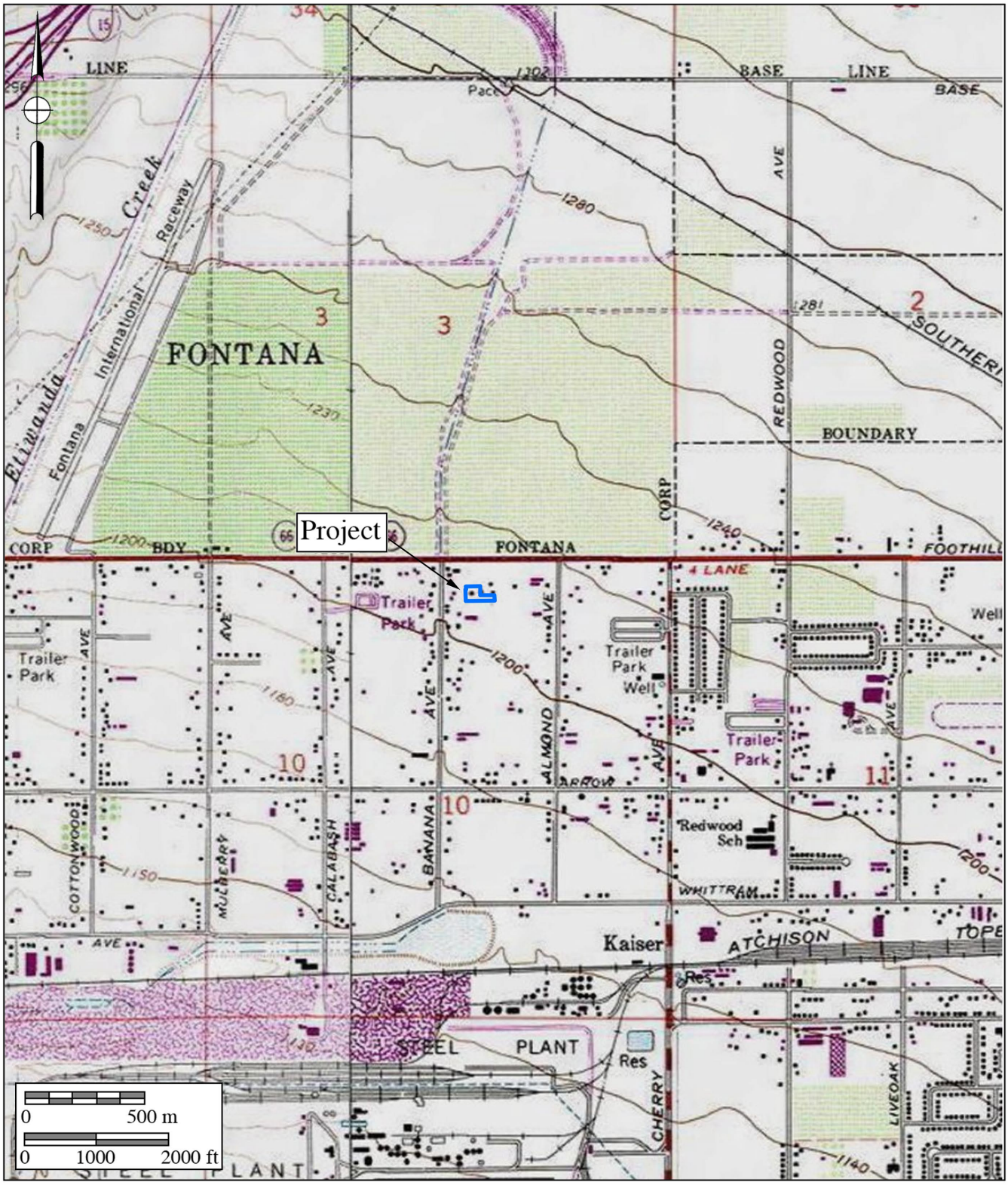


Figure 1.1–2

Project Location Map

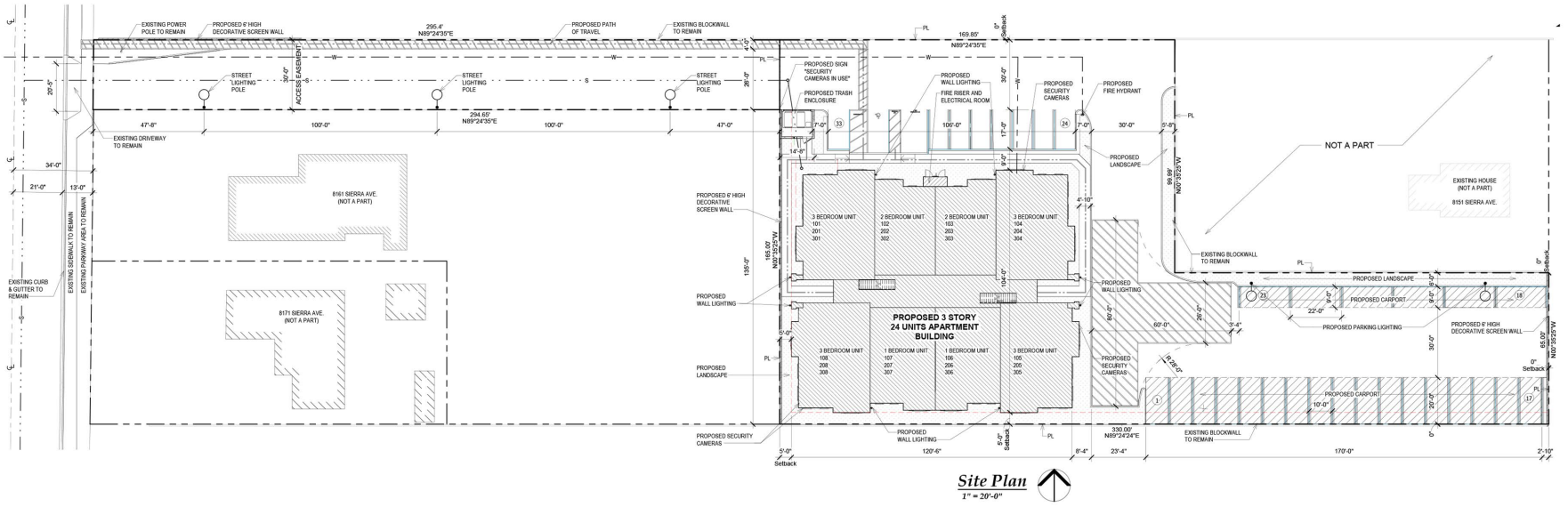
The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangles (7.5-minute series)

Proposed 3 Story 24-Unit Apartment Building for:

SA Golden Investment Inc.

8155 Banana Avenue, Fontana, CA 92335



Site Plan
1" = 20'-0"

0 40 80 ft
0 10 20 m

Figure 1.1–3

Site Plan

The 8155 Banana Avenue Project

Geologically, the project primarily lies near the western margin and distal southern end of the broad Lytle Creek alluvial fan, which emanates from the San Gabriel Mountains approximately nine to 10 miles to the north, as a result of uplift and dissection of the eastern San Gabriel Mountains (Wirths 2022). The main source of these sediments is from the Lytle Creek drainage, near where the northwest-southeast-trending San Andreas fault zone cuts across and separates the San Gabriel and San Bernardino mountain ranges (Wirths 2022). Geomorphically, the project is relatively flat lying, with a gentle slope to the southwest. The area is overlain by Holocene and late Pleistocene young alluvial fan sediments of the Lytle Creek fan (Morton 2003).

During the prehistoric period, vegetation near the project provided sufficient food resources to support prehistoric human occupants. Animals that inhabited the project during prehistoric times included mammals such as rabbits, squirrels, gophers, mice, rats, deer, and coyotes, in addition to a variety of reptiles and amphibians. The natural setting of the project during the prehistoric occupation offered a rich nutritional resource base. Fresh water was likely obtainable from Chino Creek, Cucamonga Creek, and the Santa Ana River. Historically, the property likely contained the same plant and animal species that are present today.

1.3 Cultural Setting – Archaeological Perspectives

The archaeological perspective seeks to reconstruct past cultures based upon the material remains left behind. This is done by using a range of scientific methodologies, almost all of which draw from evolutionary theory as the base framework. Archaeology allows one to look deeper into history or prehistory to see where the beginnings of ideas manifest via analysis of material culture, allowing for the understanding of outside forces that shape social change. Thus, the archaeological perspective allows one to better understand the consequences of the history of a given culture upon modern cultures. Archaeologists seek to understand the effects of past contexts of a given culture upon *this* moment in time, not culture in context *in* the moment.

Despite this, a distinction exists between "emic" and "etic" ways of understanding material culture, prehistoric lifeways, and cultural phenomena in general (Harris 1991). While "emic" perspectives serve the subjective ways in which things are perceived and interpreted by the participants within a culture, "etic" perspectives are those of an outsider looking in hoping to attain a more scientific or "objective" understanding of the given phenomena. Archaeologists, by definition, will almost always serve an etic perspective as a result of the very nature of their work. As indicated by Laylander et al. (2014), it has sometimes been suggested that etic understanding, and therefore an archaeological understanding, is an imperfect and potentially ethnocentric attempt to arrive at emic understanding. In contrast to this, however, an etic understanding of material culture, cultural phenomena, and prehistoric lifeways can address significant dimensions of culture that lie entirely beyond the understanding or interest of those solely utilizing an emic perspective. As Harris (1991:20) appropriately points out, "Etic studies often involve the measurement and juxtaposition of activities and events that native informants find inappropriate or meaningless." This is also likely true of archaeological comparisons and juxtapositions of material culture.

However, culture as a whole does not occur in a vacuum and is the result of several millennia of choices and consequences influencing everything from technology, to religions, to institutions. Archaeology allows for the ability to not only see what came before, but to see how those choices, changes, and consequences affect the present. Where possible, archaeology should seek to address both emic and etic understandings to the extent that they may be recoverable from the archaeological record as manifestations of patterned human behavior (Laylander et al. 2014).

To that point, the culture history offered herein is primarily based upon archaeological (etic) and ethnographic (partially emic and partially etic) information. It is understood that the ethnographic record and early archaeological records were incompletely and imperfectly collected. In addition, in most cases, more than a century of intensive cultural change and cultural evolution had elapsed since the terminus of the prehistoric period. Coupled with the centuries and millennia of prehistoric change separating the "ethnographic present" from the prehistoric past, this has affected the emic and etic understandings of prehistoric cultural settings. Regardless, there remains a need to present the changing cultural setting within the region under investigation. As a result, both archaeological and Native American perspectives are offered when possible.

1.3.1 Introduction

Paleo Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in San Bernardino County. The following discussion of the cultural history of San Bernardino County references the San Dieguito Complex, the Encinitas Tradition, the Milling Stone Horizon, the La Jolla Complex, the Pauma Complex, and the San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the southwestern area of San Bernardino County was represented by the Gabrielino and Serrano Indians. According to Kroeber (1976), the Serrano probably owned a stretch of the Sierra Madre from Cucamonga east to above Mentone and halfway up to San Timoteo Canyon, including the San Bernardino Valley and just missing Riverside County. However, Kroeber (1976) also states that this area has been assigned to the Gabrielino, "which would be a more natural division of topography, since it would leave the Serrano pure mountaineers."

Absolute chronological information, where possible, will be incorporated into this discussion to examine the effectiveness of continuing to use these terms interchangeably. Reference will be made to the geologic framework that divides the culture chronology of the area into four segments: late Pleistocene (20,000 to 10,000 years before the present [YBP]), early Holocene (10,000 to 6,650 YBP), middle Holocene (6,650 to 3,350 YBP), and late Holocene (3,350 to 200 YBP).

Paleo Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

The Paleo Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for

glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Moratto 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, extinction of Pleistocene megafauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending upon the particular area of the coast, was near the 30-meter isobath, or two to six kilometers further west than its present location (Masters 1983).

Paleo Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation, utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

The Archaic Period of prehistory began with the onset of the Holocene around 9,000 YBP. The transition from the Pleistocene to the Holocene was a period of major environmental change throughout North America (Antevs 1953; Van Devender and Spaulding 1979). The general warming trend caused sea levels to rise, lakes to evaporate, and drainage patterns to change. In southern California, the general climate at the beginning of the early Holocene was marked by cool/moist periods and an increase in warm/dry periods and sea levels. The coastal shoreline at 8,000 YBP, depending upon the particular area of the coast, was near the 20-meter isobath, or one to four kilometers further west than its present location (Masters 1983).

The rising sea level during the early Holocene created rocky shorelines and bays along the coast by flooding valley floors and eroding the coastline (Curray 1965; Inman 1983). Shorelines were primarily rocky with small littoral cells, as sediments were deposited at bay edges but rarely discharged into the ocean (Reddy 2000). These bays eventually evolved into lagoons and estuaries, which provided a rich habitat for mollusks and fish. The warming trend and rising sea levels generally continued until the late Holocene (4,000 to 3,500 YBP).

At the beginning of the late Holocene, sea levels stabilized, rocky shores declined, lagoons filled with sediment, and sandy beaches became established (Gallegos 1985; Inman 1983; Masters 1994; Miller 1966; Warren and Pavesic 1963). Many former lagoons became saltwater marshes surrounded by coastal sage scrub by the late Holocene (Gallegos 2002). The sedimentation of the lagoons was significant in that it had profound effects upon the types of resources available to prehistoric peoples. Habitat was lost for certain large mollusks, namely *Chione* and *Argopecten,* but habitat was gained for other small mollusks, particularly *Donax* (Gallegos 1985; Reddy 2000). The changing lagoon habitats resulted in the decline of larger shellfish, the loss of drinking water, and the loss of Torrey Pine nuts, causing a major depopulation of the coast as people shifted inland to reliable freshwater sources and intensified their exploitation of terrestrial small game and plants, including acorns (originally proposed by Rogers 1929; Gallegos 2002).

The Archaic Period in southern California is associated with a number of different cultures, complexes, traditions, horizons, and periods, including San Dieguito, La Jolla, Encinitas, Milling Stone, Pauma, and Intermediate.

Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790)

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into San Bernardino County, marking the transition into the Late Prehistoric Period. This period has been characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between A.D. 400 and 600 and the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include extensive trade networks as far reaching as the Colorado River Basin and cremation of the dead.

Protohistoric Period (Late Holocene: 1790 to Present)

Gabrielino

The territory of the Gabrielino at the time of Spanish contact covers much of present-day Los Angeles and Orange counties. The southern extent of this culture area is bounded by Aliso Creek, the eastern extent is located east of present-day San Bernardino along the Santa Ana River, the northern extent includes the San Fernando Valley, and the western extent includes portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California (Bean and Smith 1978a; Kroeber 1976).

The Gabrielino lived in permanent villages and smaller resource gathering camps occupied at various times of the year depending upon the seasonality of the resource. Larger villages were comprised of several families or clans, while smaller seasonal camps typically housed smaller family units. The coastal area between San Pedro and Topanga Canyon was the location of primary subsistence villages, while secondary sites were located near inland sage stands, oak groves, and pine forests. Permanent villages were located along rivers and streams, as well as in sheltered areas along the coast. As previously mentioned, the Channel Islands were also the locations of relatively large settlements (Bean and Smith 1978a; Kroeber 1976).

Resources procured along the coast and on the islands were primarily marine in nature and included tuna, swordfish, ray, shark, California sea lion, Stellar sea lion, harbor seal, northern

elephant seal, sea otter, dolphin, porpoise, various waterfowl species, numerous fish species, purple sea urchin, and mollusks such as rock scallop, California mussel, and limpet. Inland resources included oak acorn, pine nut, Mohave yucca, cacti, sage, grass nut, deer, rabbit, hare, rodent, quail, duck, and a variety of reptiles such as western pond turtle and snakes (Bean and Smith 1978a; Kroeber 1976).

The social structure of the Gabrielino is little known; however, there appears to have been at least three social classes: 1) the elite, which included the rich, chiefs, and their immediate family; 2) a middle class, which included people of relatively high economic status or long-established lineages; and 3) a class of people that included most other individuals in the society. Villages were politically autonomous units comprised of several lineages. During times of the year when certain seasonal resources were available, the village would divide into lineage groups and move out to exploit them, returning to the village between forays (Bean and Smith 1978a; Kroeber 1976).

Each lineage had its own leader, with the village chief coming from the dominant lineage. Several villages might be allied under a paramount chief. Chiefly positions were of an ascribed status, most often passed to the eldest son. Chiefly duties included providing village cohesion, leading warfare and peace negotiations with other groups, collecting tribute from the village(s) under his jurisdiction, and arbitrating disputes within the village(s). The status of the chief was legitimized by his safekeeping of the sacred bundle, which was a representation of the link between the material and spiritual realms and the embodiment of power (Bean and Smith 1978a; Kroeber 1976).

Shamans were leaders in the spirit realm. The duties of the shaman included conducting healing and curing ceremonies, guarding the sacred bundle, locating lost items, identifying and collecting poisons for arrows, and making rain (Bean and Smith 1978a; Kroeber 1976).

Marriages were made between individuals of equal social status and, in the case of powerful lineages, marriages were arranged to establish political ties between the lineages (Bean and Smith 1978a; Kroeber 1976).

Men conducted the majority of the heavy labor, hunting, fishing, and trading with other groups. Women's duties included gathering and preparing plant and animal resources, and making baskets, pots, and clothing (Bean and Smith 1978a; Kroeber 1976).

Gabrielino houses were domed, circular structures made of thatched vegetation. Houses varied in size and could house from one to several families. Sweathouses (semicircular, earth-covered buildings) were public structures used in male social ceremonies. Other structures included menstrual huts and a ceremonial structure called a yuvar, an open-air structure built near the chief's house (Bean and Smith 1978a; Kroeber 1976).

Clothing was minimal. Men and children most often went naked, while women wore deerskin or bark aprons. In cold weather, deerskin, rabbit fur, or bird skin (with feathers intact) cloaks were worn. Island and coastal groups used sea otter fur for cloaks. In areas of rough terrain, yucca fiber sandals were worn. Women often used red ochre on their faces and skin for adornment or protection from the sun. Adornment items included feathers, fur, shells, and beads (Bean and

Smith 1978a; Kroeber 1976).

Hunting implements included wood clubs, sinew-backed bows, slings, and throwing clubs. Maritime implements included rafts, harpoons, spears, hook and line, and nets. A variety of other tools included deer scapulae saws, bone and shell needles, bone awls, scrapers, bone or shell flakers, wedges, stone knives and drills, metates, mullers, manos, shell spoons, bark platters, and wood paddles and bowls. Baskets were made from rush, deer grass, and skunkbush. Baskets were fashioned for hoppers, plates, trays, and winnowers for leaching, straining, and gathering. Baskets were also used for storing, preparing, and serving food, and for keeping personal and ceremonial items (Bean and Smith 1978a; Kroeber 1976).

The Gabrielino had exclusive access to soapstone, or steatite, procured from Santa Catalina Island quarries. This highly prized material was used for making pipes, animal carvings, ritual objects, ornaments, and cooking utensils. The Gabrielino greatly profited from trading steatite since it was valued so much by groups throughout southern California (Bean and Smith 1978a; Kroeber 1976).

Serrano

Aboriginally, the Serrano occupied an area east of present-day Los Angeles. According to Bean and Smith (1978b), definitive boundaries are difficult to place for the Serrano due to their sociopolitical organization and a lack of reliable data:

> The Serrano were organized into autonomous localized lineages occupying definite, favored territories, but rarely claiming any territory far removed from the lineage's home base. Since the entire dialectical group was neither politically united nor amalgamated into supralineage groups, as many of their neighbors were, one must speak in terms of generalized areas of usage rather than pan-tribal holdings. (Strong [1929] in Bean and Smith 1978b)

However, researchers place the Serrano in the San Bernardino Mountains east of Cajon Pass and at the base of and north of the mountains near Victorville, east to Twentynine Palms, and south to the Yucaipa Valley (Bean and Smith 1978b). Serrano has been used broadly for languages in the Takic family including Serrano, Kitanemuk, Vanyume, and Tataviam.

The Serrano were part of "exogamous clans, which in turn were affiliated with one of two exogamous moieties, *tuk^{w}utam* (Wildcat) and *wahiʔiam* (Coyote)" (Bean and Smith 1978b). According to Strong (1971), details such as number, structure, and function of the clans are unknown. Instead, he states that clans were not political, but were rather structured based upon "economic, marital, or ceremonial reciprocity, a pattern common throughout Southern California" (Bean and Smith 1978b). The Serrano formed alliances amongst their own clans and with Cahuilla, Chemehuevi, Gabrielino, and Cupeño clans (Bean and Smith 1978b). Clans were large, autonomous, political and landholding units formed patrilineally, with all males descending from

a common male ancestor, including all wives and descendants of the males. However, even after marriage, women would still keep their original lineage, and would still participate in those ceremonies (Bean and Smith 1978b).

According to Bean and Smith (1978b), the cosmogony and cosmography of the Serrano are very similar to those of the Cahuilla:

> There are twin creator gods, a creation myth told in "epic poem" style, each local group having its own origin story, water babies whose crying foretells death, supernatural beings of various kinds and on various hierarchically arranged power-access levels, an Orpheus-like myth, mythical deer that no one can kill, and tales relating the adventures (and misadventures) of Coyote, a tragicomic trickster-transformer culture hero. (Bean [1962-1972] and Benedict [1924] in Bean and Smith 1978b)

The Serrano had a shaman, a person who acquired their powers through dreams, which were induced through ingestion of the hallucinogen datura. The shaman was mostly a curer/healer, using herbal remedies and "sucking out the disease-causing agents" (Bean and Smith 1978b).

Serrano village locations were typically located near water sources. Individual family dwellings were likely circular, domed structures. Daily household activities would either take place outside of the house out in the open, or under a ramada constructed of a thatched willow pole roof held up by four or more poles inserted into the ground. Families could consist of a husband, wife/wives, unmarried female children, married male children, the husband's parents, and/or widowed aunts and uncles. Rarely, an individual would occupy his own house, typically in the mountains. Serrano villages also included a large ceremonial house where the lineage leader would live, which served as the religious center for lineages or lineage-sets, granaries, and sweathouses (Bean and Smith 1978b).

The Serrano were primarily hunters and gatherers. Vegetal staples varied with locality. Acorns and piñon nuts were found in the foothills, and mesquite, yucca roots, cacti fruits, and piñon nuts were found in or near the desert regions. Diets were supplemented with other roots, bulbs, shoots, and seeds (Heizer 1978). Deer, mountain sheep, antelopes, rabbits, and other small rodents were among the principal food packages. Various game birds, especially quail, were also hunted. The bow and arrow was used for large game, while smaller game and birds were killed with curved throwing sticks, traps, and snares. Occasionally, game was hunted communally, often during mourning ceremonies (Benedict 1924; Drucker 1937; Heizer 1978). Earth ovens were used to cook meat, bones were boiled to extract marrow, and blood was either drunk cold or cooked to a thicker consistency and then eaten. Some meat and vegetables were sun-dried and stored. Food acquisition and processing required the manufacture of additional items such as knives, stone or bone scrapers, pottery trays and bowls, bone or horn spoons, and stirrers. Mortars, made of either stone or wood, and metates were also manufactured (Strong 1971; Drucker 1937; Benedict 1924).

The Serrano were very similar technologically to the Cahuilla. In general, manufactured goods included baskets, some pottery, rabbit-skin blankets, awls, arrow straighteners, sinew-backed bows, arrows, fire drills, stone pipes, musical instruments (rattles, rasps, whistles, bull-roarers, and flutes), feathered costumes, mats for floor and wall coverings, bags, storage pouches, cordage (usually comprised of yucca fiber), and nets (Heizer 1978).

Ethnohistoric Period (1769 to Present)

Traditionally, the history of the state of California has been divided into three general periods: the Spanish Period (1769 to 1821), the Mexican Period (1822 to 1846), and the American Period (1848 to present) (Caughey 1970). The American Period is often further subdivided into additional phases: the nineteenth century (1848 to 1900), the early twentieth century (1900 to 1950), and the Modern Period (1950 to present). From an archaeological standpoint, all of these phases can be referred to together as the Ethnohistoric Period. This provides a valuable tool for archaeologists, as ethnohistory is directly concerned with the study of indigenous or non-Western peoples from a combined historical/anthropological viewpoint, which employs written documents, oral narrative, material culture, and ethnographic data for analysis.

European exploration along the California coast began in 1542 with the landing of Juan Rodriguez Cabrillo and his men at San Diego Bay. Sixty years after the Cabrillo expeditions, an expedition under Sebastian Viscaíno made an extensive and thorough exploration of the Pacific coast. Although the voyage did not extend beyond the northern limits of the Cabrillo track, Viscaíno had the most lasting effect upon the nomenclature of the coast. Many of his place names have survived, whereas practically every one of the names created by Cabrillo have faded from use. For instance, Cabrillo named the first (now) United States port he stopped at “San Miguel”; 60 years later, Viscaíno changed it to “San Diego” (Rolle 1969). The early European voyages observed Native Americans living in villages along the coast but did not make any substantial, long-lasting impact. At the time of contact, the Luiseño population was estimated to have ranged from 4,000 to as many as 10,000 individuals (Bean and Shipek 1978; Kroeber 1976).

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). As a result, by the late eighteenth century, a large portion of southern California was overseen by Mission San Luis Rey (San Diego County), Mission San Juan Capistrano (Orange County), and Mission San Gabriel (Los Angeles County), who began colonizing the region and surrounding areas (Chapman 1921).

Up until this time, the only known way to feasibly travel from Sonora to Alta California was by sea. In 1774, Juan Bautista de Anza, an army captain at Tubac, requested and was given permission by the governor of the Mexican State of Sonora to establish an overland route from Sonora to Monterey (Chapman 1921). In doing so, Juan Bautista de Anza passed through Riverside County and described the area in writing for the first time (Caughey 1970; Chapman

1921). In 1797, Father Presidente Lausen (of Mission San Diego de Alcalá), Father Norberto de Santiago, and Corporal Pedro Lisalde (of Mission San Juan Capistrano) led an expedition through southwestern Riverside County in search of a new mission site to establish a presence between San Diego and San Juan Capistrano (Engelhardt 1921). Their efforts ultimately resulted in the establishment of Mission San Luis Rey in Oceanside, California.

Each mission gained power through the support of a large, subjugated Native American workforce. As the missions grew, livestock holdings increased and became increasingly vulnerable to theft. In order to protect their interests, the southern California missions began to expand inland to try and provide additional security (Beattie and Beattie 1939; Caughey 1970). In order to meet their needs, the Spaniards embarked upon a formal expedition in 1806 to find potential locations within what is now the San Bernardino Valley. As a result, by 1810, Father Francisco Dumetz of Mission San Gabriel had succeeded in establishing a religious site, or capilla, at a Cahuilla rancheria called Guachama (Beattie and Beattie 1939). San Bernardino Valley received its name from this site, which was dedicated to San Bernardino de Siena by Father Dumetz. The Guachama rancheria was located in present-day Bryn Mawr in San Bernardino County.

These early colonization efforts were followed by the establishment of estancias at Puente (circa 1816) and San Bernardino (circa 1819) near Guachama (Beattie and Beattie 1939). These efforts were soon mirrored by the Spaniards from Mission San Luis Rey, who in turn established a presence in what is now Lake Elsinore, Temecula, and Murrieta (Chapman 1921). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1961). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet resulting in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

Mexico achieved independence from Spain in 1822 and became a federal republic in 1824. As a result, both Baja and Alta California became classified as territories (Rolle 1969). Shortly thereafter, the Mexican Republic sought to grant large tracts of private land to its citizens to begin to encourage immigration to California and to establish its presence in the region. Part of the establishment of power and control included the desecularization of the missions circa 1832. These same missions were also located on some of the most fertile land in California and, as a result, were considered highly valuable. The resulting land grants, known as "ranchos," covered expansive portions of California and by 1846, more than 600 land grants had been issued by the Mexican government. Rancho Jurupa was the first rancho to be established and was issued to Juan Bandini in 1838. Although Bandini primarily resided in San Diego, Rancho Jurupa was located in what is now Riverside County (Pourade 1963). A review of Riverside County place names quickly illustrates that many of the ranchos in Riverside County lent their names to present-day locations, including Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo (Gunther 1984). As was typical of many ranchos, these were all located in the valley environments

within western Riverside County.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of their land or put to work on the now privately-owned ranchos, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent upon the mission system is evident when, in 1838, a group of Native Americans from Mission San Luis Rey petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission … We plead and beseech you … to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us. (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely upon prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become upon the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (missions) is based upon utilizing human resources while integrating them into their society. The Mexican and American ranchers did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

By 1846, tensions between the United States and Mexico had escalated to the point of war (Rolle 1969). In order to reach a peaceful agreement, the Treaty of Guadalupe Hidalgo was put into effect in 1848, which resulted in the annexation of California to the United States. Once California opened to the United States, waves of settlers moved in searching for gold mines, business opportunities, political opportunities, religious freedom, and adventure (Rolle 1969; Caughey 1970). By 1850, California had become a state and was eventually divided into 27 separate counties. While a much larger population was now settling in California, this was primarily in the central valley, San Francisco, and the Gold Rush region of the Sierra Nevada mountain range (Rolle 1969; Caughey 1970). During this time, southern California grew at a much slower pace than northern California and was still dominated by the cattle industry that was established during the earlier rancho period. However, by 1859, the first United States Post Office in what would eventually become Riverside County was set up at John Magee's store on the Temecula Rancho (Gunther 1984).

During the same decade, circa 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, thought they had signed a treaty resulting in their

ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Native Americans. However, Congress never ratified these treaties, and the promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the Southern Pacific Railroad in 1869, southern California saw its first major population expansion. The population boom continued circa 1874 with the completion of connections between the Southern Pacific Railroad in Sacramento to the transcontinental Central Pacific Railroad in Los Angeles (Rolle 1969; Caughey 1970). The population influx brought farmers, land speculators, and prospective developers to the region. As the Jurupa area became more and more populated, circa 1870, Judge John Wesley North and a group of associates founded the city of Riverside on part of the former rancho.

Although the first orange trees were planted in Riverside County circa 1871, it was not until a few years later when a small number of Brazilian navel orange trees were established that the citrus industry truly began in the region (Patterson 1971). The Brazilian navel orange was well suited to the climate of Riverside County and thrived with assistance from several extensive irrigation projects. At the close of 1882, an estimated half a million citrus trees were present in California. It is estimated that nearly half of that population was in Riverside County. Population growth and 1880s tax revenue from the booming citrus industry prompted the official formation of Riverside County in 1893 out of portions of what was once San Bernardino County (Patterson 1971).

Shortly thereafter, with the start of World War I, the United States began to develop a military presence in Riverside County with the construction of March Air Reserve Base. During World War II, Camp Haan and Camp Anza were constructed in what is now the current location of the National Veteran's Cemetery. In the decades that followed, populations spread throughout the county into Lake Elsinore, Corona, Norco, Murrieta, and Wildomar. However, a significant portion of the county remained largely agricultural well into the 1970s. Following the 1970s, Riverside saw a period of dramatic population increase as the result of new development, more than doubling the population of the county with a population of over 1.3 million residents (Patterson 1971).

General History of the City of Fontana

In 1869, Andrew Jackson Pope, cofounder of the Pope & Talbot Company, a lumber dealer based out of San Francisco (Ancestry.com 2009a, 2009b; University of Washington Libraries, Special Collections 2018), purchased 3,840 acres of land in San Bernardino County as part of the Land Act of 1820. "During the ensuing years, Andrew Pope and W.C. Talbot acquired other properties in the West, chiefly in California. By 1874, they owned a real estate empire, including almost 80,000 acres of ranch lands" (World Forestry Center 2017).

Pope passed away in 1878 amid water rights conflicts between grant owners (himself) and settlers surrounding his Fontana-area lands. As a result of the water rights conflict, in which the

United States Supreme Court sided with the grant owners, the Lytle Creek Water Company was formed in 1881. The purpose of the Lytle Creek Water Company was to:

> [U]nify the interests of appropriators to the stream, to fight the grant owners. These latter had the law on their side, but the settlers had the water, and were holding and using it. An injunction was issued in favor of the grant owners, restraining the settlers from using the water, but it was never enforced. The conflict was a long and bitter one. In the meantime, the grant owners, and others operating with them, quietly bought up the stock of the Lytle Creek Water Company, until enough to control it was secured, and sold out these rights to the projectors of the Semi-tropic Land and Water Company, with the riparian lands, which movement seems to have quieted the conflict. (Hall 1888)

The Semi-Tropic Land and Water Company was incorporated in 1887. That year, the company platted the settlement of Rosena, but no structures were erected. By 1888, the company had acquired "something more than twenty-eight thousand five hundred acres of land, embracing the channel of Lytle creek for ten miles" (Hall 1888).

In 1903, San Bernardino contractor and agriculturist A.B. Miller and "his pioneer Fontana Development Company purchased Rosena and by 1905, had begun the building of a farming complex that included an assortment of barns, dining rooms, a 200-man bunk house, a kitchen, a company store, as well as the ranch house used by the foreman" (Anicic 1982). By 1906, Miller had also taken over the remainder of the Semi-Tropic Land and Water Company assets and created the Fontana Farms Company and the Fontana Land Company. Afterward, Miller oversaw the construction of an irrigation system that utilized the water from Lytle Creek, as well as the planting of "half a million eucalyptus saplings as windbreaks" (Conford 1995).

In 1913, the town of Fontana was platted between Foothill Boulevard and the Santa Fe railroad tracks. Much of the land to the south of the townsite was utilized as a hog farm, while the remainder of the Fontana Farms Company land was subdivided into small farms. The smaller "starter farms" were approximately 2.5 acres and the new owner was able to choose between grapevines or walnut trees, all supplied by the Fontana Farms nursery. "By 1930 the Fontana Company had subdivided more than three thousand homesteads, half occupied by full-time settlers, some of them immigrants from Hungary, Yugoslavia, and Italy" (Conford 1995).

Kaiser Steel was founded in Fontana in the 1940s and became one of the main producers of steel west of the Mississippi River. To provide for his workers' health needs, Henry J. Kaiser constructed the Fontana Kaiser Permanente medical facility, which is now the largest managed care organization in the United States. The city of Fontana was incorporated on June 25, 1952. The steel operation was closed in the 1980s; however, the city has since become a transportation hub for trucking due to the number of highways that intersect in the area (Anicic 2005; City of Fontana 2018).

1.3.2 Results of the Archaeological Records Search

The results of the records search indicate that 17 resources have been recorded within one mile of the 8155 Banana Avenue Project (Table 1.3–1), none of which have been recorded within the project. The majority (N=16) of these resources are historic and include the Kaiser Steel Mill, the Pat Maloy Mine, a concrete watering trough, single- and multiple-family buildings, two motels, a farm/ranch complex, five roads, and a segment of the West Fontana Flood Control Channel. Only one prehistoric resource, a lithic scatter, was identified within a one-mile radius of the project.

Table 1.3–1
Archaeological Sites Located Within
One Mile of the 8155 Banana Avenue Project

Site(s)	Description
SBR-7922	Prehistoric lithic scatter
SBR-4131H	Historic Kaiser Steel Mill
SBR-7199H	Historic farm/ranch complex
SBR-7990H	Historic concrete watering trough
SBR-8257H	Historic Pat Maloy Mine
P-36-013624, P-36-013625, and P-36-020309	Historic single-family residence(s)
P-36-013935 and P-36-020310	Historic motel building
P-36-013936	Historic multi-family residential building
P-36-024084, P-36-024085, P-36-024088, P-36-024089, and SBR-15,663H	Historic road
P-36-029538	Historic West Fontana Flood Control Channel

The records search results also indicate that 19 cultural resource studies have been conducted within a one-mile radius of the project (see Appendix C), none of which intersect the project.

The following historic sources were also reviewed:

- The National Register of Historic Places Index
- The Office of Historic Preservation (OHP), Archaeological Determinations of Eligibility
- The OHP, Built Environment Resources Directory
- The USGS 1896 and 1955 *San Bernardino* and 1953, 1963, 1969, and 1975 *Fontana* and *Guasti* topographic maps
- Historic aerial photographs from 1959 to present

A building can be seen on the property as early as the 1963 Fontana USGS map. This building is

also visible on the 1966 aerial photograph. No additional development is shown on any later photograph or map.

BFSA also requested a SLF search from the NAHC, which was returned with positive results for the presence of sacred sites or locations of ceremonial importance in the vicinity of the project. The NAHC recommended contacting the Gabrieleno Band of Mission Indians – Kizh Nation for additional information. All correspondence can be found in Appendix D.

The records search and literature review suggest that there is a low potential for prehistoric sites to be contained within the boundaries of the property due to the extensive nature of past ground disturbances and the lack of natural resources often associated with prehistoric sites. The records search and literature review suggest that historic buildings and sites associated with the agricultural history of the Fontana area are the most likely cultural resources to be encountered within the 8155 Banana Avenue Project. Therefore, based upon the records search results, there is a high potential for historic resources to be located within the project.

1.4 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of San Bernardino County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, the criteria outlined in CEQA provide the guidance for making such a determination, as provided below.

1.4.1 California Environmental Quality Act

According to CEQA (§15064.5a), the term "historical resource" includes the following:

1) A resource listed in or determined to be eligible by the State Historical Resources Commission for listing in the CRHR (Public Resources Code [PRC] SS5024.1, Title 14 CCR. Section 4850 et seq.).
2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the PRC or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the PRC, shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
3) Any object, building, structure, site, area, place, record, or manuscript, which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be

"historically significant" if the resource meets the criteria for listing on the CRHR (PRC SS5024.1, Title 14, Section 4852) including the following:

a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
b) Is associated with the lives of persons important in our past;
c) 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
d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, or determined eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to Section 5020.1[k] of the PRC), or identified in a historical resources survey (meeting the criteria in Section 5024.1[g] of the PRC) does not preclude a lead agency from determining that the resource may be a historical resource as defined in PRC Section 5020.1(j) or 5024.1.

According to CEQA (§15064.5b), a project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect upon the environment. CEQA defines a substantial adverse change as:

1) 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.
2) The significance of a historical resource is materially impaired when a project:

a) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in the CRHR; or
b) 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 a 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,
c) 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 CRHR as determined by a lead agency for purposes of CEQA.

Section 15064.5(c) of CEQA applies to effects upon archaeological sites and contains the following additional provisions regarding archaeological sites:

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is a historical resource, as defined in subsection (a).
2. If a lead agency determines that the archaeological site is a historical resource, it shall refer to the provisions of Section 21084.1 of the PRC, Section 15126.4 of the guidelines, and the limits contained in Section 21083.2 of the PRC do not apply.
3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21083.2 of the PRC, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in PRC Section 21083.2(c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.
4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project upon those resources shall not be considered a significant effect upon the environment. It shall be sufficient that both the resource and the effect upon it are noted in the Initial Study or Environmental Impact Report, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5(d) and (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

(d) When an Initial Study identifies the existence of, or the probable likelihood of, Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the NAHC, as provided in PRC SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the NAHC. Action implementing such an agreement is exempt from:

    1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5).

2) The requirements of CEQA and the Coastal Act.

2.0 RESEARCH DESIGN

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the study area under investigation is in the city of Fontana in the southwestern portion of San Bernardino County. The scope of work for the cultural resources study conducted for the 8155 Banana Avenue Project included the survey of a 0.87-acre area and the assessment of one historic structure. Given the area involved, the research design for this project was focused upon realistic study options. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal is not necessarily to answer wide-reaching theories regarding the development of early southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey programs are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources:

- Can located cultural resources be associated with a specific time period, population, or individual?
- Do the types of located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?
- How do the located sites compare to others reported from different surveys conducted in the area?
- How do the located sites fit existing models of settlement and subsistence for the region?

For the historic structure located within the project, the potential for historic deposits is considered remote, and therefore, the research process was focused upon the built environment and those individuals associated with the ownership, design, and construction of the buildings within the project footprint. Although historic structure evaluations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed historic resources:

- Can the building be associated with any significant individuals or events?
- Is the building representative of a specific type, style, or method of construction?
- Is the building associated with any nearby structures? Does the building, when studied

with the nearby structures, qualify as a contributor to a potential historic district?
- Was the building designed or constructed by a significant architect, designer, builder, or contractor?

Data Needs

At the survey level, the principal research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Further, the overall goal of the historic structure assessment is to understand the construction and use of the buildings within their associated historic context. Therefore, adequate information on site function, context, and chronology from both an archaeological and historic perspective is essential for the investigation. The fieldwork and archival research were undertaken with the following primary research goals in mind:

1) To identify cultural and historic resources occurring within the project;
2) To determine, if possible, site type and function, context of the deposit, and chronological placement of each cultural resource identified, and the type, style, and method of construction for any buildings;
3) To place each cultural resource identified within a regional perspective;
4) To identify persons or events associated with any buildings and their construction; and
5) To provide recommendations for the treatment of each cultural and historic resource identified.

3.0 ANALYSIS OF PROJECT EFFECTS

The cultural resources study of the project consisted of an institutional records search, an intensive cultural resource survey of the entire 0.87-acre project, and the detailed recordation of all identified cultural resources. This study was conducted in conformance with City of Fontana environmental guidelines, Section 21083.2 of the California PRC, and CEQA. Statutory requirements of CEQA (Section 15064.5) were followed for the identification and evaluation of resources. Specific definitions for archaeological resource type(s) used in this report are those established by the State Historic Preservation Office (SHPO 1995).

3.1 Methods

3.1.1 Archival Research

Records relating to the ownership and developmental history of this project were sought to identify any associated historic persons, historic events, or architectural significance. Records research was conducted at the BFSA research library, the SCCIC, the Fontana Historical Society, the Fontana Public Library, and the offices of the San Bernardino Assessor/County Recorder/County Clerk. Sanborn Fire Insurance maps were searched for at the San Diego Public Library. Appendix E contains maps of the property, including historic USGS maps from 1953, 1963, 1969, and 1975, and the current Assessor's parcel map. No Sanborn maps are available as the property is outside the Fontana coverage areas.

3.1.2 Survey Methods

The survey methodology employed during the current investigation followed standard archaeological field procedures and was sufficient to accomplish a thorough assessment of the project. The field methodology employed for the project included walking evenly spaced survey transects set approximately 10 meters apart while visually inspecting the ground surface, including all potentially sensitive areas where cultural resources might be located. Photographs documenting survey discoveries and overall survey conditions were taken frequently. All cultural resources were recorded as necessary according to the OHP's manual, *Instructions for Recording Historical Resources,* using Department of Parks and Recreation (DPR) forms.

3.1.3 Historic Structure Assessment

Methods for evaluating the integrity and significance of the historic building within APN 0230-041-60 included photographic documentation and review of available archival documents. During the survey, photographs were taken of all building elevations. The photographs were used to complete architectural descriptions of the building. The original core structure and all modifications made to the building since its initial construction were also recorded. The current setting of the building was compared to the historical setting of the property. This information was combined with the archival research in order to evaluate the building's seven aspects of

integrity, as well as its potential significance under CEQA guidelines.

3.2 Results of the Field Survey

BFSA Field Director Clarence Hoff conducted the intensive pedestrian survey on August 16, 2022 under the direction of Principal Investigator Brian Smith. Ground visibility was limited due to the presence of the existing residence as well as equipment and soil stockpiles associated with a project located on an adjacent parcel (Plates 3.2–1 to 3.2–4). The entire property appears to have been previously rough-graded. As a result of the field survey, one historic building has been identified at 8155 Banana Avenue. The building has been recorded as Temp-1 with the SCCIC (Figure 3.2–1) and was subsequently evaluated for significance as part of this study. No other cultural resources were observed during the survey of the project.



Plate 3.2–1: Overview of the project from the southeast corner, facing west.



Plate 3.2–2: Overview of the project from the northwest corner showing Site Temp-1, facing southeast.



Plate 3.2–3: View of the soil stockpiles in the southwest corner of the project, facing northeast.



Plate 3.2–4: View of the project from the northeast corner, facing southwest.

3.3 Historic Structure Analysis

Within the boundaries of the subject property, one historic building with an address of 8155 Banana Avenue has been identified (Figure 3.3–1). A DPR site form for the building was submitted to the SCCIC. Once processed, the SCCIC will assign the new resource a permanent site number. The following section provides the pertinent field results for the significance evaluation for the historic building located within the project boundaries, which was conducted in accordance with City of Fontana guidelines and site evaluation protocols. A description and significance evaluation of the historic resource is provided below.

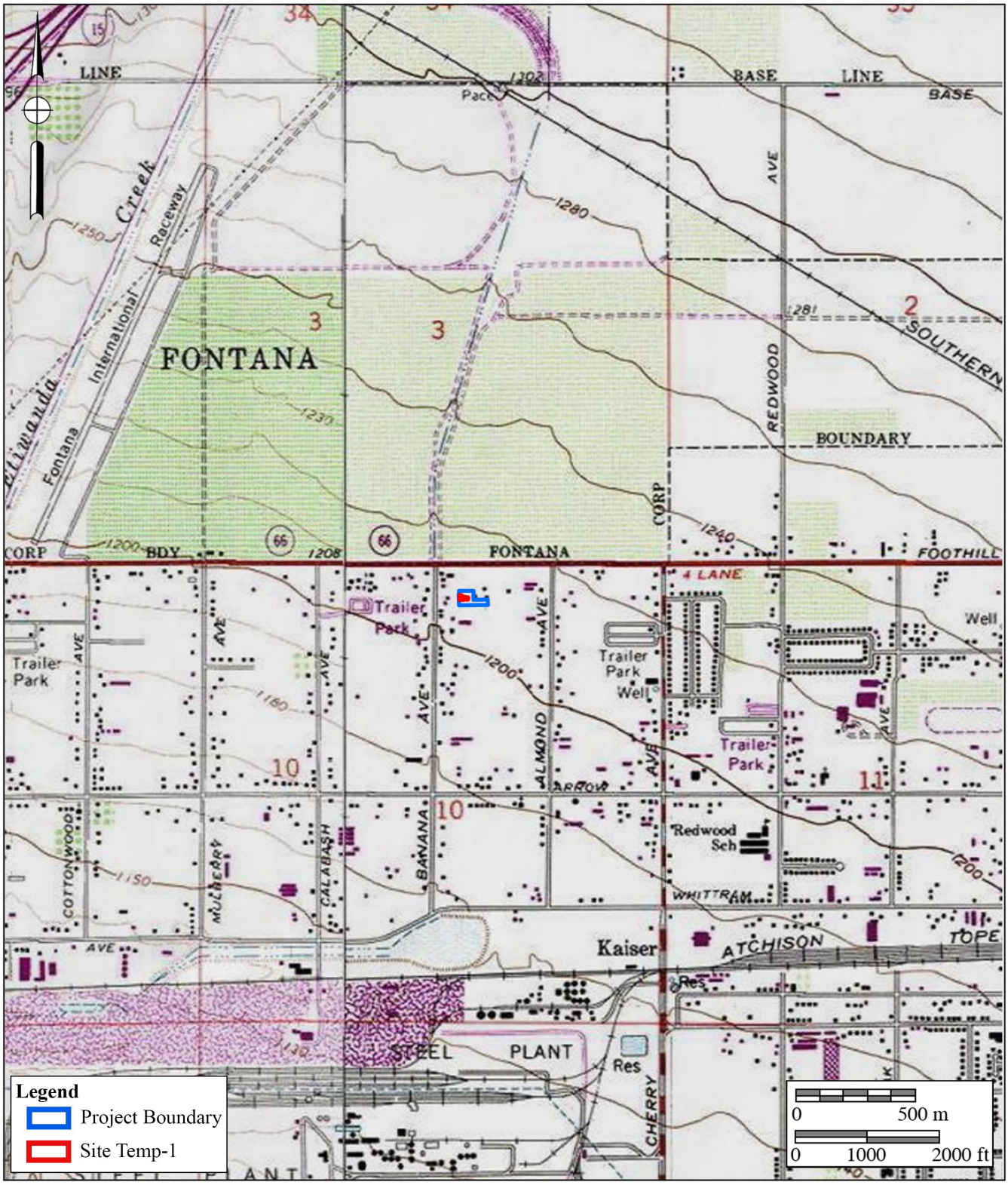


Figure 3.2–1

Cultural Resource Location Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangles (7.5-minute series)



Figure 3.3–1

Historic Structure Location Map

The 8155 Banana Avenue Project

3.3.1 History of the Project Area

The County of San Bernardino Parcel Information Management System indicates that the single-family residence located at 8155 Banana Avenue was constructed in 1961 while the property was owned by the Roy E. and Anna Preston. Roy Preston was born in 1929 and Anna Preston was born in 1932. They got married in 1947 (Ancestry.com 2007). According to the chain of title, Roy and Anna Preston co-owned the 8155 Banana Avenue property until their divorce in 1968, when Roy Preston become the sole owner of the property (Ancestry.com 2007).

The property was acquired by A.G. and Pearl I. Fuqua in 1973, Alvin G. and Eula Mae Ramshur in 1979, and Arion D. and Adela Z. Conteas in 1981. Research efforts resulted in very little information about the Fuqua and Ramshur families.

Arion D. Conteas was born in 1932 and Adela Zita Hernandez (later Conteas) was born in 1947. They married in 1980 (Ancestry.com 2007). Arion Conteas was an electronic engineer at Goldstone Tracking Station, located north of Barstow (*San Bernardino County Sun* 1977). He was also a radio show host (*Desert Dispatch* 1974, 1976) and a record collector/dealer with more than 190,000 records in his possession (Lundahl 1978). By 1980, he was said to have the largest collection in Southern California with nearly 200,000 records and ran a mail order business for collectors (*San Bernardino Sun* 1980). While a name change application published in the *San Bernardino County Sun* (1986) indicates that the Conteas family was living in the 8155 Banana Avenue residence in 1986, phone and address directories indicate that they moved to Carlsbad between 1986 and 2001 (Ancestry.com 2005).

The property was acquired by William V. Landecena (Plate 3.3–1) and Dorothy M. Landecena in 1988. William "Bill" Vincent Landecena was born in 1925, in Chicago, Illinois (Ancestry.com 2011). Dorothy M. Clickhenger (later Landecena) was also born in 1925 and married Bill Landecena in 1960 (Ancestry.com 2007). Bill and Dorothy Landecena owned and operated the Arrow Food Locker, later the Arrow Meat Company, in Upland until their retirement in 1981 (*The Daily Report* 1970; *San Gabriel Valley Tribune* 2010). Bill Landecena was elected national director of the American Association of Meat Processors in 1975 (*Montclair Tribune* 1975). The Landecenas were active philanthropists and established their charity foundation, the Landecena Family Charitable Foundation, in 2000, which was headquartered in Upland (Causeiq.com 2020). Newspaper articles indicate that their foundation supported animal welfare efforts, including spay/neuter programs and shelter adoption fairs (*Los Angeles Times* 2003, 2004; Sproul 2010). The Landecena Family Charitable Foundation was active until 2018; however, Dorothy Landecena passed away on October 10, 2010



Plate 3.3–1: William V. Landecena (left).
(*Photograph courtesy of Daily Bulletin 2014*)

(Causeiq.com 2020; *San Gabriel Valley Tribune* 2010). Additional research indicated that a community center building named after the Landecenas was established in Upland at an unknown date. The Landecena Family Community Center was first mentioned in newspapers in January 2012 (*Chino Hills Champion* 2012); however, historic aerial photographs show that the building was constructed between 1994 and 2002, indicating that the community center was likely not built by the Landecena family but was instead dedicated to them prior to 2012. The 8155 Banana Avenue property remained in possession of the Landecena family until 2006, although it is unclear if they continued to live on the property at the time of the sale.

The property was acquired by Gary Lawrence Jackson in 2006. According to his death certificate, Gary L. Jackson was born in California in 1946, worked as an air conditioning technician, and passed away in July 2019. Upon his passing, the property was purchased by Guillermo Vergara in 2019. The 8155 Banana Avenue property was acquired by SA Golden Investments, Inc. in 2019, who are the current owners of the subject property.

3.3.2 Description of Surveyed Resource

According to San Bernardino County Assessor's Office records, the construction of the single-family residence and the attached garage located at 8155 Banana Avenue was completed in 1961. The architect and builder of the residence could not be determined. The residence is located on the west portion of the property, east of Banana Avenue. Access to the residence is provided from the north via an access road branching off Banana Avenue. A metal and wood fence surrounds the property. The east end of the south side of this fence features a large opening to provide access into the property.

The single-family residence is a single-story Ranch house that features an L-shaped plan which is elongated eastward by the attached garage. The garage is attached to the residence on its east façade. The north façade of the attached garage is slightly recessed from the north façade of the residence. The building features multiple roof styles including cross-gable and shed roofs (Plate 3.3–2). The low-pitched cross-gable roof is covered with composite shingles and the shed roof is covered with corrugated metal sheets. The cross-gable roof features overhanging eaves with exposed rafters which are covered with rake boards. The shed roof was constructed using a wood frame and is covered with corrugated metal sheets. The residence was constructed using standard frame construction on a concrete foundation. The walls of the building are clad in stucco.

The primary façade of the residence is the south façade, which faces away from the access road branching off Banana Avenue (Plate 3.3–3). This elevation consists of the south façades of the residence and attached garage. A shed roof runs the length of this elevation, which provides shelter to the south façade of the building. The east section of the shed roof was constructed between 1985 and 1989, the middle portion was constructed between 2004 and 2005, and the west portion was constructed between 2011 and 2012. The main entry of the residence is located at the center of the south façade, featuring a wood and glass door with a hanging screen in front and a concrete door stoop (Plate 3.3–4). One sliding window is located west of the door and two sliding

windows are located on the east side of the door. The parts of the wall where these windows are located are covered with unfinished compressed wood sheets, and west of the west window is an unfinished alcove with exposed insultation (Plates 3.3–5 and 3.3–6). Another entrance is located on the west portion of this façade, which features the gable end of the cross-gable roof. Two sliding windows with colonial-style grilles are placed on either side of the entry door, which features two panels and a glass window. A partially covered door opening is located on the east end of this façade where the garage and residence are connected.

A wood pergola is attached to the west side of the south façade of the attached garage (see Plates 3.3–2, 3.3–7, and 3.3–8). An entry is located under the pergola that features a plain wood door. An external metal storage structure is located east of this pergola, and a sliding window and a plain wood door are located east of the storage structure. The east façade of the attached garage features a 24-panel wood and glass garage door (Plate 3.3–9 and 3.3–10).

The north façade of the attached garage and the north and east façades of the residence form an L-shape, creating a semi-enclosed courtyard facing Banana Avenue (Plate 3.3–11). The north façade of the attached garage features four sliding windows of various sizes (Plate 3.3–12). The recessed north façade of the garage creates a narrow east façade of the residence, which features another sliding window (Plate 3.3–13). The area in front of this narrow east façade features a concrete-paved, small rectangular area. The north façade of the residence, located west of the garage, features two sliding windows and a four-panel wood door with a half-circle window at the top. The east façade of the north wing of the residence features two more sliding windows. The north façade of the east wing and the east façade of the north wing of the residence form a semi-enclosed courtyard on the north side of the residence. This courtyard features a concrete platform (Plate 3.3–14) and planter beds along the exterior walls of the house.

The north façade of the north wing of the residence features one sliding window (Plate 3.3–15) and the west façade of the residence features three horizontal sliding windows (Plates 3.3–16 and 3.3–17). None of the windows on the residence and attached garage are original, and all windows have PVC window frames that are painted white.

The modifications to the 8155 Banana Avenue building include:

- Construction of the east section of the shed roof attached to the south façade of the residence between 1985 and 1989;
- Construction of the middle section of the shed roof attached to the south façade of the residence between 2004 and 2005;
- Construction of the west section of the shed roof attached to the south façade of the residence between 2011 and 2012;
- Construction of the pergola on the south façade of the garage between 2019 and 2020;
- Replacement of the windows at an unknown date; and
- Replacement of sections of the wall on the south façade of the residence at an unknown date.



Plate 3.3–2

Aerial Overview of the 8155 Banana Avenue Building

The 8155 Banana Avenue Project



Plate 3.3–3

South Façade of the 8155 Banana Avenue Residence, Facing North

The 8155 Banana Avenue Project



Plate 3.3-4

South Façade of the 8155 Banana Avenue Residence,
Showing the Main Entry Door, Facing North

The 8155 Banana Avenue Project



Plate 3.3–5

South Façade of the 8155 Banana Avenue Residence, Facing North

The 8155 Banana Avenue Project



Plate 3.3–6

South Façade of the 8155 Banana Avenue Residence, Facing Northeast

The 8155 Banana Avenue Project



Plate 3.3–7

South Façade of the 8155 Banana Avenue Attached Garage and Pergola, Facing North

The 8155 Banana Avenue Project



Plate 3.3–8
South Façade of the 8155 Banana Avenue
Attached Garage and Pergola, Facing Northwest
The 8155 Banana Avenue Project



Plate 3.3–9

East Façade of the 8155 Banana Avenue Attached Garage, Facing Northwest

The 8155 Banana Avenue Project



Plate 3.3–10

East Façade of the 8155 Banana Avenue
Attached Garage, Showing the Garage Door, Facing West

The 8155 Banana Avenue Project



Plate 3.3–11

North and East Façades of the 8155 Banana Avenue Residence, Showing the Semi-Enclosed Courtyard, Facing Southwest

The 8155 Banana Avenue Project



Plate 3.3–12

North Façade of the 8155 Banana Avenue Attached Garage, Facing South

The 8155 Banana Avenue Project



Plate 3.3–13

North Façade of the 8155 Banana Avenue Attached Garage (Left) and North and East Façades of the Residence (Right), Facing Southwest

The 8155 Banana Avenue Project



Plate 3.3–14

North Façade (Left) and East Facade of the North Wing (Right) of the 8155 Banana Avenue Residence, Facing South

The 8155 Banana Avenue Project



Plate 3.3–15

North Façade of the North Wing of the 8155 Banana Avenue Residence, Facing South

The 8155 Banana Avenue Project



Plate 3.3–16

West Façade of the 8155 Banana Avenue Residence, Facing Northeast

The 8155 Banana Avenue Project



Plate 3.3–17

North Façade of the 8155 Banana Avenue Residence, Facing Southeast

The 8155 Banana Avenue Project

3.3.3 Significance Evaluation

CEQA guidelines (Section 15064.5) address archaeological and historic resources, noting that physical changes that would demolish or materially alter in an adverse manner those characteristics that convey the historic significance of the resource and justify its listing on inventories of historic resources are typically considered significant impacts. Because demolition of the building within the project would require approval from the City of Fontana as part of the proposed project, CEQA eligibility criteria were used to evaluate the historic building. Therefore, criteria for listing on the CRHR were used to measure the significance of the resources.

Integrity Evaluation

When evaluating a historic resource, integrity is the authenticity of the resource's physical identity clearly indicated by the retention of characteristics that existed during its period of construction. It is important to note that integrity is not the same as condition. Integrity directly relates to the presence or absence of historic materials and character-defining features, while condition relates to the relative state of physical deterioration of the resource. In most instances, integrity is more relevant to the significance of a resource than condition; however, if a resource is in such poor condition that original materials and features may no longer be salvageable, then the resource's integrity may be adversely impacted.

In order to determine whether or not the building is eligible for listing, CRHR eligibility criteria were used. Furthermore, BFSA based the review upon the recommended criteria listed in the *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (Andrus and Shrimpton 2002). This review is based upon the evaluation of integrity of the building followed by the assessment of distinctive characteristics.

1. **Integrity of Location** *[refers to] the place where the historic property was constructed or the place where the historic event occurred* (Andrus and Shrimpton 2002). Integrity of location was assessed by reviewing historical records and aerial photographs in order to determine if the building had always existed at its present location or if it had been moved, rebuilt, or its footprint significantly altered. Historical research revealed that the 8155 Banana Avenue building was constructed in its current location in 1961, and therefore, retains integrity of location.

2. **Integrity of Design** *[refers to] the combination of elements that create the form, plan, space, structure, and style of a property* (Andrus and Shrimpton 2002). Integrity of design was assessed by evaluating the spatial arrangement of the building and any architectural features present. The 8155 Banana Avenue residence was constructed in 1961 as a Ranch-style building. The modifications made to the residence since its original construction include: construction of the east section of the shed roof attached to the south façade of the residence between 1985 and 1989, construction of the middle

section of the shed roof attached to the south façade of the residence between 2004 and 2005, construction of the west section of the shed roof attached to the south façade of the residence between 2011 and 2012, construction of the pergola attached to the south façade of the attached garage between 2019 and 2020, replacement of the windows at an unknown date, and replacement of sections of the wall on the south façade of the residence at an unknown date. These modifications did not result in the alteration of the form, plan, space, and structure of the building, and the residence preserved its Ranch-style construction. Additionally, these changes did not impact the building's integrity of design. Therefore, the residence retains integrity of design.

3. **Integrity of Setting** *[refers to] the physical environment of a historic property. Setting includes elements such as topographic features, open space, viewshed, landscape, vegetation, and artificial features* (Andrus and Shrimpton 2002). Integrity of setting was assessed by inspecting the elements of the property, which include topographic features, open space, views, landscape, vegetation, man-made features, and relationships between buildings and other features. The historic building located within the boundaries of the 8155 Banana Avenue Project was constructed in 1961. The surrounding area consisted of low-density residential development from the 1950s into the 1980s (Plates 3.3–18 to 3.3–21). The parcels and streets were laid out, but not all the building lots were developed. The area north of the 8155 Banana Avenue property was generally vacant, except for the lots immediately north of the subject property which included two small residential buildings. These lots are currently developed with large commercial warehouses. The lot immediately east/southeast of the property, which currently includes an elementary school, was almost entirely vacant except for two small residential units. The area north of the 8155 Banana Avenue property was developed between 1985 and 1994 (Plates 3.3–22 to 3.3–24). Housing developments started to be developed west and south of the property between 1994 and 2002. The elementary school east of the property was constructed between 2002 and 2005 (Plates 3.3–25 to 3.3–27). The commercial structures immediately north of the property were constructed between 2005 and 2009 (see Plates 3.3–27 to 3.3–28). Currently, the surrounding area consists of modern single-family residences, large commercial structures, and an elementary school (Plate 3.3–29). Because the area is no longer recognizable as the low-density residential community and no longer retains the same open space, viewshed, landscape, vegetation, or general built environment, the property does not retain integrity of setting.

4. **Integrity of Materials** *[refers to] the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property* (Andrus and Shrimpton 2002). Integrity of

materials was assessed by determining the presence or absence of original building materials, as well as the possible introduction of materials that may have altered the architectural design of the building. The modifications made to the residence since its original construction include: construction of the east section of the shed roof attached to the south façade of the residence between 1985 and 1989, construction of the middle section of the shed roof attached to the south façade of the residence between 2004 and 2005, construction of the west section of the shed roof attached to the south façade of the residence between 2011 and 2012, construction of the pergola attached to the south façade of the attached roof between 2019 and 2020, the replacement of the windows at an unknown date, and the replacement of sections of the wall on the south façade of the residence at an unknown date. These modifications, especially the replacement of windows and the sections of the wall, resulted in the loss of the original materials. Therefore, it can be concluded that the building has undergone enough original material replacements that it does not retain integrity of materials.

5. **Integrity of Workmanship** *[refers to] the physical evidence of the labor and skill of a particular culture or people during any given period in history* (Andrus and Shrimpton 2002). Integrity of workmanship was assessed by evaluating the quality of the architectural features present in the building. The original workmanship demonstrated by the construction of the residence was average. Since its construction, the building has undergone modifications that have negatively influenced its initial workmanship. In addition to this, the building does not possess elements or details that would make it representative of the labor or skill of a particular culture or people. Therefore, the building never possessed integrity of workmanship.

6. **Integrity of Feeling** *[refers to] a property's expression of the aesthetic or historic sense of a particular period of time* (Andrus and Shrimpton 2002). Integrity of feeling was assessed by evaluating whether or not the resource's features, in combination with its setting, conveyed a historic sense of the property during the period of construction. As noted previously, the integrity of setting for the building has been lost due to the transformation of the surrounding neighborhood into a higher-density residential area. While the residence retains its integrity of design, due to the replacement of windows and sections of the wall, it does not retain integrity of materials. Therefore, the building does not retain integrity of feeling.



Plate 3.3–18

1959 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–19

1966 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–20

1976 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–21

1980 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–22

1985 Aerial Photograph

The 8155 Banana Avenue Project

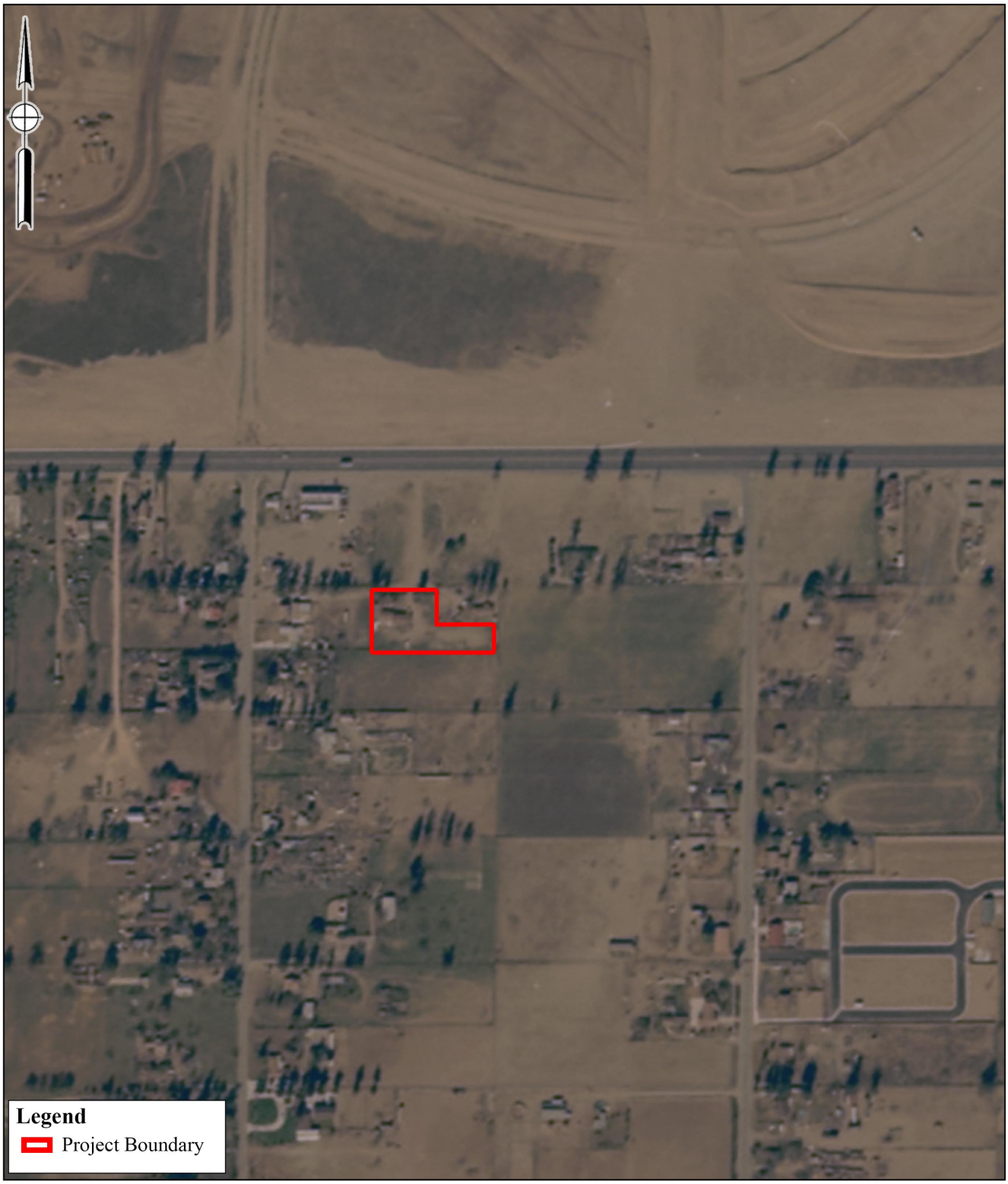


Plate 3.3–23

1989 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–24

1994 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–25

2002 Aerial Photograph

The 8155 Banana Avenue Project

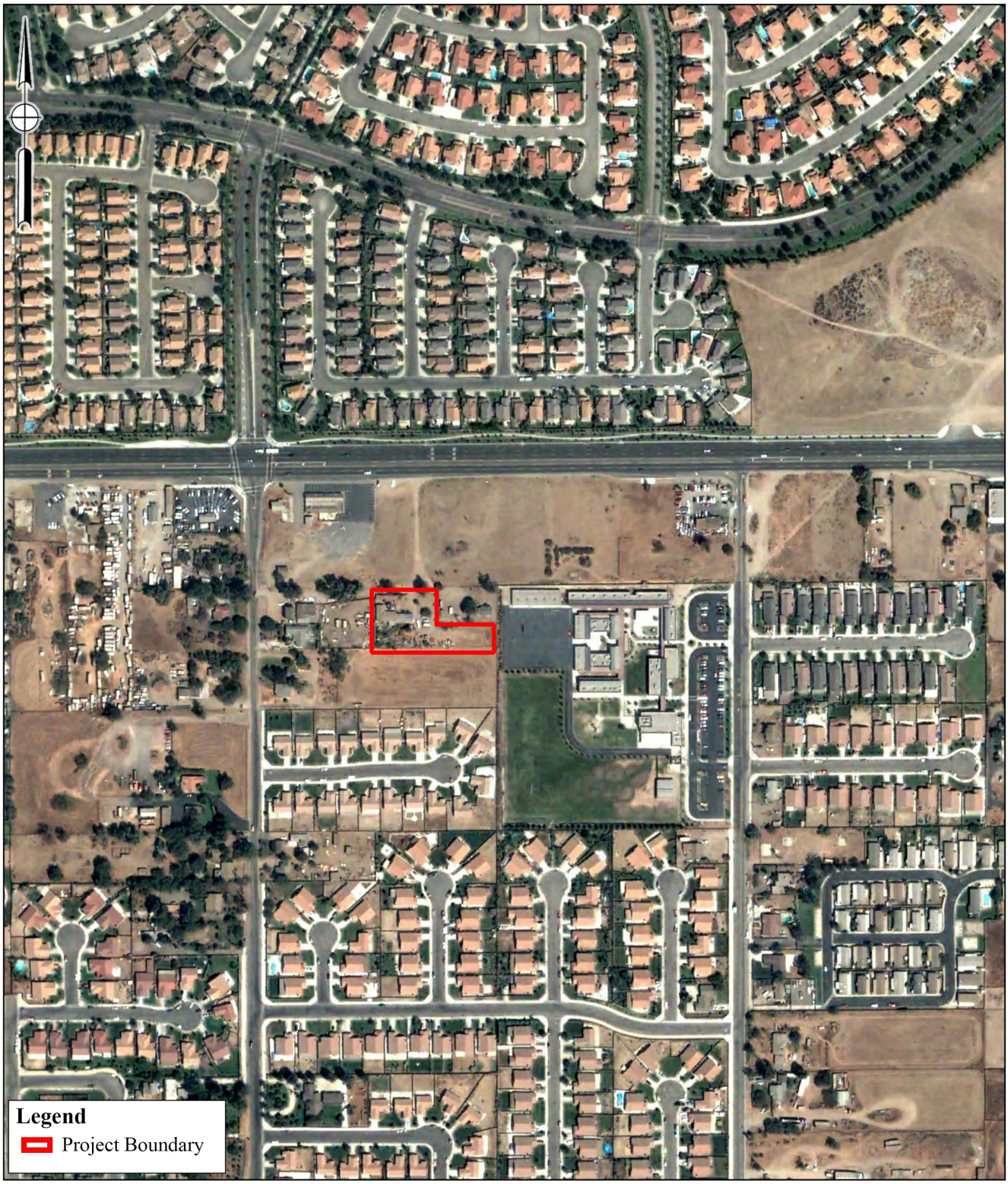


Plate 3.3–26

2004 Aerial Photograph

The 8155 Banana Avenue Project



Plate 3.3–27

2005 Aerial Photograph

The 8155 Banana Avenue Project

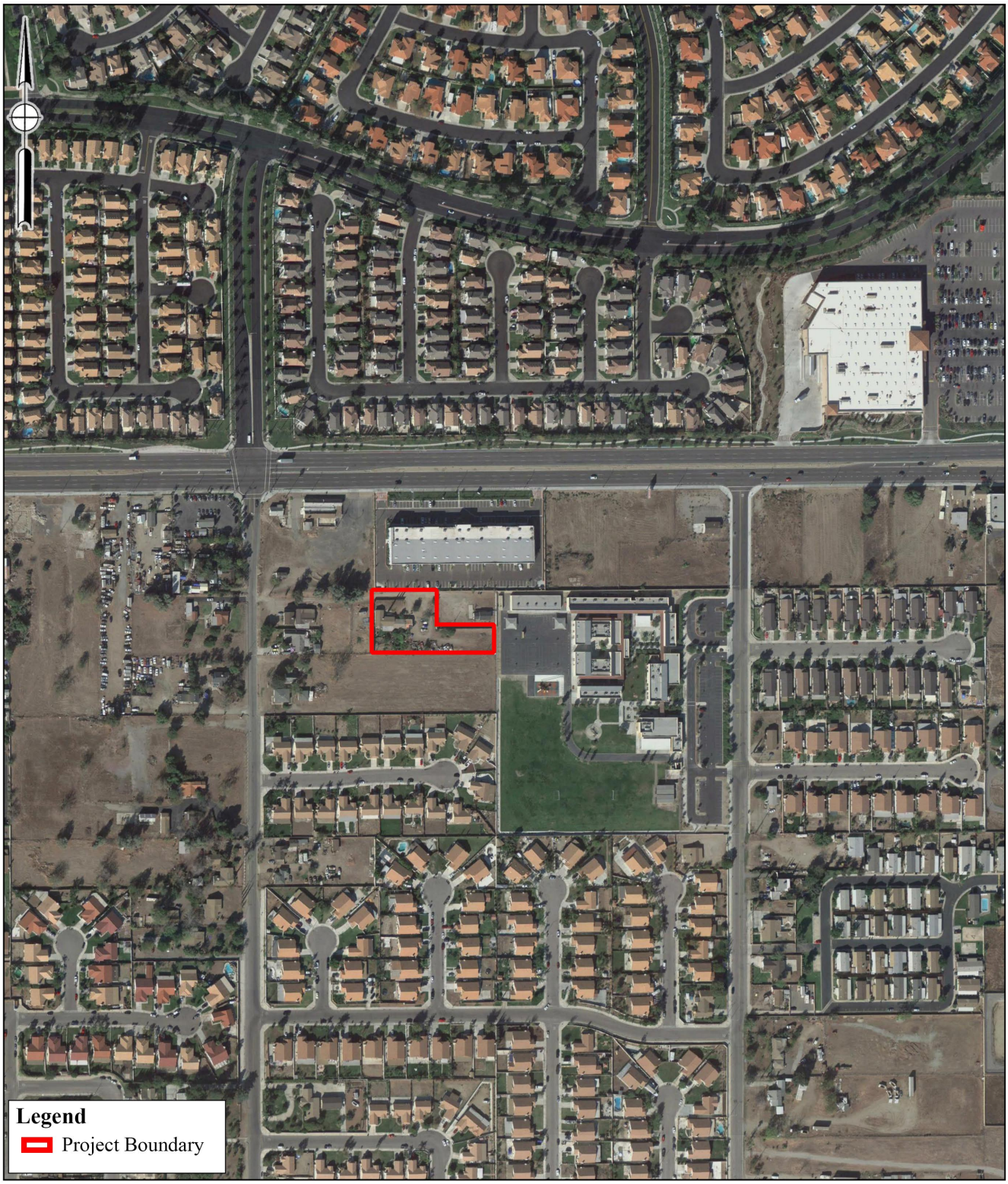


Plate 3.3–28

2009 Aerial Photograph

The 8155 Banana Avenue Project

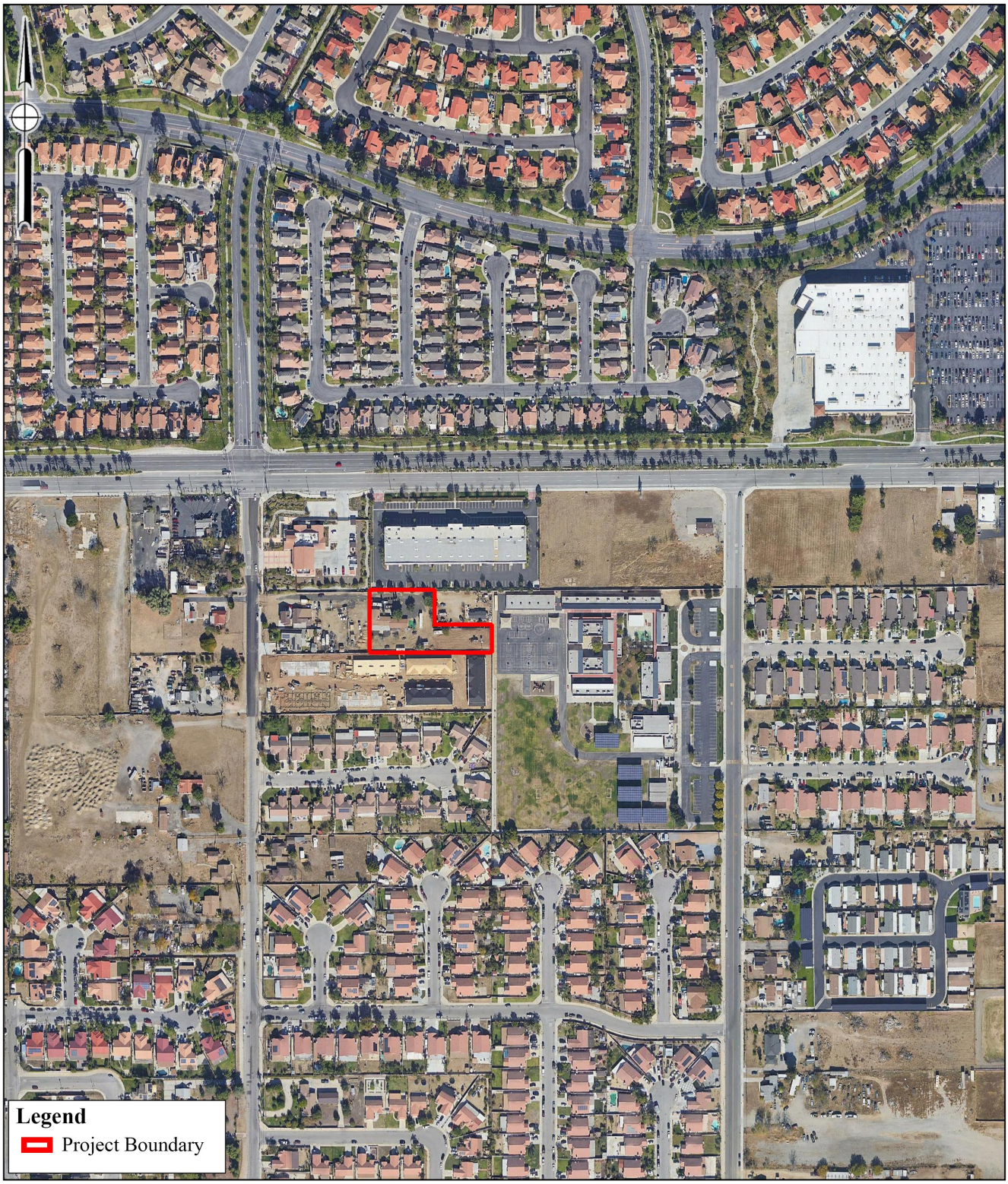


Plate 3.3–29

Current Aerial Photograph

The 8155 Banana Avenue Project

7. **Integrity of Association** *[refers to] the direct link between an important historic event or person and a historic property* (Andrus and Shrimpton 2002). Integrity of association was assessed by evaluating the resource's data or information and its ability to answer any research questions relevant to the history of the Fontana area or the state of California. Historical research indicates that the building is not associated with any significant persons or events. None of the individuals who owned or lived in the building were found to be significant and no known important events occurred at the property. Although the Landecenas were relatively well-known philanthropists, they were locally significant to the city of Upland, not the city of Fontana, and no indication could be found that they established or operated their charitable foundation out of the 8155 Banana Avenue residence. Therefore, the building has never possessed integrity of association.

The 8155 Banana Avenue residence (Site Temp-1) was determined to retain integrity of location and design. The residence has never possessed integrity of workmanship or association and it does not retain integrity of setting, materials, or feeling.

CRHR Evaluation

For a historic resource to be eligible for listing on the CRHR, the resource must be found significant at the local, state, or national level, under one or more of the following criteria:

- **CRHR Criterion 1:**
  It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

  It was discovered through historical research that no significant events could be associated with the 8155 Banana Avenue building. Because the property could not be associated with any specific historic event, the building is not eligible for designation under CRHR Criterion 1.

- **CRHR Criterion 2:**
  It is associated with the lives of persons important in our past.

  Historical research revealed that the 8155 Banana Avenue building is not associated with any persons important in our past. Because the property could not be associated with the lives of any important persons in our past, the residence is not eligible for designation under CRHR Criterion 2.

- **CRHR Criterion 3:**
  It embodies the distinctive characteristics of a type, period, region, or method of construction; represents the work of an important creative individual; or possesses high artistic values.

  The 8155 Banana Avenue residence was constructed in 1961 as a Ranch-style building, during the circa 1935 to 1975 period during which the Ranch style was most popular:

  > The Ranch style originated in southern California in the mid-1930s, after a few earlier precursors … During the decades of the 1950s and 1960s it became by far the most popular house style built throughout the country. Often located in large subdivisions, post-World War II Ranch-house suburbs form a dominant part of many American cities – particularly those that grew in the postwar Sunbelt Boom of the 1950s and 1960s, such as Dallas, Houston, Phoenix, Los Angeles, and Atlanta. (McAlester 2015)

  Identifying features of the Ranch style, as provided by McAlester (2015) include:

  > Broad one-story shape; usually built low to ground; low-pitched roof without dormers; commonly with moderate-to-wide roof overhang; front entry usually located off-center and sheltered under main roof of house; garage typically attached to main façade (faces front, side, or rear); large picture window generally present; asymmetrical façade. (McAlester 2015:597)

  The 8155 Banana Avenue residence possesses five of the seven features listed above: broad one-story shape; built low to the ground; a low-pitched roof without dormers with moderate overhang; an attached garage that faces to the side, and an asymmetrical façade. The residence does not feature a front entry sheltered under the main roof, as it is located under the shed roof that was constructed between 1984 and 2012. The residence also lacks a large picture window.

  In addition to the identifying features listed above, McAlester (2015) also distinguishes between four principal subtypes of the Ranch architectural style, including Hipped Roof, Cross-Hipped Roof, Side-Gabled Roof, and Cross-Gabled Roof. The 8155 Banana Avenue residence is best classified as the Cross-Gabled Roof subtype. McAlester (2015:598) states that "about 40 percent of one-story Ranch houses have a broad side-gabled form, with a long roof ridge parallel to the street, and a single-

prominent, front facing gable extension." While the 8155 Banana Avenue residence does resemble this form in the way the gables are oriented and has a broad one-story shape, the building possesses two gabled facades on the north and south facades of its north wing, as opposed to "a single prominent front facing gable extension."

Although built within the 1935 to 1975 period of significance for Ranch-style buildings, the 8155 Banana Avenue residence only possesses five of the seven character-defining features associated with the Ranch style and, therefore, it is not considered a representative example of a type (Ranch architecture). Additionally, the residence does not retain a high level of integrity as it only retains integrity of location and design. As the Ranch architectural style was popular across the United States and the building was not built using any unique construction techniques, the 8155 Banana Avenue residence is also not representative of a region (southern California) or method of construction and is not known to have been designed or built by an important creative individual. Therefore, the 8155 Banana Avenue building is not eligible for designation under CRHR Criterion 3.

- **CRHR Criterion 4:**
  It has yielded, or may be likely to yield, information important in prehistory or history.

  The research conducted for this study revealed that because the building located within the 8155 Banana Avenue Project is not associated with any significant persons or events and was not constructed using unique or innovative methods of construction, they likely cannot yield any additional information about the history of Fontana or the state of California. Therefore, the building is not eligible for designation under CRHR Criterion 4.

3.4 Discussion/Summary

The 8155 Banana Avenue residence is evaluated as not historically or architecturally significant under any CEQA criteria due to a lack of association with any significant persons or events. Additionally, although it retains some level of integrity, it was never a representative or significant example of the Ranch style. Because the building is not eligible for listing on the CRHR, no mitigation measures are required for any future alterations or planned demolition of the building.

4.0 INTERPRETATION OF RESOURCE IMPORTANCE AND IMPACT IDENTIFICATION

4.1 Resource Importance

The cultural resources survey of the 8155 Banana Avenue Project identified one historic residence located at 8155 Banana Avenue. The historic single-family residence at has been recorded as Temp-1. The conclusion of the current assessment is that the building is not CEQA-significant or eligible for listing on the CRHR. The building has been thoroughly recorded and no additional information can be derived from further analysis.

4.2 Impact Identification

The proposed development of the 8155 Banana Avenue Project will include the demolition of one historic building. However, the removal of the building as part of the development of the property will not constitute an adverse impact because it has been evaluated as not CEQA-significant and not eligible for listing on the CRHR. The potential does still exist, however, that historic deposits may be present that are related to the occupation of this location since the 1940s. To mitigate potential impacts to unrecorded historic features or deposits, mitigation monitoring is recommended. The mitigation monitoring program is presented in Section 5.0.

5.0 MANAGEMENT CONSIDERATIONS – MITIGATION MEASURES AND DESIGN CONSIDERATIONS

5.1 Mitigation Measures

The proposed development will impact one historic building; however, as the resource is evaluated as not significant and lacking any further research potential, impacts have been determined to be not significant. Based upon the evaluation of the building as lacking further research potential, mitigation measures will not be required as a condition of approval for the project; however, a MMRP is recommended because grading may expose undocumented and potentially significant historic features or deposits associated with the historic occupation of the property since the 1960s. Evidence of Native American use of this location prehistorically may also be discovered. Based upon this potential, monitoring of grading is recommended to prevent the inadvertent destruction of any potentially important cultural deposits that were not observed or detected during the current cultural resources study. The monitoring program will include Native American observers only in the event that prehistoric deposits are discovered.

5.2 Mitigation Monitoring and Reporting Program

The 8155 Banana Avenue Project will disturb one non-significant historic resource (Temp-1) that does not require any mitigation measures. However, to mitigate potential impacts to resources that have not yet been detected, a MMRP is recommended as a condition of approval. In accordance with direction from the City of Fontana Planning Division, the following guidance is presented as part of the MMRP condition:

- In the event that cultural resources are discovered by the archaeological or Native American monitor, all work shall be suspended 50 feet around the resource(s) and a qualified archaeologist meeting the Secretary of the Interior's Standards shall assess the discovery. Work on the overall project may continue during this period if the following activities are initiated:

    - If the discovery is a prehistoric resource, initiate consultation between the qualified archaeologist, the appropriate Native American tribal entity, and the City/project applicant;
    - Include the appropriate Native American entity (as determined by a qualified archaeologist meeting the Secretary of the Interior's Standards) in the cultural resources investigations as soon as possible; and
    - If the qualified archaeologist determines the resource(s) to be a "unique archaeological resource" consistent with Public Resources Code Section 21083.2 or a "tribal cultural resource" consistent with Public Resources Code Section 21074, a Cultural Resources Management Plan shall be prepared by the

project archaeologist and submitted to the City Planning Division for approval and subsequent implementation.

The proposed MMRP tasks are detailed below.

During Grading

A. Monitor(s) Shall be Present During Grading/Excavation/Trenching
   1. The archaeological monitor shall be present full-time during all soil-disturbing and grading/excavation/trenching activities that could result in impacts to archaeological resources.
   2. The principal investigator (PI) may submit a detailed letter to the lead agency during construction requesting a modification to the monitoring program when a field condition such as modern disturbance post-dating the previous grading/trenching activities, presence of fossil formations, or when native soils are encountered that may reduce or increase the potential for resources to be present.

B. Discovery Notification Process
   1. In the event of an archaeological discovery, either historic or prehistoric, the archaeological monitor shall direct the contractor to temporarily divert all soil-disturbing activities, including but not limited to, digging, trenching, excavating, or grading activities in the area of discovery and in the area reasonably suspected to overlay adjacent resources and immediately notify the Native American monitor and client, as appropriate.
   2. The monitor shall immediately notify the PI (unless monitor is the PI) of the discovery.

C. Determination of Significance
   1. The PI shall evaluate the significance of the resource. If human remains are involved, the protocol provided in Section D, below, shall be followed.

      a. The PI shall immediately notify the City of Fontana to discuss the significance determination and shall also submit a letter indicating whether additional mitigation is required.
      b. If the resource is significant, the PI shall submit an Archaeological Data Recovery Program (ADRP) and obtain written approval from the City of Fontana to implement that program. In the event that prehistoric deposits are discovered, the ADRP should also be reviewed by the Native American consultant/monitor. Impacts to significant resources must be mitigated before ground-disturbing activities in the area of discovery will be allowed to resume.

c. If the resource is not significant, the PI shall submit a letter to the City of Fontana indicating that artifacts will be collected, curated, and documented in the final monitoring report. The letter shall also indicate that that no further work is required.

D. Discovery of Human Remains

If human remains are discovered, work shall halt in that area until a determination can be made regarding the provenance of the human remains; and the following procedures as set forth in CEQA Section 15064.5(e), the California PRC (Section 5097.98), and the State Health and Safety Code (Section 7050.5) shall be undertaken:

1. Notification

   a. The archaeological monitor shall notify the PI, if the monitor is not qualified as a PI.
   b. The PI shall notify the Coroner's Division of the San Bernardino County Sheriff's Department after consultation with the City of Fontana, either in person or via telephone.

2. Isolate discovery site

   a. Work shall be directed away from the location of the discovery and any nearby area reasonably suspected to overlay adjacent human remains until a determination can be made by the sheriff-coroner in consultation with the PI concerning the provenance of the remains.
   b. The sheriff-coroner, in consultation with the PI, will determine the need for a field examination to determine the provenance.
   c. If a field examination is not warranted, the sheriff-coroner will determine, with input from the PI, if the remains are or are most likely to be of Native American origin.

3. If Human Remains **ARE** determined to be Native American

   a. The medical examiner will notify the NAHC within 24 hours. By law, **ONLY** the medical examiner can make this call.
   b. The NAHC will immediately identify the person or persons determined to be the Most Likely Descendent (MLD) and provide contact information.
   c. The MLD will contact the PI within 24 hours or sooner after the sheriff-coroner has completed coordination to begin the consultation process in accordance

with CEQA Section 15064.5(e), the California PRC, and the State Health and Safety Code.

d. The MLD will have 48 hours to make recommendations to the property owner or representative for the treatment or disposition with proper dignity of the human remains and associated grave goods.
e. Disposition of Native American human remains will be determined between the MLD and the PI, and, if:

   i. The NAHC is unable to identify the MLD; OR
   ii. The MLD failed to make a recommendation within 48 hours after being notified by the NAHC; OR
   iii. The landowner or authorized representative rejects the recommendation of the MLD and mediation in accordance with PRC 5097.94 (k) by the NAHC fails to provide measures acceptable to the landowner; THEN
   iv. Upon the discovery of multiple Native American human remains during a ground-disturbing land development activity, the landowner may agree that additional conferral with descendants is necessary to consider culturally appropriate treatment of multiple Native American human remains. Culturally appropriate treatment of such a discovery may be ascertained from review of the site utilizing cultural and archaeological standards. Where the parties are unable to agree upon the appropriate treatment measures, the human remains and grave goods buried with the Native American human remains shall be reinterred with appropriate dignity.

4. If Human Remains are **NOT** Native American

   a. The PI shall contact the sheriff-coroner and notify them of the historic-era context of the burial.
   b. The sheriff-coroner will determine the appropriate course of action with the PI and city staff (PRC 5097.98).
   c. If the remains are of historic origin, they shall be appropriately removed and conveyed to the City of Fontana. The decision for internment of the human remains shall be made in consultation with City, the applicant/landowner, and any known descendant group.

Post-Construction

A. Preparation and Submittal of Draft Monitoring Report
   1. The PI shall submit to the City of Fontana a draft monitoring report (even if negative) prepared in accordance with the agency guidelines, which describes

the results, analysis, and conclusions of all phases of the archaeological monitoring program (with appropriate graphics).

a. For significant archaeological resources encountered during monitoring, the ADRP shall be included in the draft monitoring report.
b. Recording sites with the State of California DPR shall be the responsibility of the PI, including the recording (on the appropriate forms-DPR 523 A/B) any significant or potentially significant resources encountered during the archaeological monitoring program.

2. The PI shall submit a revised draft monitoring report to the City of Fontana for approval, including any changes or clarifications requested by the City.

B. Handling of Artifacts
1. The PI shall be responsible for ensuring that all cultural remains collected are cleaned and cataloged.
2. The PI shall be responsible for ensuring that all artifacts are analyzed to identify function and chronology as they relate to the history of the area; that faunal material is identified as to species; and that specialty studies are completed, as appropriate.
3. The cost for curation is the responsibility of the property owner.

C. Curation of Artifacts
1. To be determined.

D. Final Monitoring Report(s)
1. The PI shall submit the approved final monitoring report to the City of Fontana and any interested parties.

6.0 LIST OF PREPARERS AND ORGANIZATIONS CONTACTED

The archaeological survey program for the 8155 Banana Avenue Project was directed by Principal Investigator Brian F. Smith. The archaeological fieldwork was conducted by archaeological field director Clarence Hoff. The report text was prepared by Irem Oz and Brian Smith. Report graphics were provided by Emily Soong. Technical editing and report production were conducted by Courtney McNair. The SCCIC at CSU Fullerton provided the archaeological records search information and the NAHC provided the SLF search results. Archival research was conducted at the BFSA research library, the Fontana Historical Society, the Fontana Public Library, and the offices of the San Bernardino Assessor/County Recorder/County Clerk. Sanborn Fire Insurance maps were searched for at the San Diego Public Library.

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APPENDIX A

Resumes of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History, and Anthropology, University of San Diego, California **1975**

Professional Memberships

Society for California Archaeology

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc. **Poway, California**

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. Over the past 32 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Mr. Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Corps of Engineers, the Bureau of Land Management, the Bureau of Reclamation, the Department of Defense, and the Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts that have added significantly to the body of knowledge concerning the prehistoric life ways of cultures once present in the southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large numbers of downtown San Diego mitigation and monitoring projects, some of which included Broadway Block (2019), 915 Grape Street (2019), 1919 Pacific Highway (2018), Moxy Hotel (2018), Makers Quarter Block D (2017), Ballpark Village (2017), 460 16th Street (2017), Kettner and Ash (2017), Bayside Fire Station (2017), Pinnacle on the Park (2017), IDEA1 (2016), Blue Sky San Diego (2016), Pacific Gate (2016), Pendry Hotel (2015), Cisterra Sempra Office Tower (2014), 15th and Island (2014), Park and G (2014), Comm 22 (2014), 7th and F Street Parking (2013), Ariel Suites (2013), 13th and Marker (2012), Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft

Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

1900 and 1912 Spindrift Drive: An extensive data recovery and mitigation monitoring program at the Spindrift Site, an important prehistoric archaeological habitation site stretching across the La Jolla area. The project resulted in the discovery of over 20,000 artifacts and nearly 100,000 grams of bulk faunal remains and marine shell, indicating a substantial occupation area (2013-2014).

San Diego Airport Development Project: An extensive historic assessment of multiple buildings at the San Diego International Airport and included the preparation of Historic American Buildings Survey documentation to preserve significant elements of the airport prior to demolition (2017-2018).

Citracado Parkway Extension: A still-ongoing project in the city of Escondido to mitigate impacts to an important archaeological occupation site. Various archaeological studies have been conducted by BFSA resulting in the identification of a significant cultural deposit within the project area.

Westin Hotel and Timeshare (Grand Pacific Resorts): Data recovery and mitigation monitoring program in the city of Carlsbad consisted of the excavation of 176 one-square-meter archaeological data recovery units which produced thousands of prehistoric artifacts and ecofacts, and resulted in the preservation of a significant prehistoric habitation site. The artifacts recovered from the site presented important new data about the prehistory of the region and Native American occupation in the area (2017).

The Everly Subdivision Project: Data recovery and mitigation monitoring program in the city of El Cajon resulted in the identification of a significant prehistoric occupation site from both the Late Prehistoric and Archaic Periods, as well as producing historic artifacts that correspond to the use of the property since 1886. The project produced an unprecedented quantity of artifacts in comparison to the area encompassed by the site, but lacked characteristics that typically reflect intense occupation, indicating that the site was used intensively for food processing (2014-2015).

Ballpark Village: A mitigation and monitoring program within three city blocks in the East Village area of San Diego resulting in the discovery of a significant historic deposit. Nearly 5,000 historic artifacts and over 500,000 grams of bulk historic building fragments, food waste, and other materials representing an occupation period between 1880 and 1917 were recovered (2015-2017).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven-block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark Project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade (2000-2007).

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, containing primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the city of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the city of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs documenting this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the city and county of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the city. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the city showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Mid-Bayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the city. The study included the analysis of some potentially historic features and numerous prehistoric

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Audie Murphy Ranch, Riverside County, California: Project manager/director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February- September 2002.

Cultural Resources Evaluation of Sites Within the Proposed Development of the Otay Ranch Village 13 Project, San Diego County, California: Project manager/director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural Resources Survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project manager/director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee West GPA, Riverside County, California: Project manager/director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites

for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Cultural Resources Survey and Test of Sites Within the Proposed French Valley Specific Plan/EIR, Riverside County, California: Project manager/director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural Resources Survey and Test of Sites Within the Proposed Development of the Menifee Ranch, Riverside County, California: Project manager/director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage Mitigation of a Portion of the San Diego Presidio Identified During Water Pipe Construction for the City of San Diego, California: Project archaeologist/director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Tyrian 3 Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Lamont 5 Project, Pacific Beach, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced Cultural Resource Survey and Evaluation for the Reiss Residence Project, La Jolla, California: Project manager/director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage Mitigation of a Portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and Testing of Two Prehistoric Cultural Resources for the Airway Truck Parking Project, Otay Mesa, California: Project archaeologist/director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural Resources Phase I and II Investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Westview High School Project for the City of San Diego, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a Prehistoric Cultural Resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project archaeologist/director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of Grading for the Herschel Place Project, La Jolla, California: Project archaeologist/ monitor—included monitoring of grading activities associated with the development of a single- dwelling parcel. September 1999.

Survey and Testing of a Historic Resource for the Osterkamp Development Project, Valley Center, California: Project archaeologist/ director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Testing of a Prehistoric Cultural Resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project manager/director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and Evaluation of Cultural Resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and Evaluation of Cultural Resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project manager/director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural Resources Phase I, II, and III Investigations for the Immigration and Naturalization Services Triple Fence Project Along the International Border, San Diego County, California: Project manager/director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997- January 2000.

Phase I, II, and II Investigations for the Scripps Poway Parkway East Project, Poway California: Project archaeologist/project director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Irem Oz, Ph.D.

Architectural Historian
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 484-0915 • Fax: (858) 679-9896 • E-Mail: irem@bfsa-ca.com

Education

Doctor of Philosophy, Architecture **2022**

The Pennsylvania State University, University Park, Pennsylvania

Master of Arts, Archaeology and Art History **2014**

Koc University, Istanbul, Turkey

Bachelor of Science, City and Regional Planning **2010**

Middle East Technical University, Ankara, Turkey

Research Interests

History of Architecture

Historic Structure Significance Eligibility

Cultural Heritage Management

Archival Research

Ethnography

Qualitative Research

Experience

Architectural Historian **March 2022–Present**
Brian F. Smith and Associates, Inc.

Writing, editing, and producing cultural resource reports for both California Environmental Quality Act and National Environmental Policy Act compliance; recording and evaluating historic resources, including historic structure significance eligibility evaluations, Historical Resource Research Reports, Historical Resource Technical Reports, and Historic American Buildings Survey/Historic American Engineering Record preparation.

On-Call Architectural Historian **September 2021–March 2022**
Stell Environmental Enterprises, Inc.

Writing, editing, and producing cultural resource reports; recording and evaluating historic resources, including historic structure significance eligibility evaluations, Historical Resource Research Reports, Historical Resource Technical Reports, and Historic American Buildings Survey/Historic American Engineering Record preparation.

Research and Teaching Assistant/Ph.D. Candidate **August 2015–December 2021**
The Pennsylvania State University

Conducting literature reviews and research on various large-scale urban planning projects; teaching history of architecture and urban planning (ARCH 100) to non-specialist groups of 150+ students per semester; acting as a jury in architectural design studios; developing and conducting comprehensive qualitative research projects with clearly stated scope of work, cultural and scientific significance, and expected outcomes; analyzing and synthesizing spatial and socio-cultural data; producing 3-D models, site plans, section drawings and synthesis plans; preparing interview and focus group protocols, conducting expert, in-depth and walkalong interviews and moderating focus groups; writing grant applications.

Research Assistant **March 2013–November 2014**
UNESCO Mudurnu Cultural Heritage Management Plan Project

Conducting literature reviews and archival research on the history of the town of Mudurnu in Turkey; conducting field surveys and interviews to identify local tangible and intangible cultural heritage; developing a conservation action plan; preparing and digitizing conservation implementation plan proposals

Project Supervisor **January 2000-December 2001**
Taksim Yapi, Istanbul

Conducting literature reviews and archival research on the architectural heritage in Istabul; developing conservation projects for the Molla Çelebi and Hüseyin Ağa Mosques in Istanbul through rigorous archival research and interviews; managing a team of 50 workers and contractors during the implementation of conservation projects; preparing and submitted fiscal reports and memos on project progress.

Scholarly Works

Oz, I. and Staub, A.
2020 The Performance of Gender and Ethnic Identity in the Diaspora Mosque in The Architect and the City. *Proceedings of the ARCC 15th International Conference.*

Oz, I. and Staub, A.
2019 Fieldwork in-between Architecture and Anthropology: The Case of Marxloh, Duisburg in *Future Praxis: Applied Research as a Bridge between the Theory and Praxis. Proceedings of the ARCC 14th International Conference.*

Oz, I. and Staub, A.
2018 The Tale of Two Mosques: Marxloher Merkez Mosque vs. Cologne Central Mosque in Architectural Research for a Global Community. *Proceedings of the EAEE ARCC 13th International Conference.*

Oz, I.
2018 The Tale of Marxloher Merkez Mosque: The Miracle of Duisburg or an Illusion of Miracle?. *Archi-DOCT, 10.*

Oz, I. and Staub, A.
2016 Integration of Turkish Migrants in Germany: A Case Study in Polarities in Architectural Research Addressing Societal Challenges*. Proceedings of the EAAE ARCC 11th International Conference.*

Oz, I.

2015 Spatial Representations of Ideology and Politics in Urban Scene: Keçiören Example. *Journal of Ankara Studies,* 2, 131-158.

2015 Yıldırım, A. E., Nalbant, K., Aydın, B., Güzelsarı, S., Onur, F., Oz, I., …, Moralı, Y. (2014). *Mudurnu Cultural Heritage Area Management Plan, Mudurnu, Turkey: Municipality of Mudurnu*

Technical Reports

Oz, Irem

2022 *History of the Poultry Research Facilities at the Beltsville Agricultural Research Center.* Prepared for Stelle Environmental Enterprises, Inc to be submitted to the United States Army Corps of Engineers and the Bureau of Engravings. Report under revision.

Oz, Irem and Sarah Steinkraus

2022 *Historic Structure Assessment for 401 Avery Street, Walla Walla County, Washington. Parcel Numbers 350724440024, 360730220010* and *360730220029.* Prepared for Gram Northwest, LLC.

2021 *Historic Structure Assessment for 2121 Keene Road, Benton County, Washington. Parcel Number 122983000001009.* Prepared for Gram Northwest, LLC.

Yıldırım, A. E., Nalbant, K., Aydın, B., Güzelsarı, S., Onur, F., Oz, I, Moralı, Y.

2014 *Mudurnu Cultural Heritage Area Management Plan, Mudurnu, Turkey: Municipality of Mudurnu*

APPENDIX B

Site Record Form

(Deleted for Public Review; Bound Separately)

APPENDIX C

Archaeological Records Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX D

NAHC Sacred Lands File Search Results

(Deleted for Public Review; Bound Separately)

APPENDIX E

Historic Documents

Ownership Information

Chain of Title

Title Records for 8155 Banana Avenue (APN 230-041-60)

Seller	Buyer	Year
Fred H. Schulz and Helen N. Schulz	Morris D. Clark and Dorothy M. Clark	1958
Morris D. Clark and Dorothy M. Clark	Roy E. Preston and Anna Preston	1959
Leonard S. Mc Nee and Mamie Brown Mc Nee	Roy E. Preston and Anna Preston	1962
Anna Preston	Roy E. Preston	1968
Sharon K. Preston	Roy E. Preston	1973
Roy E. Preston	A. G. Fuqua and Pearl I. Fuqua	1973
A. G. Fuqua and Pearl I. Fuqua	Alvin G. Ramshur and Eula Mae Ramshur	1979
Alvin G. Ramshur and Eula Mae Ramshur	Arion D. Conteas and Adela Z. Conteas	1981
Arion D. Conteas and Adela Z. Conteas	William V. Landecena and Dorothy M. Landecena	1988
William V. Landecena and Dorothy M. Landecena	William V. Landecena and Dorothy M. Landecena, Trustees	1989
William V. Landecena and Dorothy M. Landecena	William V. Landecena and Dorothy M. Landecena, Trustees	1990
William V. Landecena and Dorothy M. Landecena, Trustees	The Landecena Enterprises Limited Partnership, dated January 22, 1998	1998
The Landecena Enterprises Limited Partnership, dated January 22, 1998	William V. Landecena, aka Bill Landecena, and Dorothy M. Landecena, Trustees	2004
William V. Landecena, aka Bill Landecena, and Dorothy M. Landecena, Trustees	Gary L. Jackson	2006
Gary L. Jackson	Gary L. Jackson, Trustee	2019
The Jackson Living Trust dated June 27, 2019	Guillermo Vergara	2019
Elsa Vergara	Guillermo Vergara	2019

Seller	Buyer	Year
Guillermo Vergara	SA Golden Investments, Inc.	2019

Maps

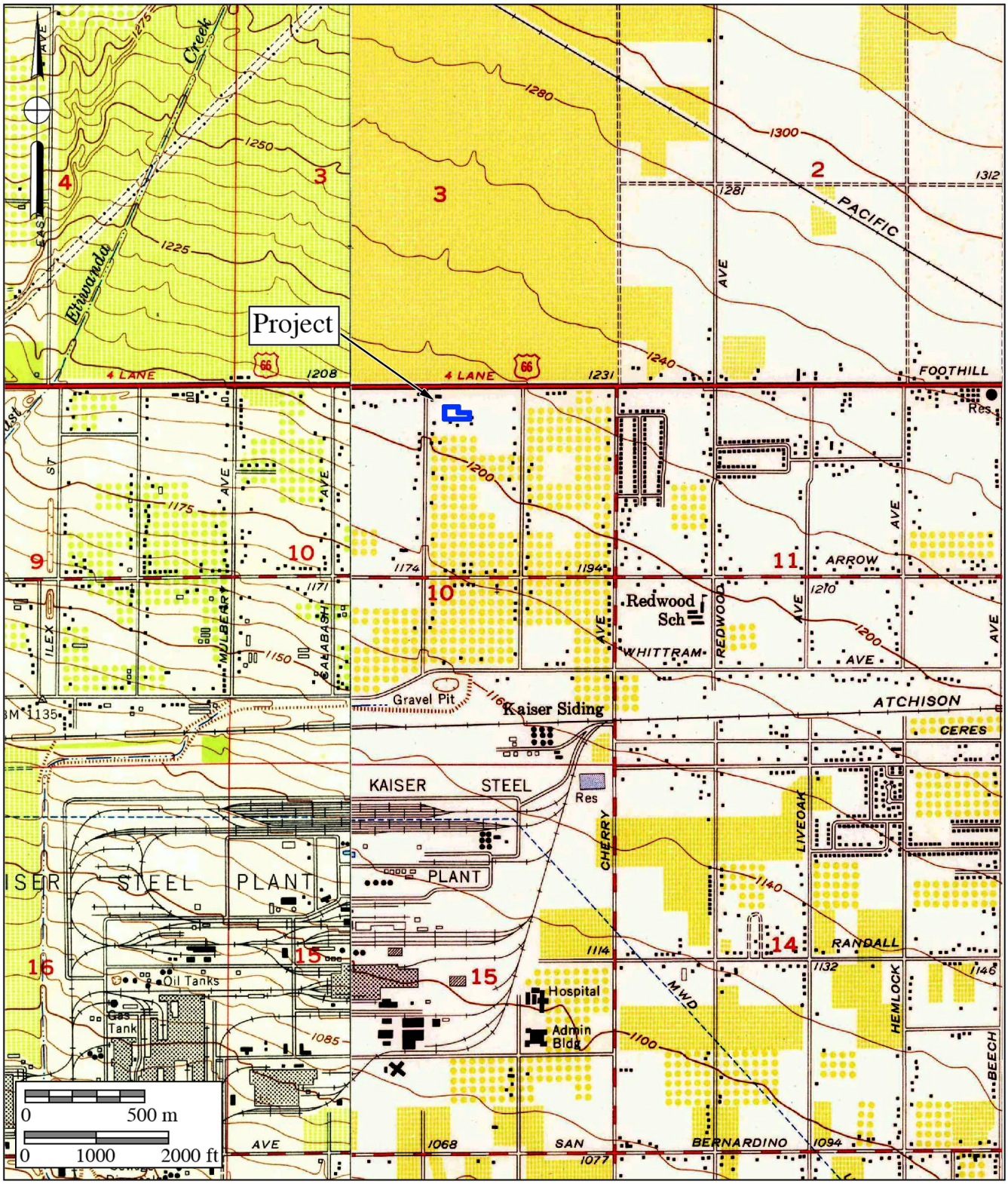


Figure 1

1953 USGS Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangle (7.5-minute series)

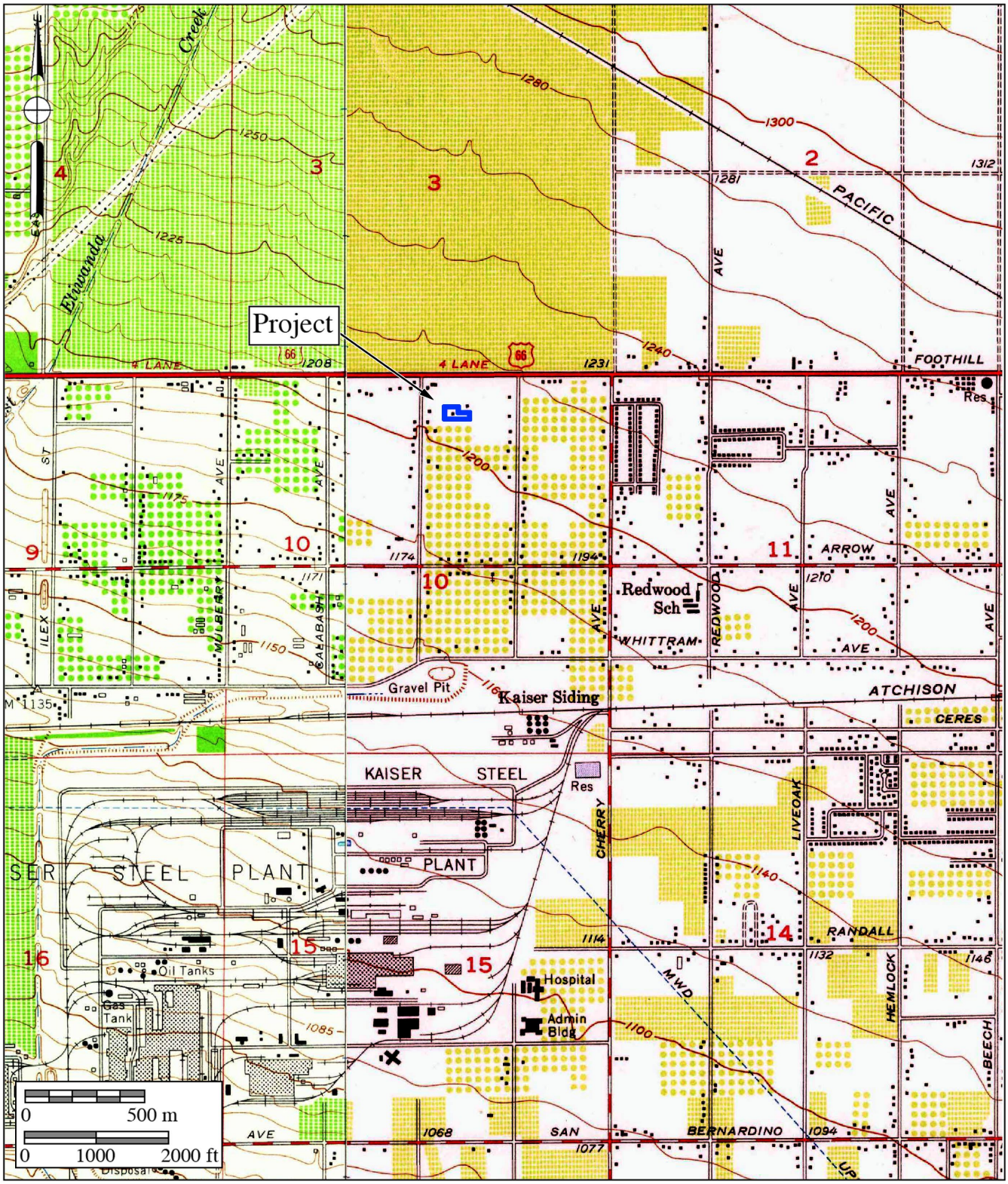


Figure 2

1963 USGS Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangle (7.5-minute series)

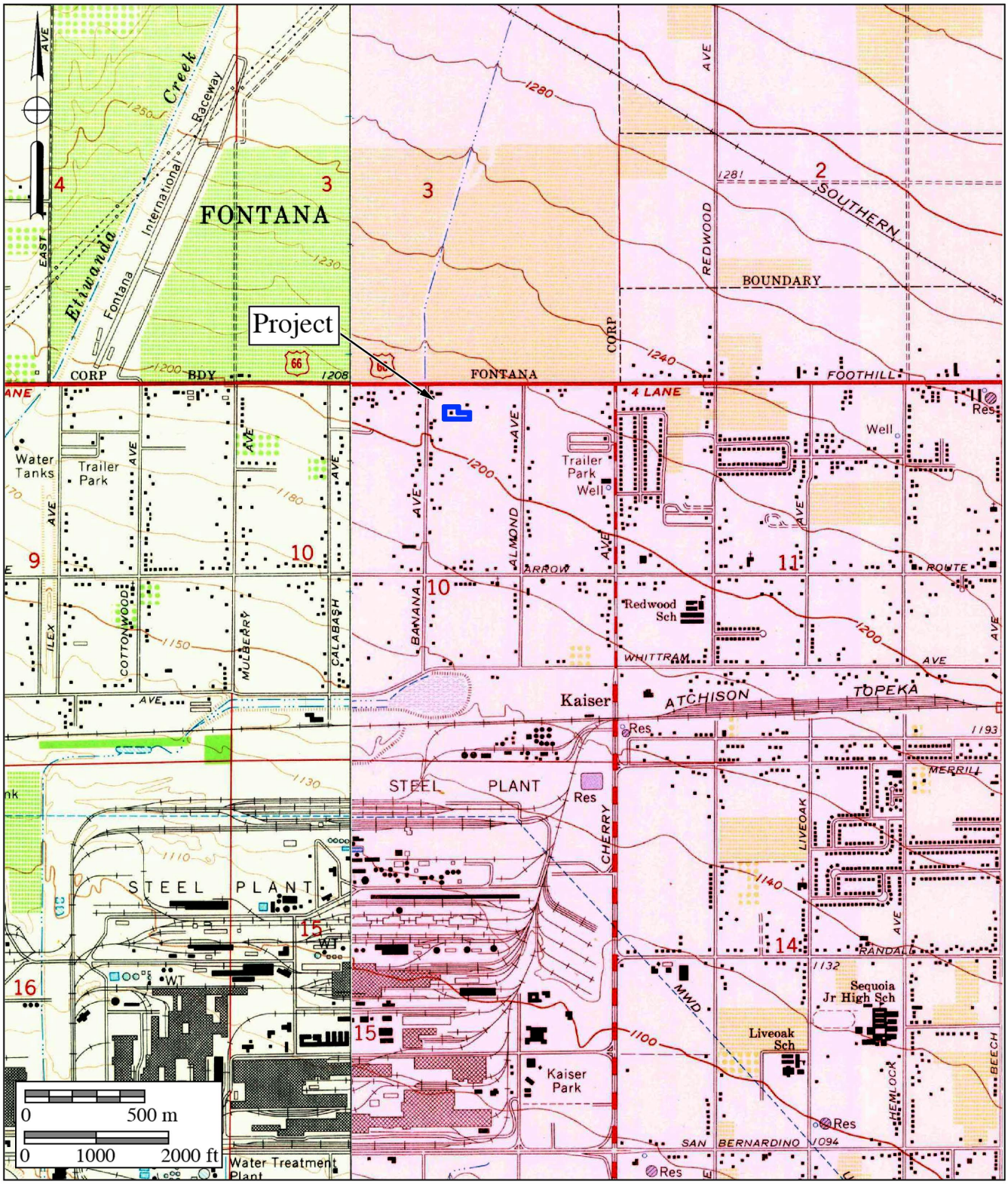


Figure 3

1969 USGS Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangles (7.5-minute series)

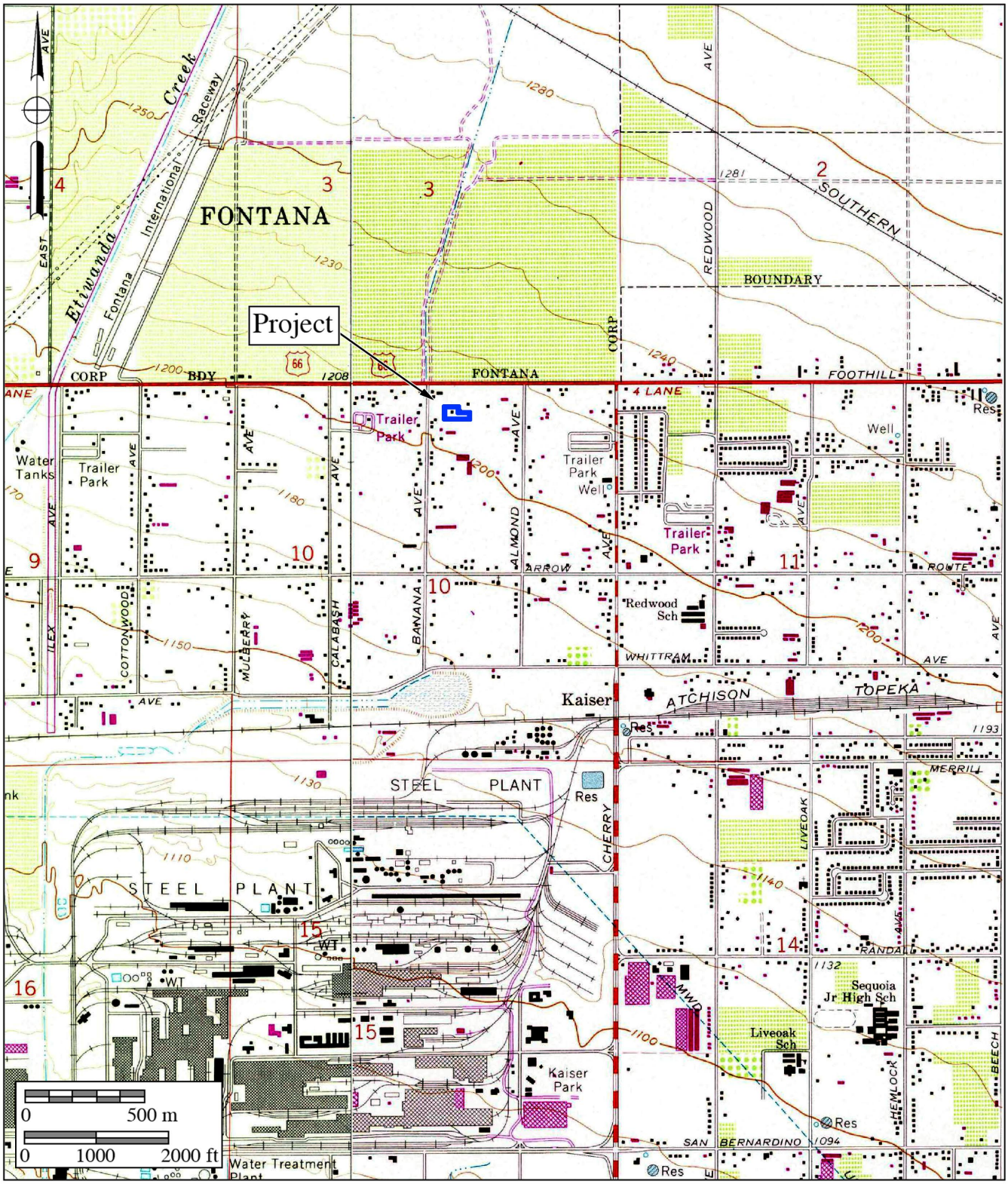


Figure 4

1975 USGS Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangles (7.5-minute series)

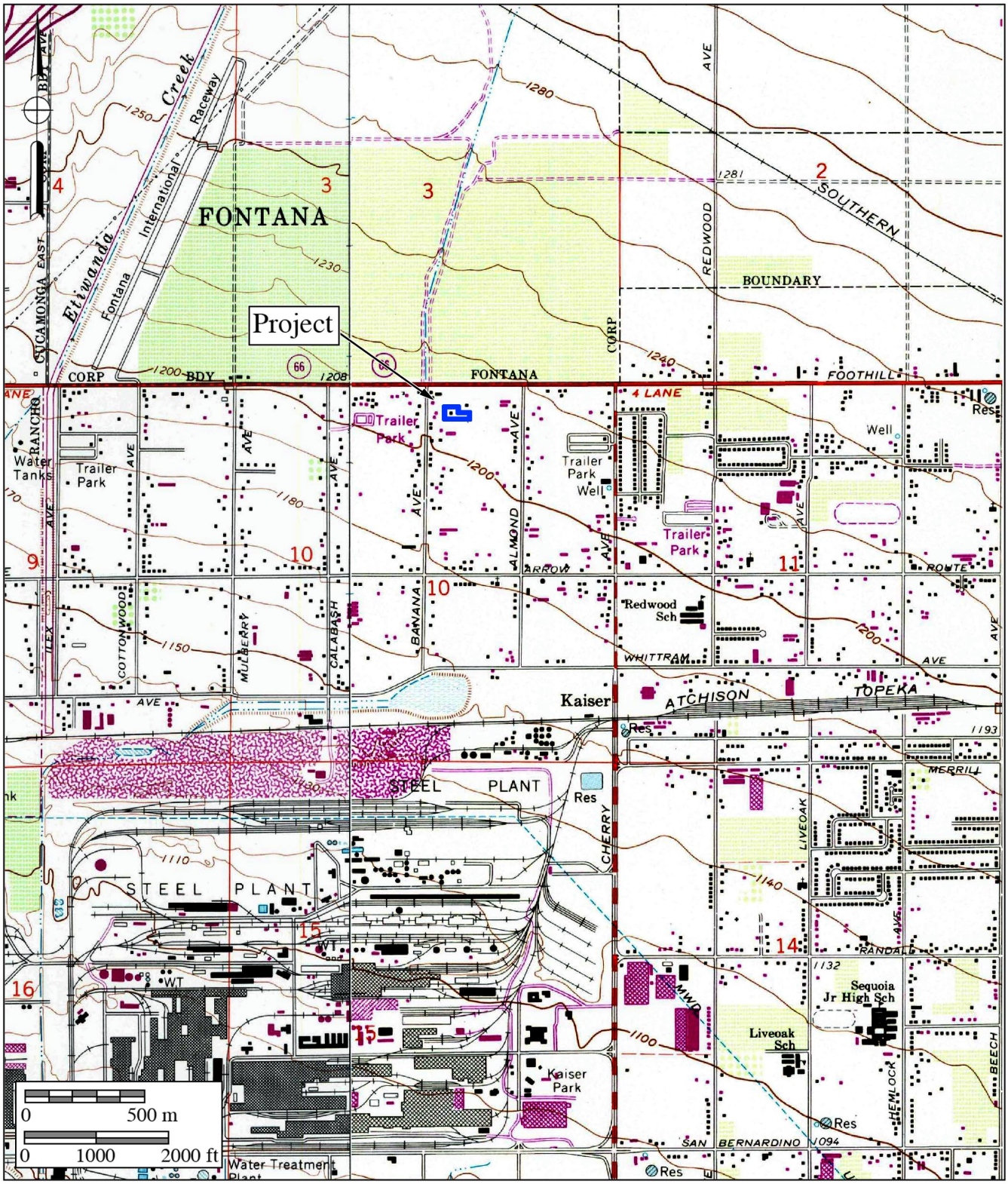


Figure 5

Current USGS Map

The 8155 Banana Avenue Project

USGS *Fontana* and *Guasti* Quadrangles (7.5-minute series)

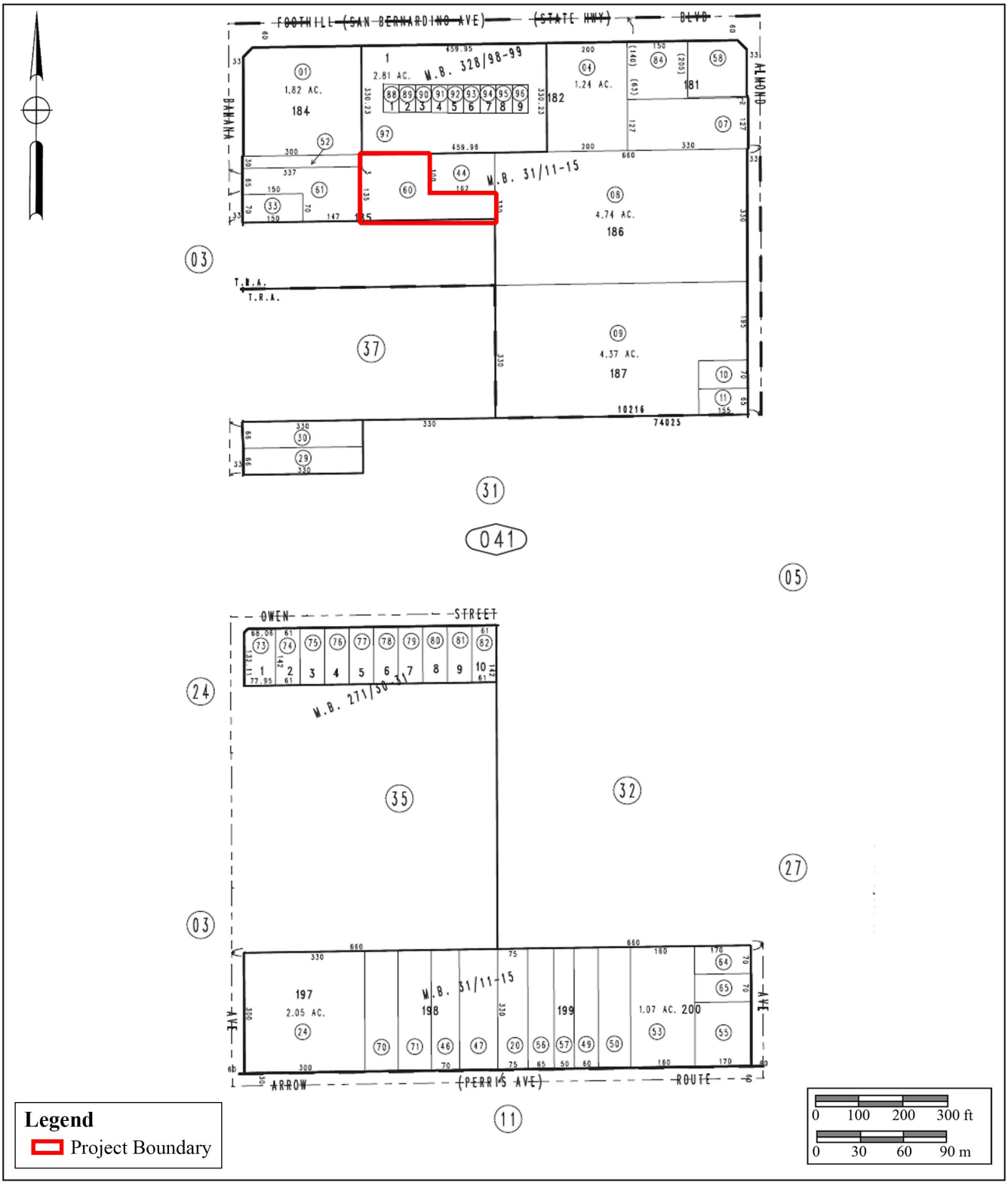


Figure 6

Assessor's Parcel Map

The 8155 Banana Avenue Project

APPENDIX E
SOILS EVALUATION

SAMPSON and ASSOCIATES

CONSULTING ENGINEERS

Geotechnical, Structure, Environmental

Project No.: DRB22-00002
February 25, 2022

TO: **SA Golden Investments Inc.**
6226 Cooper Ave
Fontana, California 92336

SUBJECT: Preliminary Soils Evaluation, New Proposed 3-story 24 unit apartments Located at 8155 Banana Ave, City of Fontana, California.

INTRODUCTION:

We sincerely appreciate the opportunity to be of service to you on this project. The primary purpose of this study was to evaluate the soils conditions as they impact the proposed development and to provide engineering recommendations. Our study has demonstrated that the proposed development is feasible from soils engineering point of view and that no un- mitigatable conditions h been disclosed by our studies provided that our recommendation provided in this report are incorporated fully in the design of the project.

This report presents the findings of our data review, subsurface exploration, laboratory testing, engineering analysis and evaluation, and our conclusions and recommendations.

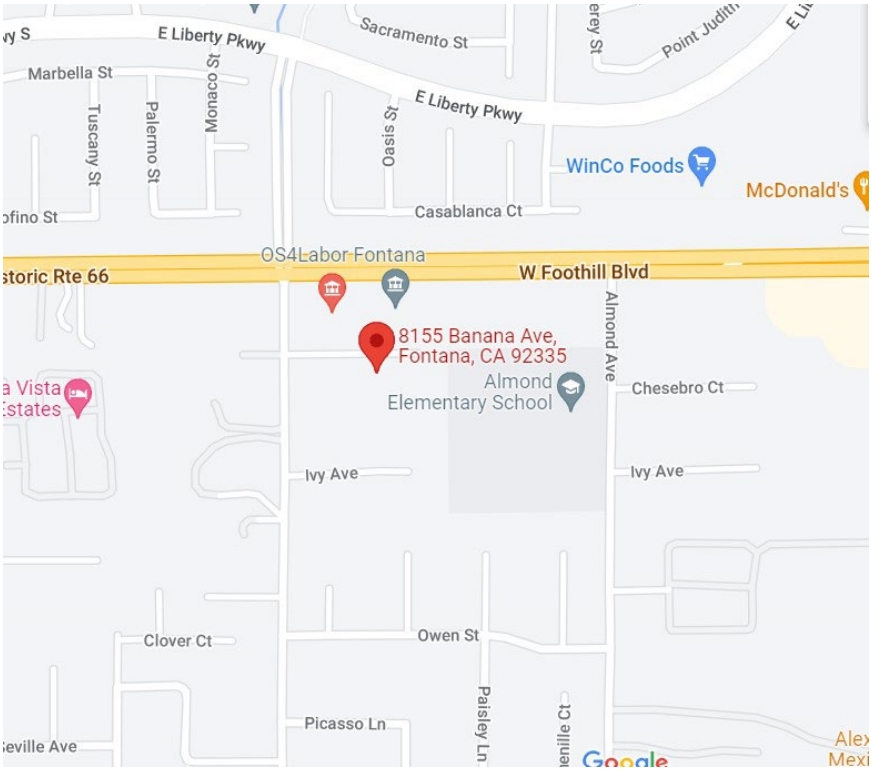
If you have any questions regarding this report please do not hesitate to contact this office at your convenience. We appreciate the opportunity to be of service on this project.

Respectfully Submitted;
Sampson and Associates

M. E. Samiee MS, Calif RCE 46172
MS/db
Distribution: (4) Addressee

REGISTERED PROFESSIONAL ENGINEER
MOHAMMAD E. SAMIEE
NO. 46172
EXP. 12/31/22
CIVIL
STATE OF CALIFORNIA

P. 0. Box 834, San Dimas, California 91773 Tel.: (909) 522-7067
E-Mail: mohsamiee@msn.com



Index Map

Of

8155 Banana Ave, City of Fontana, California

SCOPE OF STUDY:

The purposes of this study are to identify on-site, near-surface soil conditions that may affect the proposed developments and provide soils engineering recommendations for site preparation, temporary excavations, foundation design, slabs-on-grade, and drainage recommendations.

1. Site visit and review of pertinent documents.
2. Drilling, logging, and sampling of (3) exploratory borings to a maximum depth of (5) feet for foundation evaluation.
3. Laboratory testing of selected samples to determine the engineering characteristics of onsite soils.
4. Engineering analysis of collected data and information obtained from our field study, laboratory testing, and literature review.
5. Development of soils engineering recommendations for site preparation, grading, and Soils engineering design criteria for building foundations, slab-on grade construction, underground utility trenches, temporary excavations, retaining walls, and drainage.
6. Preparation of this report presenting our findings, conclusions, and recommendations Including maps and illustrations.

ACCOMPANYING MAPS, ILLUSTRATIONS, and APPENDICES:

Index Map - Page 2
Plate 1 - Approximate Boring Location Map
Appendix "A" - References
Appendix "B" - Borings Logs
Appendix "C" - Laboratory Test Results
Appendix - General Earthwork and Grading Specification

SITE LOCATION, PROPOSED DEVELOPMENT, and CONDITION:

The proposed development consists of new 3-story 24 unit apartments at end of Banana Ave.in the City of Fontana, County of San Bernardino, California.

The subject site is flat irregular shape lot bounded by Banana Ave. on south and by developed properties on other sides. Access to the site is available via pd Banana Ave. .

Project is covered with dense dry and green annual weeds, bushes, trees, and scattered trash. Drainage onsite is uncontrolled by sheet flow appears to be toward east and south.

This office must review the Foundation Plans prior to permit issue. Although building loads were not provided, we would expect the loads to be typical of Multifamily construction. The building will be supported on shallow continuous footings and slab-on-grade. The remaining of the property will be landscaped or pd.

SUBSURFACE INVESTIGATION:

To evaluate the subsurface condition of the subject sites, three (3) exploratory Borings were drilled to maximum depths of (5) feet as shown on Plate-1. The excavations were then backfilled. The borings were logged and sampled. Bulk and relatively undisturbed samples were collected for proper laboratory testing.

SUBSURFACE CONDITIONS:

Soil materials encountered in our trenches consisted of top-soils over Alluvium material to a depth of approximately 4.5 feet below surface. Upper 2 feet consists of very dry, loose, silty sand, sandy silt, poorly graded with grls and some rocks with roots and minor trash on surface. The soils below 2 feet is loose and dry silty sand, sandy silt with minor roots to depth of 4.5 feet below grade. The soils encountered below approximately 4.5 feet grade consists of dense brown silty sand, sandy, with rocks, and scattered cobbles. These soils are dense becoming more dense with depth.

Field observation, probing, and testing of the subsurface material indicates that approximately upper approximately 4.5± feet of the onsite soils appears to be loose, dry, and collapsible under proposed structural load.

GROUND WATER:

No Ground water or any perched ground water was observed at our (4) exploratory trenches onsite during the course of our investigation.

LABORATORY TEST RESULTS:

Laboratory tests were performed to identify the engineering characteristics of the onsite soils with respect to the proposed development at the site. A description of these test procedures is presented in Appendix "C", along with the results of these tests.

Laboratory testing included in-place moisture/density, maximum dry density/optimum moisture content, and direct shear.

A summary of the test results is presented below:

Based on our visual inspection and testing, the onsite soils are expected to h a very low potential for expansion.

Maximum dry density and Optimum moisture of representative onsite native soils is 128 pcf and 7.5 percent respectively.
The maximum dry density and optimum moisture content of typical onsite soils are determined by ASTM Test Method D1557.

Shear strength test was performed on representative samples for undisturbed conditions. Direct shear test results on native soil sample indicates a cohesion and frictional strength of 50 psf and 28 degrees, respectively.

Soluble sulfates test result is included in Appendix “C”, however, soluble sulfate test must be verified after completion of grading.

CONCLUSIONS and RECOMMENDATIONS

Based on the field, laboratory data, and our analysis, it is our opinion that the proposed developments are feasible, provided that the recommendations in this report are incorporated fully in the design and construction stages of the projects.

FAULTING and SEISMICITY:

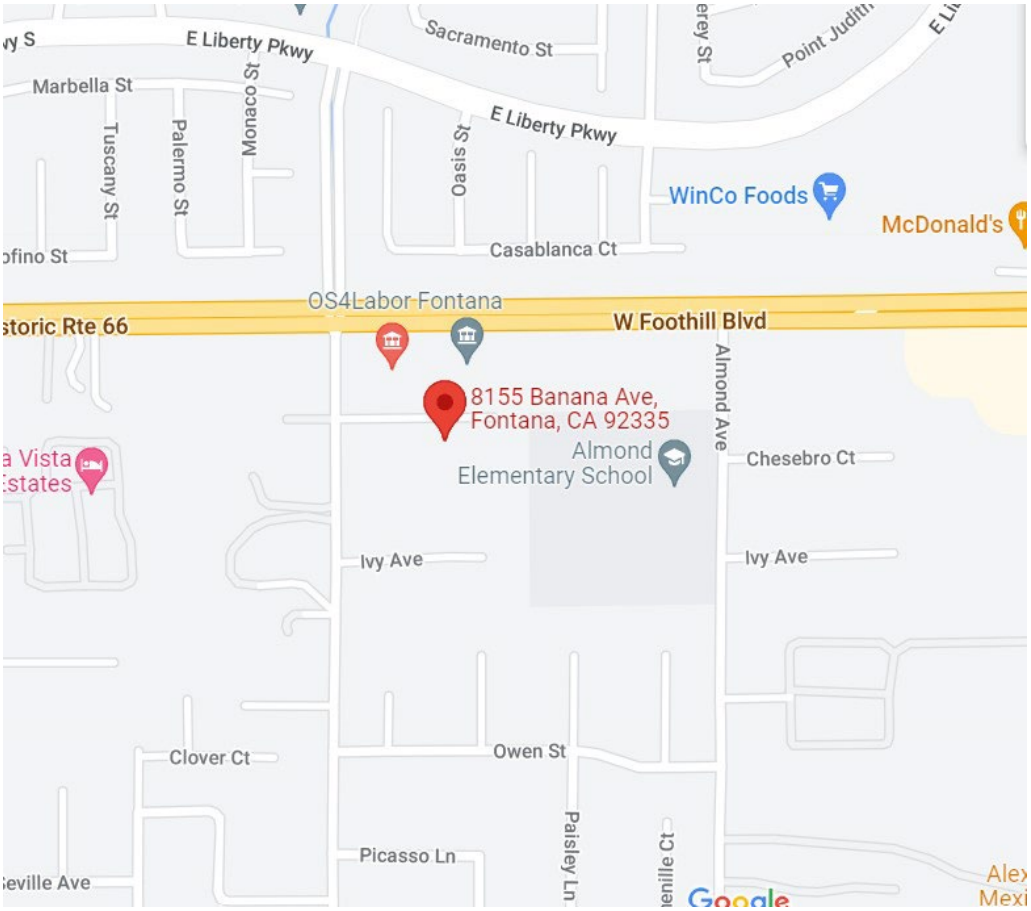
The Southern California region is considered to be tectonically active because of its historically high seismic activity. As with most of southern California, the site can be expected to experience moderate to severe ground shaking during the design life.
The effects of seismic shaking can be mitigated through consideration of the parameters and by design in accordance with the latest Uniform Building Code and the Structural Engineers Association.

*Seismic Coefficients **Per 2019** CBC Code are as follow:*

Site Longitude:	W 119.5975
Site Latitude:	N 36.25556
Site Class:	
Fa:	1.0
Fv:	null -See Section 11.4.8

LIQUEFACTION ANALYSIS:

There are some number of factors which affect the liquefaction characteristics of any given sand. It is now recognized that these include: relative density, grain structure or fabric, length of time the sand is subjected to sustain pressures, the value of the lateral earth pressure, coefficient, and prior seismic or other shear strains to which the sand may h been subjected. According to our site visit, soil classification, and, our soils evaluation and laboratory testing for in-place moisture/densities, the onsite soils are primarily dens silty sand/sandy silt. It is our professional opinion that based on the under-laying dense to hard sandy silt/silty sand soils and considering the deep groundwater below grade, the potential for liquefaction is remote.


E Liberty Pkwy
Sacramento St
Marbella St
Monaco St
Tuscany St
Palermo St
Oasis St
E Liberty Pkwy
WinCo Foods
McDonald's
Casablanca Ct
OS4Labor Fontana
W Foothill Blvd
8155 Banana Ave,
Fontana, CA 92335
Almond
Elementary School
Almond Ave
Chesebro Ct
Ivy Ave
Ivy Ave
Clover Ct
Owen St
Picasso Ln
Paisley Ln
Google

....

RECOMMENDATION

General Site Grading:

All grading shall be performed in accordance with the Local Standards and General-Earthwork/Grading Specifications on this report (Appendix) except as modified in the text of this report.

The following soils engineering recommendations for site preparation, foundation, and slabs-on-grade should be incorporated into final design and construction stages of the project and should be in conformance with local governmental regulations contained herein, whichever is more restrictive. All such work and design, and slabs-on-grade should be incorporated into final design and construction practice.

SITE PREPARATION and GRADING:

Removal and Re-Compaction:

Prior to any grading operations, the site must be cleared of all surface and subsurface obstructions including uncertified fill, any existing structure, grass, weeds, large and small tree stumps, debris, trash, and residual topsoil. Any underground obstruction encountered must be located, removed, and backfilled with clean soils under supervision and testing of the soils engineer.

Based on our site observation, testing, and evaluation, the subsurface material at present condition (building area) are dry to damp, loose/soft, and compressible within the upper (4.5+) feet below existing grade. Following clearing and stripping, grading of the site shall be initiated by removals of upper 4.5+ feet and scarification of approximate (12) inches within building area and 5 feet beyond footprints. Bottom of all excavations to receive fill must be inspected by the soils engineer, scarified 12 inches, moisture-conditioned as-necessary to satisfaction of soils engineer (flooded), and re-compacted to a minimum 90% of relative dry density under supervision and testing of the soils engineer.

After removal of deleterious material and debris, the exposed bottom of building area shall be inspected by the soils engineer to verify the above findings. If conditions differs from those encountered, our conclusions and recommendations may be re-evaluated.

PRELIMINARY FOUNDATION RECOMMENDATIONS:

It is our opinion that the proposed 3-story 24 unit apartments Multifamily may be supported on continuous footings. All footings must be designed by structural engineer founded in native or approved compacted certified soils provided by the above recommended over-excavation and re-compaction.
No foundation plan was available to us at the time of our investigation, therefore, the proposed footings shall be designed by the structural engineer and shall be reviewed by this office prior to construction.
Following parameters are preliminary recommendations in design of foundations and are based on a low expansion potential.

CONTINUOUS FOOTINGS:

All foundation system for this project must be designed by the structural engineer. Final foundation design should be reviewed by this office prior to construction.

Following soils parameters may be used in design criteria of the project.

Allowable Bearing Pressure:	1650 psf Approved Fill or Native
Coefficient of Friction:	0.28 Approved Fill or Native
Passive Lateral Pressure:	250 pcf Approved Fill or Native

Single-Story:

Footing Depth Min.:	18-Inch Into Approved Bedrock-To Be Designed By The Structural Engineer- Min 1 #4 rebar @ Top and 1 #4 Rebar @ Bottom
Footing Width Min.:	15-Inch- To Be Designed By The Structural Engineer

Two-Story

Footing Depth Min.:	72-Inch Into Approved Bedrock-To Be Designed By The Structural Engineer- Min 2 #4 rebar @ Top and 2 #4 Rebar @ Bottom
Footing Width Min.:	18-Inch- To Be Designed By The Structural Engineer

The above foundation parameters shall be superseded by more restrictive design requirements from the architect, structural engineer, and/or governing agency.

For design, resistance to lateral loads can be assumed to be provided by friction along the base of the foundation and by passive earth pressures on the side of the foundation. An allowable friction coefficient of 0.28 may be used with the vertical dead loads, and an allowable lateral passive pressure.
The friction value is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. Resistance to lateral loading may be provided by passive earth pressure within the layer below the base of the excavation.

RETAINING WALL:

Retaining walls should be designed for the following active lateral soil pressure:

Equivalent Fluid Pressure: 35 pcf - Level Backfill
45 pcf - 2:1 Sloping Backfill
70 pcf - At Rest

Any additional surcharge pressure behind the wall should be added to these values. If import soil is used for backfill, other lateral soil pressures may apply and shall be determined by inspection and/or testing. For lateral restraint, the following soil design parameters may be used when all the foundation recommendations are followed:

Passive Lateral Pressure (EFP): 250 pcf
Coefficient-Of- Friction:0.28
Bearing Pressure: Approved Soils 1850 psf
Lateral Soil pressure increase due to
additional width or depth to Max. 1800 psf : 250 psf/1 foot
Minimum Depth of Footing In Approved Soils: 12 Inches

All footings must be embedded in approved soils certified by the soils engineer.

An adequate sub-drain system shall be constructed behind the retaining walls at base to allow adequate drainage and to prevent building of excessive hydrostatic pressures. Typical sub-drains may include weep holes with grl pockets, perforated pipes surrounded by filter rock**,** or other approved methods. Outlets should pass below the base of the wall at a minimum 2 percent gradient. Backfill directly behind retaining walls may consist of self compacting 3/4" maximum grl or clean sand water jetted into place to obtain proper compaction. If other types of soil are used for backfill, mechanical compaction method will be necessary to achieve a relative compaction of at least 90% of maximum dry density. Backfill directly behind retaining walls shall not be compacted by wheel track or other rolling method unless the wall is designed for the surcharge loading from the compaction equipment.

If grl, clean sand, or other imported granular backfill is used behind the retaining wall, the upper 18 inches of backfill shall consist of typical on-site soil to prevent the influx of surface runoff into the granular backfill and into sub-drain system.

All excavations shall be stabilized within 30 days of initial excavation. Water should not be allowed to pond on top of the excavations nor to flow toward it. No vehicular surcharge shall be allowed within 3 feet of the top of the cut. Any fill which is placed shall be approved, tested and verified by registered soils engineer.

Footing excavations shall be inspected by soils engineer prior to the placement of reinforcing steel and concrete to ensure that competent bearing materials h been encountered. The exact required footing depths are not known at this time and will h to be verified by means of a footing inspection.
It should be noted that a large portion of the anticipated settlement will occur during and soon after the actual construction of the structure. However, additional differential settlement will occur over a period of time. For footings thus designed and constructed, total and differential settlement with the above requirements are anticipated to be negligible provided our recommendations are followed.

Contractors should be informed that the use of heavy compaction equipment in close proximity to retaining walls can cause excessive wall movement and/or earth pressure in excess of design values.
For excavations made during dry seasons where rain is not expected, the excavations shall be cut back 1/2:1 (horizontal to vertical). If unseasonal rainfall is encountered excavation shall be cut back to 3/4:1 (horizontal to vertical) and the open cut shall be adequately protected from saturation or erosion.

Footings adjacent to a descending slope which is steeper than 3:1 in gradient shall be located a distance away from the face of the slope as required by Slope Setback Requirements of the latest Uniform Building Code. Where more restrictive, the safety requirements of OSHA regulations shall be followed.

SETBACKS:

All setbacks required by governing agency must be followed.

TEMPORARY EXCAVATION:

Temporary construction excavation shall be made vertically without shoring to a depth of about 5 feet below adjacent surrounding grade. For deeper cuts, the slopes should be properly shored or sloped back to at least a 1:1 (horizontal:vertical) ratio or flatter.

SLAB-ON-GRADE:

Concrete floor slabs (if any) should h a minimum thickness of (4) inches and be reinforced with No. 4 bars spaced 18 inches on center, both ways. All slab reinforcement should be supported on chairs or brick to ensure the desired placement near mid depth placed at mid-height in the slab. If moisture sensitive floor covering is to be placed, we recommend that a 6-mil visqueen barrier be placed beneath slabs. A 2-inch sand layer between the slab and barrier is recommended to protect the barrier and aid in concrete curing.

Prior to placing sand and Visqueen, the slab sub-grade shall be moisture-conditioned to a depth of 18 inches to 5 percent above optimum moisture content as approved by the soils engineer.
All slabs intended to carry any concentrated loads should be designed by a structural engineer. Weakened plane joints shall be provided to reduce the probability of cracks.

Additional or heavier reinforcement shall be necessary for structural considerations as determined by the project architect or structural engineer.

Final recommendations for slab and foundation shall be made on the basis of observation and testing of the soils at pad grade upon completion of grading.

FILL PLACEMENT and COMPACTION:

The voids generated from removals of any underground obstructions and any utilities may be backfilled with onsite soils once free of organic material, debris, boulder and rocks larger than 6 inches in size. Bottom of excavation should be inspected by qualified soils engineer, scarified one foot, flooded uniformly, and re-compacted to a minimum 90% of relative dry density.
If the proposed finished grades are established at or above the existing grades, import soils would be required to accomplish the grading work. All import soils must be granular coarse material free of organic and rocks larger than 6 inches in diameter and should be approved by soils engineer prior to import.
All fill soils should be placed in layers not exceeding 6 to 8 inches in loose thickness approved by the soils engineer, and compacted to at least 90 percent of the maximum dry unit weight as determined by ASTM Designation D1557-91 Compaction Method.
In-Place density tests should be made by the required degree of compaction and the proper moisture content. Where compaction of less than 90 percent is indicated, additional compactive effort should be made with adjustment of the moisture content or layer thickness, as necessary, until at least 90 percent compaction is obtained.

SURFACE DRAINAGE:

Surface drainage should be directed away from foundations and slopes toward the streets or approved drainage devices. Ponding of water adjacent to the foundations and retaining walls must be avoided. Planters which are located within the residence should be sealed or sloped away from the structure to drain to a safe point of collection. Planters located adjacent to a raised floor structure should be sealed to the depth of the footings. A program for maintenance of drainage devices should be developed by the owner.

TRENCH BACKFILL:

Trench excavations for utility pipes shall be backfilled with granular soils under the observation of the soils engineer. After the utility pipe has been laid, the space under and around the pipe shall be backfilled with clean, granular soil having a sand equivalent of 30 or greater to a depth of at least one foot over the top of the pipe before the controlled backfilled is placed. The soils material approved by the soils engineer shall be moisture - conditioned and mixed, as necessary, prior to placement in lifts over the sand backfill. The controlled backfill shall be compacted by mechanical methods to a minimum relative compaction of 90 percent of their relative maximum density.
Field density tests and inspection of the backfill procedures shall be made by this firm during backfilling to ensure that proper moisture content and uniform compaction is being maintained.

PRE-JOB CONFERENCE:

It is imperative that no clearing and/or grading operations be performed without the presence of a representative of this firm. An on-site, pre-job meeting with the inspector, developer, contractor, and the soils engineer should occur prior to all grading related operations.

It would be stressed that operations undertaken at the site without the presence of the soils engineer may result in exclusions of affected areas from the final compaction report for the project.

OBSERVATION and TESTING:

The recommendations provided in this report are based on preliminary design information and subsurface conditions as interpreted from limited excavations at the site. Our investigation consisted of a field exploration, laboratory testing of typical soil types, a review of the information obtained in this exploration and testing phases, and preparation of this report.

The conclusions and recommendations presented in this report h been prepared in accordance with generally accepted engineering principals and practices, and h incorporated federal, state and local laws, codes, ordinances and regulations which in our professional opinion are applicable at the time of preparation of this report. The logs show subsurface conditions at the dates and locations indicated, and may not be representative of subsurface conditions at other locations and times. Should soil conditions be encountered during construction that appear different from those shown in this report, this office shall be notified immediately so that our recommendations may be re-evaluated.

Our preliminary conclusions and recommendations shall be reviewed and verified during the site grading, and revised accordingly if exposed condition vary from our preliminary findings and interpretations.

The engineering consultant shall provide observation and testing during grading of the subject site. The consultant shall prepare a final as-graded report summarizing the conditions countered and any field modification to the recommendations provided herein. It is recommended that a representative of this office be present when the excavation is first exposed. Modifications to our recommendations may be necessary if significant variation in the soil conditions are encountered. It shall be noted that the recommendations presented herein is for use in design and for cost estimating purposes prior to construction. The contractor is solely responsible for safety during construction.

This report is issued and made for sole use and benefit of the client, is not transferable and is valid as of the exploration date.

ADDITIONAL OBSERVATION and TESTING MUST BE PROVIDED:

* After completion of site clearing, prior to grading.

* During removal of any existing underground obstructions (if any).

* After removal of unsuitable soils for bottom inspection and during placement of any fill material for laboratory testing of onsite soil, import soils, and compaction testing.

* After footing excavation, prior to placement of steel and pouring concrete.

* After pre-saturation of the slab sub-grade prior to placement of sand and Visqueen.

* During any additional fill placement and compaction.

* When any unusual conditions are encountered

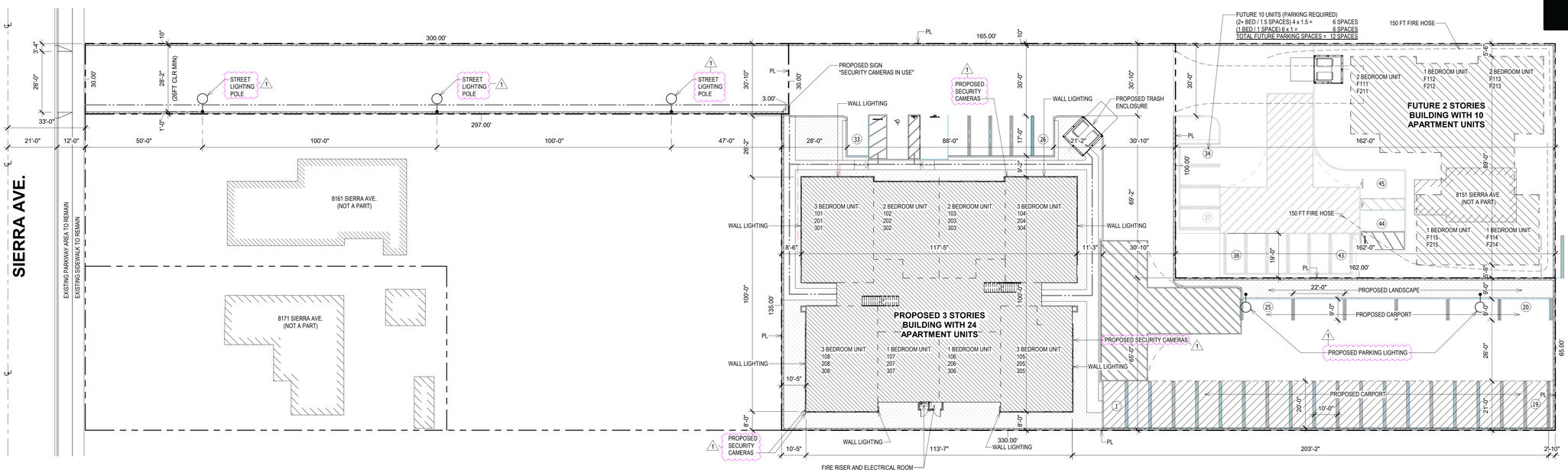
Any unusual condition encountered during site development not discussed in this report shall be brought to our immediate attention.

Proposed 24-Units on 3-Story Bldg. For:

SA Golden Investment Inc.

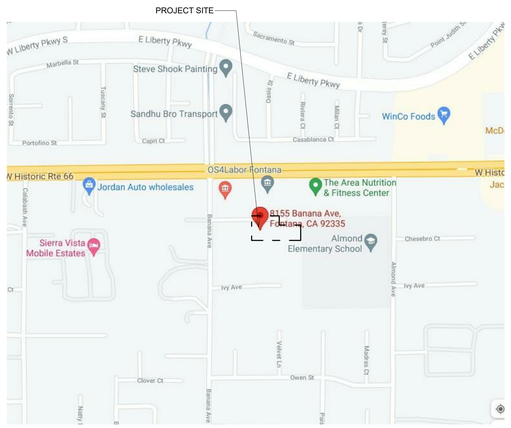
8155 Banana Ave, Fontana, CA 92335

ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY, FONTANA, CA 92335 (909) 355-6688

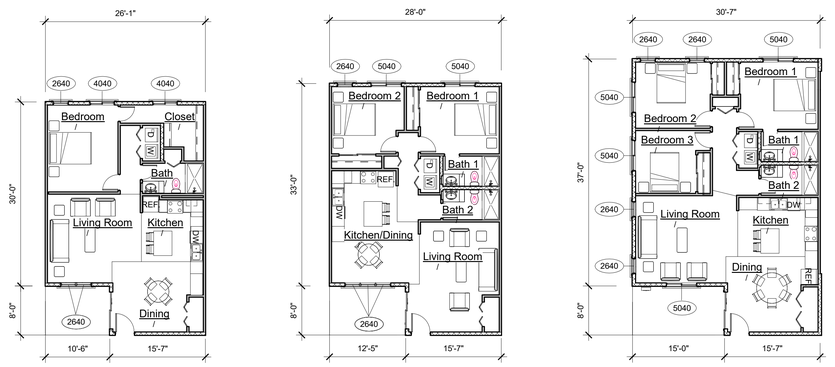


Site Plan

1" = 20'-0"



Vicinty Map



OWNER: **SA GOLDEN INVESTMENT INC.**
(909) 519-3346
SABER AWAD
ewed@sbcglobal.net

PROJECT ADDRESS: **8155 BANANA AVE.**
FONTANA, CA 92335

ARCHITECT: ANDRESEN ARCHITECTURE INC.
17087 ORANGE WAY
FONTANA, CA 92335
CONTACT: (909) 355-6688
doug.andresen@aaifirm.com

APN:	**023004160**
ACREAGE:	0.87
ZONING:	ZONING TO BE CHANGE (ROUTE 66 GATEWAY DISTRICT)
OCCUPANCY:	GROUP R2
CONSTRUCTION:	TYPE V-B
BUILDING HEIGHT:	38'-0" (70 MAX)
NUMBER OF STORIES:	3-STORIES (5 MAX)
FIRE SPRINKLERS:	REQUIRED
EASEMENTS:	NONE

PROJECT DESCRIPTION: PROPOSED 3-STORY 24-UNITS

GROSS LOT SIZE:	38,160 SF (0.87 AC)	
PROPOSED TWO CARPORTS (SOLAR READY):		3,799 SQ. FT.
PROPOSED APARTMENTS BUILDING:		10,876 SQ. FT.
TOTAL FOOTPRINT PROPOSED		15,863 SQ. FT.
TOTAL BUILDINGS COVERAGE:		**14,662 SF (38.4%)**
NET LOT SIZE:	23,498 SF (100%)	
HARDSCAPE AREA:	19,704 SF (83.8 %)	
LANDSCAPE AREA:	3,792 SF (16.2 %)	
MAXIMUM DENSITY:	39 UNITS/ ACRE	
MAXIMUM HEIGHT:	70'	

REQUIRED PARKING:
PARKING (ROUTE 66 GATEWAY DISTRICT)

1 SPACES / 1 BED (6 UNITS X 1)	6 SPACES
1.5 SPACES REQ / 2+ BED (18 UNITS X 1.5)	27 SPACES
TOTAL REQUIRED =	33 SPACES

PARKING REQUIRED:

OPEN REGULAR 9' x 19'	8 SPACES
OPEN PARALLEL 8' x 22'	6 SPACES
ONE CARPORT 10' x 20'	19 SPACES
TOTAL PROPOSED:	33 SPACES

PRIVATE OPEN SPACE: 64 SF/ UNIT (8' MIN. DIM.) **TOTAL REQUIRED**: 1,536 SF
PRIVATE OPEN SPACE: VARIES (SEE SITE PLAN) **TOTAL PROVIDED**: 2,544 SF

GAS: SOUTHERN CALIFORNIA GAS CO.
(800) 427-2200

ELECTRICITY: SOUTHERN CALIFORNIA EDISON
(800) 684-8123

Area Schedule - 1-Bed Apartment	
Name	Area
Living	
1-Bed Apt.	907 SF
Non-Living	
Private Open Space	84 SF

Area Schedule - 2-Bed Apartment	
Name	Area
Living	
2-Bed Apt.	1,049 SF
Non-Living	
Private Open Space	100 SF

Area Schedule - 3-Bed Apartment	
Name	Area
Living	
3-Bed Apt.	1,256 SF
Non-Living	
Private Open Space	120 SF

Area Schedule - 3 Stories Building	
Name	Area
First Floor	
1-Bed Apt.	1,814 SF
2-Bed Apt.	2,097 SF
3-Bed Apt.	5,025 SF
Living	8,937 SF
Hallway	1,091 SF
Private Open Space	848 SF
Non-Living	1,939 SF

Area Schedule - 3 Stories Building	
Name	Area
Second Floor	
1-Bed Apt.	1,814 SF
2-Bed Apt.	2,097 SF
3-Bed Apt.	5,025 SF
Living	8,937 SF
Hallway	859 SF
Private Open Space	848 SF
Non-Living	1,707 SF

Area Schedule - 3 Stories Building	
Name	Area
Third Floor	
1-Bed Apt.	1,814 SF
2-Bed Apt.	2,097 SF
3-Bed Apt.	5,025 SF
Living	8,937 SF
Hallway	859 SF
Private Open Space	848 SF
Non-Living	1,707 SF

SECURITY FEATURES:

A. ON-SITE MANAGER
B. PARKING LOT LIGHTING
C. 24-HOURS VIDEO SURVEILLANCE

1

Proposed 24-Units on 3-Story Bldg. For:
SA Golden Investment Inc.
8155 Banana Ave, Fontana, CA 92335

16 Aug. 2021
21-4187

1 *22 Dec. 2021 Rev.*

LICENSED ARCHITECT Douglas Andresen C-14504 12-31-21 RENEWAL DATE STATE OF CALIFORNIA

Site Plan

PL1

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Project No.: DRB22-00002 February 25, 2022

A P P E N D I X "A"

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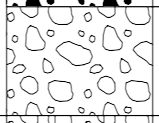
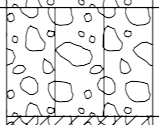
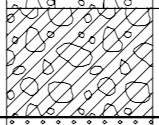
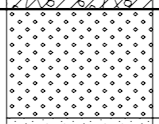
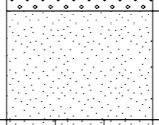
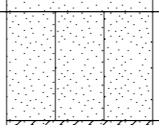
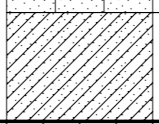
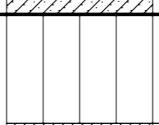
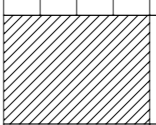
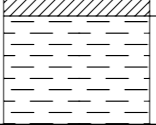
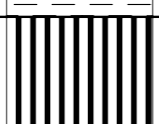
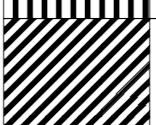
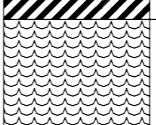
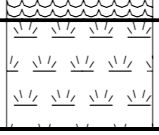
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A P P E N D I X "B"

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL
			GRAPH	LETTER	DESCRIPTIONS
COARSE GRAINED SOILS	GRL AND GRLLY SOILS	CLEAN GRLS		GW	WELL-GRADED GRLS, GRL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRLS, GRL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRLS WITH FINES		GM	SILTY GRLS, GRL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRLS, GRL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		S	
					WELL-GRADED SANDS, GRLLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	~~POORLY-GRADED SANDS,~~ GRLLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		S	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		S	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		M	~~INORGANIC SILTS AND VERY FINE~~ SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				C	~~INORGANIC CLAYS OF LOW TO~~ MEDIUM PLASTICITY, GRLLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		O	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
				MH	~~INORGANIC SILTS, MICACEOUS OR~~ DIATOMACEOUS FINE SAND OR SILTY SOILS
				C	INORGANIC CLAYS OF HIGH PLASTICITY
				O	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS					PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

P

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SAMPSON and ASSOCIATES

Project No.: _____

BORING LOG
B–1

Sheet 1 of 1

Project: _____

Date 2/25/22

EQUIPMENT: Backho e

Elevation Top of Hole See Plate 1

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
							Sampled By MS/TS Logged By MS
0		[1] @ 2'–4'	—	5.5	SM	TOP–SOILS	0–6" DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5		(1) @ 4'	DISTURBED	7.5	SM	ALLUVIAL	6"–4' SILTY SAND TO SANDY SILT, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT, VERY FINE, TRACE OF CLAY,
10							
15							4'–5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH. VERY DENSE TO HARD.
20							5'– VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							TOTAL DEPTH = 5 FEET NO GROUND WATER NO CAVING
30							[1] INDICATE BULK SAMPLE COLLECTED (1) INDICATE UNDISTURBED SAMPLE COLLECTED

SAMPSON and ASSOCIATES

Project No.: _____

BORING LOG
B–2

Sheet 1 of 1

Project: _____

Date 2/25/22

EQUIPMENT: Backhoe

Elevation Top of Hole See Plate 1

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
							Sampled By MS/TS Logged By MS
0					SM	TOP-SOILS	0–6" DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5					SM	ALLUVIAL	6"–4' SILTY SAND TO SANDY SILT, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT, VERY FINE, TRACE OF CLAY,
10							
15							4'–5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH. VERY DENSE TO HARD.
20							5'– VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							
30							TOTAL DEPTH = 5 FEET NO GROUND WATER NO CAVING

[1] INDICATE BULK SAMPLE COLLECTED

(1) INDICATE UNDISTURBED SAMPLE COLLECTED

SAMPSON and ASSOCIATES

Project No.: _____

BORING LOG
B-3

Sheet 1 of 1

Project: _____

Date 2/25/22

EQUIPMENT: Backho e

Elevation Top of Hole See Plate 1

DEPTH (ft.)	Graphic Symbole	Sample No.	Dry Density (pcf)	Moisture Content (%)	Soil Classification (U.S.C.S.)		Geotechnical Description
							Sampled By MS/TS Logged By MS
0					SM	TOP-SOILS	0-6" DRY WEEDS MIXED WITH SANDY SILT/SILTY SAND WITH TRASH, LOOSE, DRY.
5					SM	ALLUVIAL	6"-4' SILTY SAND TO SANDY SILT, LOOSE TO DENSE, DRY TO MOD MOIST, BROWN TO LIGHT, VERY FINE, TRACE OF CLAY,
10							
15							4'-5' BECOMES MORE DENSE, ORANGE BROWN, WELL GRADED, MOIST WITH DEPTH. VERY DENSE TO HARD.
20							5'- VERY DENSE TO HARD, DIFFICULT TO EXCAVATE. YELOOWISH BROWN, DENSE. WELL GRADED.
25							
30							TOTAL DEPTH = 5 FEET NO GROUND WATER NO CAVING [1] INDICATE BULK SAMPLE COLLECTED (1) INDICATE UNDISTURBED SAMPLE COLLECTED

SAMPLING PROCEDURES

Undisturbed Samples:

Samples of the subsurface materials were obtained from the exploratory borings and/or trenches in a relatively undisturbed condition. The depth at which each "undisturbed" sample was obtained is shown on the boring and/or trench logs.

The sampler used to obtain "undisturbed" samples is generally a split-barrel sampler, or a thin-wall sampler (Shelby tube).

The split-core barrel drive sampler:

The sampler, with an external diameter of 3.0 inches, is lined with 1-inch long thin brass rings with an inside diameter of 2.41 inches. The sample barrel is driven into the ground with an effective weight of the Kelly bar of the boring machine. The Kelly bar is permitted to free-fall. The approximate length of the fall, the weight of the bar, and the number of blows per foot of driving are noted and recorded on the boring logs. Blow counts h been noted in the log of borings as an index to the relative resistance of the sampled materials. The samples are removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

Shelby Tube:

The tube, with an external diameter of 3.0 inches and a length of 2 to 3 feet, is a seamless thin-walled steel tube commonly known as a Shelby tube and has a beveled butting edge at the lower end. The tube is connected to the drill rod and pushed by a static force into the bottom of the hole. When the tube is almost full (avoid over-penetration), it is withdrawn from the hole, removed from the drill rod, sealed at both ends with paraffin, and carefully shipped to the laboratory for testing.

The Standard Penetration Test Spoon:
The spoon is driven into the ground for 18 inches with a 140-pound hammer free-falling from a height of 30 inches. The blow counts are recorded for every 6 inches of penetration. (The reported blow counts are the blow counts for the last 12 inches of penetration.) The soil samples are examined and carefully removed from the spoon, bagged, and sealed and transported to the laboratory for testing.
Disturbed Samples:
Bulk samples of representative materials were also obtained from the borings and/or trenches, bagged and transported to the laboratory for testing.

A P P E N D I X "C"

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE TEST RESULTS

****

Soil Type or Location	Soil Description	Optimum Moisture (%)	Max. Dry Density (Pcf)
B-1 at 2'-4'	Silty Sand/Sandy Silt	7.5	127.0

EXPANSION INDEX TEST RESULTS

****

Soil Type or Location	Expansion Index	Potential Expansion
B-1 @ 2'-4'	7	Very Low

Soluble Sulfate

****

Soil Type or Location	Soil Description	Sulfate % By Weight
B-1 @ 2'-4'	Silty Sand/Sandy Silt	0.0880

LABORATORY TESTING PROCEDURES

Moisture and Density Tests: Moisture content and dry density determinations were performed on relatively undisturbed samples obtained from the test borings and/or trenches. The results of these tests are presented in the boring and/or trench logs. Where applicable, only moisture content was determined from "undisturbed" or disturbed samples.

Classification Tests: Typical materials were subjected to mechanical grain-size analysis by wet sieving from U.S. Standard brass screens (ASTM D422). Hydrometer analyses were performed where appreciable quantities of fines were encountered. The data was evaluated in determining the classification of the materials. The grain-size distribution curves are presented in the test data and the Unified Soil Classification is presented in both the test data and the boring and/or trench logs.

Atterberg Limits: The Atterberg Limits were determined in accordance with ASTM D423 and ASTM D472 for engineering classification of the fine-grained materials.

Direct Shear Tests: Direct Shear Tests were performed on selected remolded and/or undisturbed samples which were socked for a minimum of 72 hours under a surcharge equal to the applied normal force during testing. After transfer of the sample to the shear box, and reloading the sample, pore pressures set up in the sample due to the transfer were allowed to dissipate for a period of approximately 1 hour prior to application of shearing force. The samples were tested under various normal loads, a different specimen being used for each normal load. The samples were sheared in a motor-driven, strain-controlled, direct shear testing apparatus at a strain rate of 0.05 inches per minute. After a trl of 0.300 inches of the direct shear machine, the motor was stopped and the sample was allowed to "relax" and "peak" shear values were recorded. It is anticipated that, in a majority of samples tested, the 15 minutes relaxing of the sample is sufficient to allow dissipation of pore pressures set up in the samples due to application of shearing force. The relaxed values are therefore, judged to be a good estimation of effective strength parameters. The test results were plotted on the "Direct Shear Summary".

For residual direct shear test, the samples were sheared, as described in the preceding paragraph, with the rate of shearing of 0.001 inches per minutes. The upper portion of the specimen was pulled back to the original position and the shearing process was repeated until no further decrease in shear strength was observed with contid shearing (at least three times re-sheared). There are two methods to obtain the shear values: (a) the shearing process was repeated for each normal load applied and the shear value for each normal load was recorded. One or more than one specimen can be used in this method; (b) only one specimen was needed, and a very high normal load (approximately 9000 psf) was applied from the beginning of the shearing process. After the equilibrium state was reached (after "relaxed", the shear value for that normal load was recorded. The normal loads were then reduced gradually without shearing the sample (the motor was stopped). The shear values were recorded for different normal loads after they were reduced and the sample was "relaxed".

Maximum Density Test: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557-91 (five layers). The results of these tests are presented in the test data.

Expansion Index Tests: The expansion potential of selected materials was evaluated by the Expansion Index Test, U.B.C. Standard No. 29-2. Specimens are molded under a given compactive energy to approximately the optimum moisture and approximately 50% saturation or approximately 90% relative compaction. The prepared 1-inch thick by 4-inch diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the test data.

Consolidation Tests: Consolidation tests were performed on selected, relatively undisturbed samples recovered from the sampler. Samples were placed in a consolidometer and loads were applied in geometric progression. The percent consolidation for each load cycle was recorded as the ratio of the amount of vertical compression to the original 1-inch height. The consolidation pressure curves are presented in the test data. Where applicable, time-rates of consolidation were also recorded. A plot of these rates can be used to estimate time of consolidation.

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by the California Materials Method No. 417.

"R"-Value: The resistance "R"-Value was determined by the California Materials Method No. 301 for base, sub-base, and basement soils. Three samples were prepared and exudation pressure and "R"-Value determined on each one. The graphically determined "R"-Value at exudation pressure of 300 psi is reported.

Triaxial Compression Tests: Triaxial compression tests were performed on selected remolded and/or undisturbed samples according to ASTM 2166 (Unconfined) and ASTM 2850 (Confined).

A P P E N D I X

GENERAL EARTHWORK and GRADING SPECIFICATIONS:

1.0 General Intent

These specifications present general procedures and requirements for grading and earthwork as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of sub-drains, and excavations. The recommendations contained in the geotechnical report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in case of conflict Evaluations performed by the consultant during the course of grading may result in new recommendations which could supersede these specifications or the recommendations of the geotechnical report.

2.0 Earthwork Observation and Testing

Prior to the commencement of grading, a qualified geotechnical consultant (soils engineer and engineering geologist, and their representatives) shall be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. It will be necessary that the consultant provide adequate testing and observation so that he may determine that the work was accomplished as specified. It shall be the responsibility of the contractor to assist the consultant and keep him apprised of work schedules and change so that he may schedule his personnel accordingly.

It shall be the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the consultant, unsatisfactory conditions, such as questionable soil, poor moisture condition, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the consultant will be empowered to reject the work and recommend that construction be stopped until the conditions are rectified.

Maximum dry density tests used to determine the degree of compaction will be performed in accordance with the American Society for Testing and Materials test method ASTM D1557-91.

3.0 Preparation of Areas to be Filled

3.1 Clearing and Grubbing:

All brush, vegetation, and debris shall be removed or piled and otherwise disposed of.

3.2 Processing:

The existing ground which is determined to be satisfactory for support of fill shall be scarified to a minimum depth of 6 inches. Existing ground which is not satisfactory shall be over-excavated as specified in the following section. Scarification shall conti until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.

3.3 **Over-excavation:**
Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such a depth that surface processing cannot be adequately improve the condition, shall be over-excavated down to firm ground and approved by the consultant.

3.4 **Moisture Conditioning:**
Over-excavated and processed soils shall be watered, dried-back, blended, and/or mixed, as required to attain a uniform moisture content near optimum.

3.5 **Recompaction:**
Overexcavated and processed soils which h been properly mixed and moisture- conditioned shall be recompacted to a minimum relative compaction of 90 percent.

3.6 **Benching:**
Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be steeped or benched. The lowest bench shall be a minimum of 15 feet wide, shall be at least 2 feet deep, shall expose firm material, and shall be approved by the consultant. Other benches shall be excavated in firm material for a minimum width of 4 feet. Ground sloping flatter than 5:1 shall be benched or otherwise over-excavated when considered necessary by the consultant.

3.7 **Approval:**
All areas to receive fill, including processed areas, removal areas and toe-of-fill benches shall be approved by the consultant prior to fill placement.

4.0 Fill Material

4.1 **General:**
Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the consultant. Soils of poor graduation, expansion, or strength characteristics shall be placed in areas designated by the consultant or shall be mixed with other soils to serve as satisfactory fill material.

4.2 **Oversize:**
Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches, shall not be buried or placed in fills, unless the location, materials, and disposal methods are specifically approved by the consultant. Oversize disposal operations shall be such that nesting of oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet vertically of finish grade or within the range of future utilities or underground construction, unless specifically approved by the consultant.

4.3 **Import:**

If importing of fill material is required for grading, the import material shall meet the requirements of Section 4.1.

5.0 Fill Placement and Compaction

5.1 **Fill Lifts:**

Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 inches in compacted thickness. The consultant may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

5.2 **Fill Moisture:**

Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture-conditioning and mixing of fill layers shall conti until the fill material is at a uniform moisture content at or near optimum.

5.3 **Compaction of Fill:**

After each layer has been evenly spread, moisture-conditioned, and mixed, it shall be uniformly compacted to not less than 90 percent of maximum dry density. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve degree of compaction.

5.4 **Fill Slopes:**

Compacting of slopes shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheepsfoot rollers at frequent increments of 2 to 3 feet in fill elevation gain, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.

5.5 **Compaction Testing:**

Field tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant's discretion. In general, the tests will be taken at an interval not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of embankment.

6.0 **Subdrain Installation**

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or herein. The subdrain location or materials shall not be changed or modified without the approval of the consultant. The consultant, however, may recommend and upon approval, direct changes in subdrain line, grade or material. All subdrains should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of filling over the subdrains.

7.0 **Excavation**

Excavations and cut slopes will be examined during grading. If directed by the consultant, further excavation or over-excavation and refilling of cut areas shall be performed, and/or remedial grading of cut slopes shall be performed. Where fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the consultant prior to placement of materials for construction of the fill portion of the slope.

APPENDIX F
INFILTRATION EVALUATION

Project Res. Units
February 25, 2022

Sampson and Associates
CONSULTING ENGINEERS
Soil, ***Geology,*** *Environmental*

TO: SA Golden Investment Inc.
6226 Cooper Avenue
Fontana, California 92336

SUBJECT: Infiltration Evaluation,, 24 Units Residential Units, Located at 8155 Banana Avenue, City Of Fontana, County of San-Bernardino, California.

INTRODUCTION:

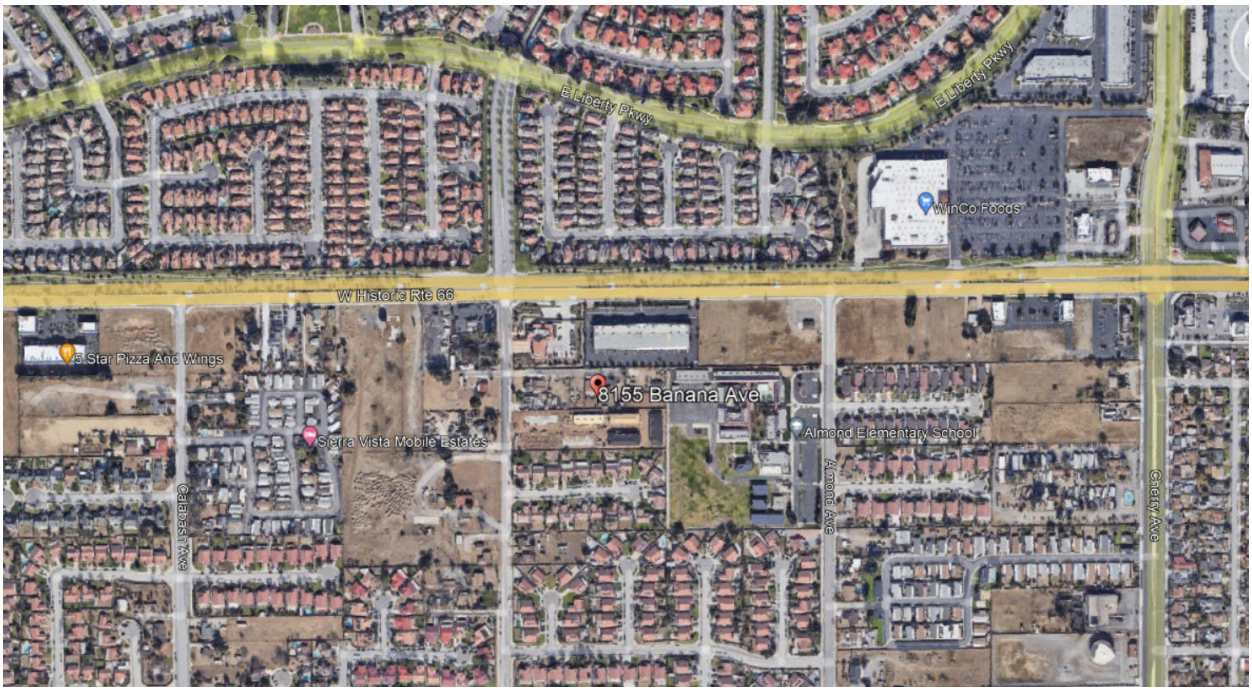
We sincerely appreciate the opportunity to be of service to you on this project. The primary objective of this study was to evaluate an infiltration rate of the onsite subsurface soils for the design of the infiltration drainage system to be constructed at designated area for the above subject site.

If you have any questions regarding this report please do not hesitate to contact this office at your convenience. We appreciate the opportunity to be of service on this project.

Respectfully Submitted;
Sampson and Associates

M. E. Samiee MS, Calif RCE 46172
MS/db
Distribution: ddressee





Index Map

Of

8155 Banana Avenue
City Of Fontana
County Of San Bernardino, California

ACCOMPANYING MAPS & ILLUSTRATIONS,:

Index Map - Page 2
Plate 1 - Site Plan and Approximate Location of Infiltration Tests
Appendix "A" - Field Test Logs

SITE LOCATION, PROPOSED DEVELOPMENT, and CONDITION:

The site area is approximately 38000 square feet and the proposed development consists of (24) new apartment units each with associated open lawn areas and parking lots located 8155 Banana Avenue in the City of Fontana County Of San Bernardino, California.
The subject site is flat regular shape lot bounded by Banana Avenue on east and by multi residential on north, south, and west. Access to the site is available from Banana Avenue which is paved.

Project is covered with minor dry annual weeds, bushes, and minor scattered trash.

SUBSURFACE CONDITIONS:

Soil materials encountered in our trenches consisted of top-soils over alluvium material to a depth of approximately 12 inches below surface. Upper 2 feet consists of dry, loose, silty sand with gravels and some rocks with roots and minor trash on surface. The soils below 2 feet is loose and dry silty sand, sandy silt with minor roots to depth of 4 feet below grade. The soils encountered below approximately 4 feet grade consists of dense brown silty sand with rocks, cobbles, and boulders.

GROUND WATER:

No ground water or any perched ground water was observed at our test locations onsite during the course of our investigation.

INFILTRATION TEST:

Shallow percolation tests were performed at the approximate locations of the proposed infiltration drainage system. Two 8-inch diameter boring holes were drilled to a depth of 3 feet as shown on grading plan and test location (Plate 1). The bottom elevation of the test hole is corresponded to the bottom elevation of the proposed infiltration system. The holes were filled with water and left for presoaking period.

TEST PROCEDURE:

Once the minimum required numbers of testing intervals were determined, water was added. The time and the drop in water level were recorded until the stabilized rate of drop was obtained. The average drop of the stabilized rate over the last readings is the pre-adjusted percolation rate at the test location. Logs of field data are presented in Appendix "A" of this report.

The design engineer must use the factor of safety with the average measured infiltration rate to achieve the design value as needed.

RECOMMENDATIONS:

Bases on the result of the tests, the site is suitable for the storm-water infiltration system from a geotechnical viewpoint. Recommendations are provided as follows:

1- The on-site storm-water infiltration drainage system may be designed utilizing the slowest conservative infiltration rate of 7.00 inches per hour after the rate of percolation was generally stabilized.

2- The potential for creating perched water conditions that may adversely affect the proposed and existing structures is nil due to the onsite permeable soils.

3- It must be noted that over the lifetime of the disposal area the infiltration rate may be affected by sediment build ups and biological activities as well as local variation in soils subsurface condition.

LIMITATONS:

Based on our visual observation it appears that the soils condition appears to be the same throughout the site however; soils material may vary in character between excavations and natural outcrops or conditions exposed during construction. Should soil conditions be encountered during construction that appear different this office must be notified immediately so that our recommendations may be re-evaluated.

Project Res. Units
February 25, 2022

A P P E N D I X “A”

Approximate Location Of Infiltration Test

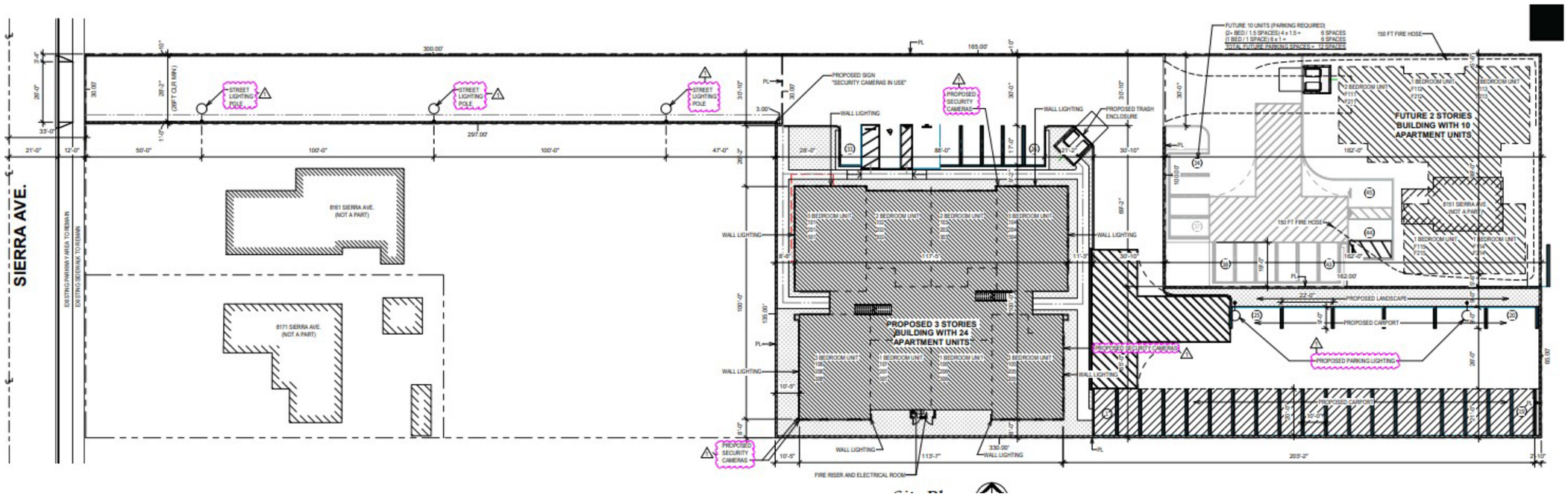


Plate-1 Approximate Location Of Infiltration Test Map

8155 Banana Avenue

Project Res. Units
February 25, 2022

PERCOLATION TESTING FIELD LOG

Boring/Excavation Percolation Testing Field Log

Date: 02/19/2022

Project Location 8155 banana Ave.
Earth Description: Silty Gravelly Sand
Tested by: TB/MS

Liquid Description: Tap Water
Measurement Method: Measuring Tape
Time Interval Standard:
Start Date for Pre-Soak: 02/19/2022
Start Time for Standard: 11:00

Boring/test Number: B-1
Diameter of Boring: 8-inch
Depth of Boring: 3' below grade
Depth to Invert of BMP's: 3' below grade
Depth to Water Table: >50'
Depth to initial water Depth(d1): 36"

Water Remaining In Boring (Y/N): Yes
Standard Time Interval Between Readings: 30 Minutes

Reading Number	Time Start/End (hh:mm)	Elapsed Time △ Time (mins)	Water Drop During Standard Time Interval △ D (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	11:00 11:30	30	6.75	13.50	Medium to Coarse, Silty Gravelly Sand
2	12:00 12:30	30	5.75	11.50	
3	13:00 13:30	30	5.5	11.0	
4	14:00 14:30	30	4.25	8.50	
5	15:00 15:305	30	3.50	7.00	
			Infiltration Rate	7.00 In/Hr.	Use 7.0

Project Location: 8155 Banana Ave.	**Project No:** Res. Units	**PLATE-2**

Project Res. Units
February 25, 2022

PERCOLATION TESTING FIELD LOG

Boring/Excavation Percolation Testing Field Log Date: 02/19/2022

Project Location 8155 banana Ave.
Earth Description: Silty Gravelly Sand
Tested by: TB/MS

Liquid Description: Tap Water
Measurement Method: Measuring Tape
Time Interval Standard:
Start Date for Pre-Soak: 02/19/2022
Start Time for Standard: 11:20

Boring/test Number: B-2
Diameter of Boring: 8-inch
Depth of Boring: 3' below grade
Depth to Invert of BMP's: 3' below grade
Depth to Water Table: >50'
Depth to initial water Depth(d1): 36"

Water Remaining In Boring (Y/N): Yes
Standard Time Interval Between Readings: 30 Minutes

Reading Number	Time Start/End (hh:mm)	Elapsed Time △ Time (mins)	Water Drop During Standard Time Interval △ D (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	11:20 11:50	30	4.75	8.50	Medium to Coarse, Silty Gravelly Sand
2	12:55 13:25	30	4.50	9.00	
3	13:30 14:00	30	4.50	9.00	
4	14:05 14:35	30	4.25	8.50	
5	14:40 15:10	30	3.75	7.50	
6	15:15 15:45	30	3.75	7.50	
			Infiltration Rate	7.50 In/Hr.	Use 7.50 in/hr

Project Location: 8155 Banana Ave	**Project No:** Res. Units	**PLATE-3**

APPENDIX G
PALEO ASSESSMENT

PALEONTOLOGICAL ASSESSMENT FOR THE 8155 BANANA AVENUE PROJECT

CITY OF FONTANA, SAN BERNARDINO COUNTY, CALIFORNIA

APN 0230-041-60

Prepared for:

Lilburn Corporation
1905 Business Center Drive
San Bernardino, California 92408

Submitted to:

City of Fontana
Community Development Department
8353 Sierra Avenue
Fontana, California 92335

Prepared by:

Brian F. Smith and Associates, Inc.
14010 Poway Road, Suite A
Poway, California 92064

September 29, 2022

Paleontological Database Information

Author:	Todd A. Wirths, M.S., Senior Paleontologist, California Professional Geologist No. 7588
Consulting Firm:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064
Report Date:	September 29, 2022
Report Title:	Paleontological Assessment for the 8155 Banana Avenue Project, City of Fontana, San Bernardino County, California
Prepared for:	Lilburn Corporation 1905 Business Center Drive San Bernardino, California 92408
Submitted to:	City of Fontana Community Development Department 8353 Sierra Avenue Fontana, California 92335
Prepared by:	Brian F. Smith and Associates, Inc. 14010 Poway Road, Suite A Poway, California 92064
USGS Quadrangle:	USGS *Fontana, California* (7.5-minute) Quadrangle, Section 10, Township 1 South, Range 6 West
Assessor's Parcel Number:	0230-041-60
Study Area:	0.87 acre
Key Words:	Paleontological assessment; Holocene alluvial fan deposits; low sensitivity; monitoring not recommended; City of Fontana.

Table of Contents

Section **Page**

I. INTRODUCTION AND LOCATION 1
II. REGULATORY SETTING 1
State of California 4
City of Fontana 4
III. GEOLOGY 5
IV. PALEONTOLOGICAL RESOURCES 7
Definition 7
Fossil Locality Search 7
V. PALEONTOLOGICAL SENSITIVITY 7
Overview 7
Professional Standards 8
City Assessment of Paleontological Sensitivity 8
VI. CONCLUSION AND RECOMMENDATIONS 9
PRIMP 9
VII. CERTIFICATION 11
VIII. REFERENCES 11

Appendices

Appendix A – Qualifications of Key Personnel

List of Figures

Figure **Page**

Figure 1 General Location Map 2
Figure 2 Project Location Map 3
Figure 3 Geologic Map 6

I. INTRODUCTION AND LOCATION

A paleontological resource assessment has been completed for the 8155 Banana Avenue Project, located at 8155 Banana Avenue between Banana Avenue and Almond Avenue, south of Foothill Boulevard, in the city of Fontana, San Bernardino County, California (Figures 1 and 2). The project consists of one 0.87-acre parcel (Assessor's Parcel Number [APN] 0230-041-60). On the U.S. Geological Survey (7.5-minute), 1:24,000-scale *Fontana, California* topographic quadrangle map, the project is situated in Section 10, Township 1 South, Range 6 West, of the San Bernardino Baseline and Meridian. The project parcels are highly disturbed, having previously been utilized for agricultural, industrial, and residential purposes throughout the latter half of the twentieth century. As a result of the previous land use, the properties have been repeatedly graded and cleared. The project parcel is being considered for redevelopment as a three-story, 24-unit apartment complex.

As the lead agency, the City of Fontana has required the preparation of a paleontological assessment to evaluate the project's potential to yield paleontological resources. The paleontological assessment of the project included a review of paleontological literature and fossil locality records for a previous project in the area; a review of the underlying geology; and recommendations to mitigate impacts to potential paleontological resources.

II. REGULATORY SETTING

The California Environmental Quality Act (CEQA), which is patterned after the National Environmental Policy Act, is the overriding environmental regulation that sets the requirement for protecting California's paleontological resources. CEQA mandates that governing permitting agencies (lead agencies) set their own guidelines for the protection of nonrenewable paleontological resources under their jurisdiction.

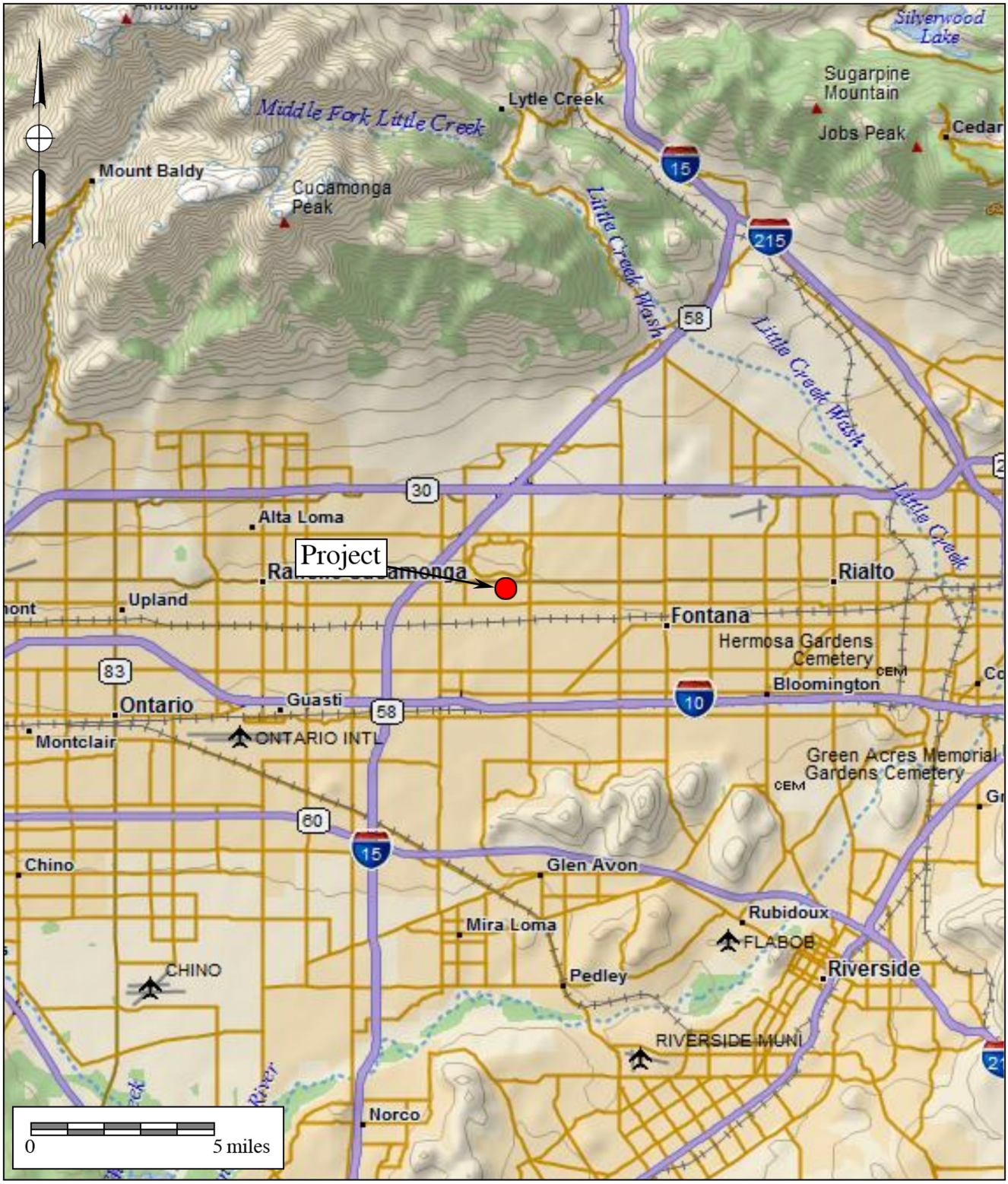


Figure 1

General Location Map

The 8155 Banana Avenue Project

DeLorme World Base Map Service (1:250,000 series)

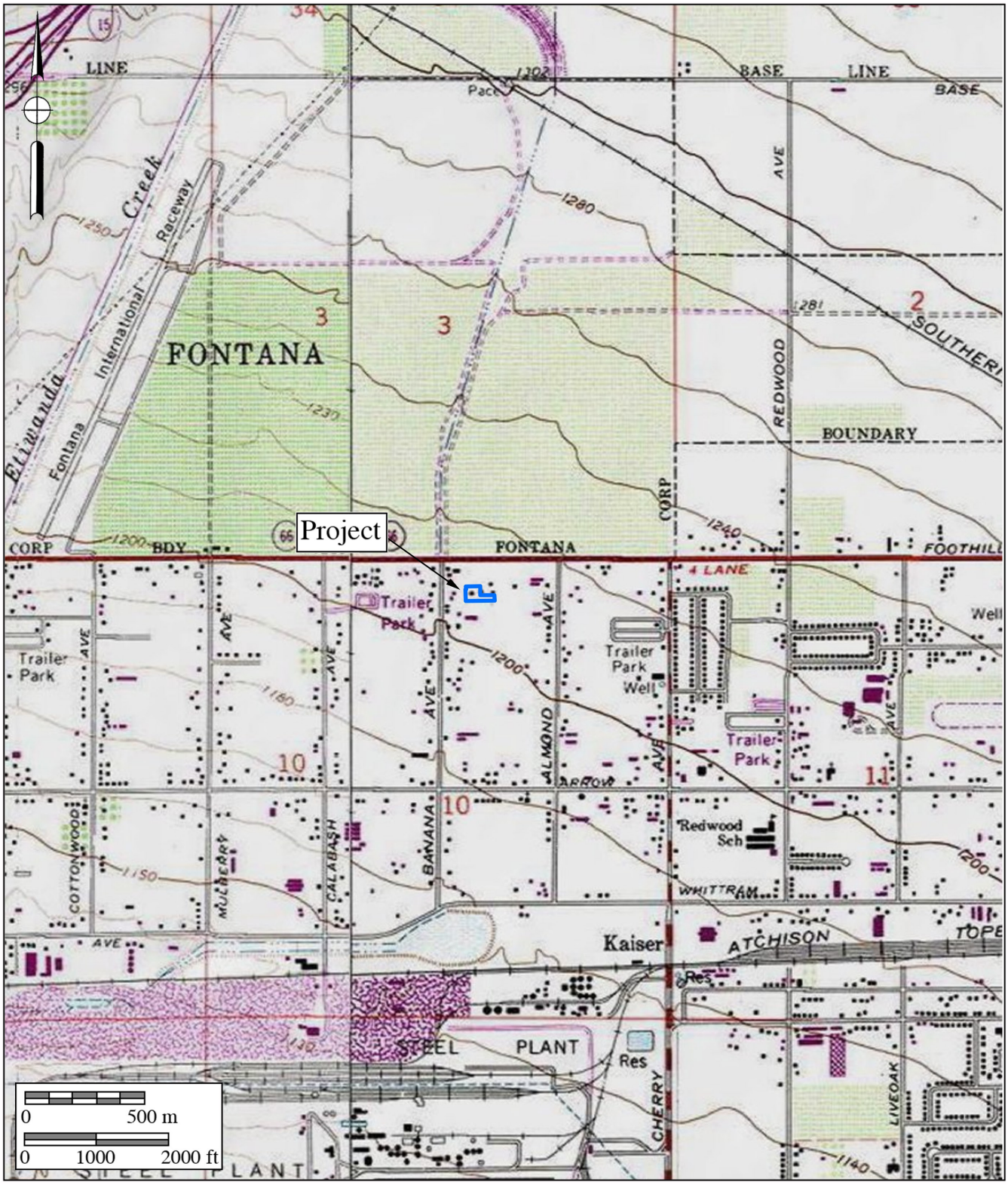


Figure 2

Project Location Map

The 8155 Banana Avenue Project

USGS *Fontana and Guasti, California,* Quadrangles (7.5-minute series)

State of California

Under "Guidelines for Implementation of the California Environmental Quality Act," as amended in December 2018 (California Code of Regulations [CCR] Title 14, Division 6, Chapter 3, Sections 15000 et seq.), procedures define the types of activities, persons, and public agencies required to comply with CEQA. Section 15063 of the CCR provides a process by which a lead agency may review a project's potential impact to the environment, whether the impacts are significant, and provide recommendations, if necessary.

In CEQA's Environmental Checklist Form, one of the questions to answer is, "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?" (Appendix G, Section VII, Part f). This is to ensure compliance with California Public Resources Code Section 5097.5, the law that protects nonrenewable resources, including fossils, which is paraphrased below:

> a) A person shall not knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, rock art, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands.
> b) As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.
> c) A violation of this section is a misdemeanor.

City of Fontana

In the Final Environmental Impact Report (EIR) of the City of Fontana General Plan Update 2015–2035, two paleontological resource mitigation measures are specified, MM-CUL-4 and MM-CUL-5. MM-CUL-4 must be implemented before construction starts, while MM-CUL-5 must be implemented before, during, and after construction (City of Fontana 2018a). The measures are as follows:

> **MM-CUL-4** A qualified paleontologist shall conduct a pre-construction field survey of any project site within the Specific Plan Update area that is underlain by older alluvium. The paleontologist shall submit a report of findings that provide specific recommendations regarding further mitigation measures (*i.e.*, paleontological monitoring) that may be appropriate.

MM-CUL-5 Should mitigation monitoring of paleontological resources be recommended for a specific project within the project site, the program shall include, but not be limited to, the following measures:

- Assign a paleontological monitor, trained and equipped to allow the rapid removal of fossils with minimal construction delay, to the site full-time during the interval of earth-disturbing activities.
- Should fossils be found within an area being cleared or graded, earth-disturbing activities shall be diverted elsewhere until the monitor has completed salvage. If construction personnel make the discovery, the grading contractor shall immediately divert construction and notify the monitor of the find.
- All recovered fossils shall be prepared, identified, and curated for documentation in the summary report and transferred to an appropriate depository (*i.e.*, San Bernardino County Museum).

A summary report shall be submitted to City of Fontana. Collected specimens shall be transferred with [a] copy of [the] report to [the] San Bernardino County Museum (City of Fontana 2018a).

III. GEOLOGY

The project is located near the western margin of the broad Lytle Creek alluvial fan that emanates from the San Gabriel Mountains approximately six-to-seven miles to the northeast as a result of uplift and dissection of the eastern San Gabriel Mountains. The main source of these sediments is from the Lytle Creek drainage, near where the northwest-southeast-trending San Andreas fault zone cuts across and separates the San Gabriel and San Bernardino Mountain ranges (Morton and Miller 2006). Geomorphically, the project is relatively flat-lying, with a gentle slope to the southwest (see Figures 2 and 3). The project is underlain by late Holocene-aged (approximately within the last few thousand years) young alluvial fan deposits (yellow areas with red dots labeled "Qyf_5"), mostly composed of sand (Figure 3, after Morton and Miller 2006). Just west of the project are even younger, very young alluvial-fan deposits (light yellow areas labeled "Qf").

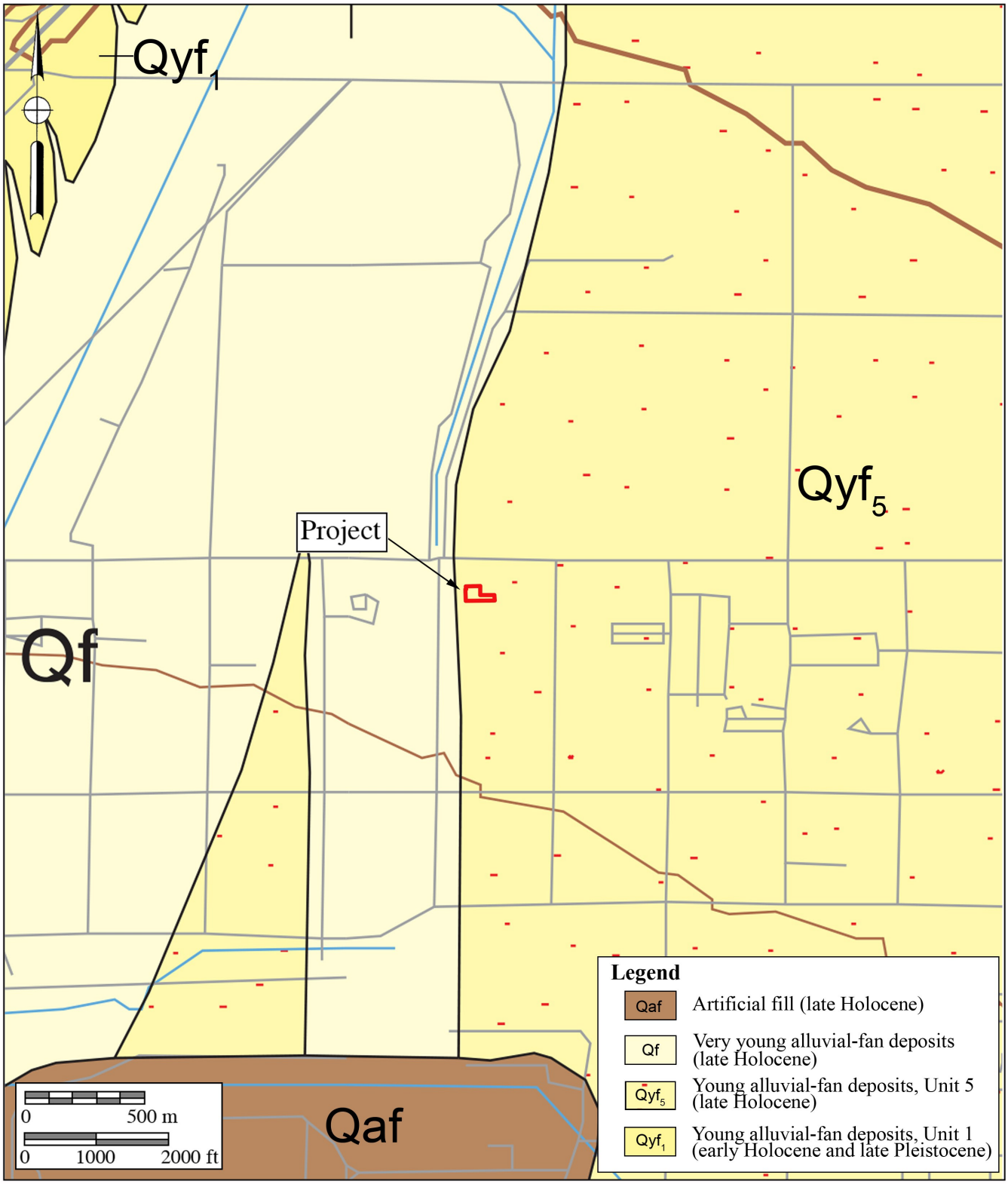


Figure 3

Geologic Map

The 8155 Banana Avenue Project

Geology after Morton and Miller (2006)

IV. PALEONTOLOGICAL RESOURCES

Definition

Paleontological resources are the remains of prehistoric life that have been preserved in geologic strata. These remains are called fossils and include bones, shells, teeth, and plant remains (including their impressions, casts, and molds) in the sedimentary matrix, as well as trace fossils such as footprints and burrows. Fossils are considered older than 5,000 years of age (Society of Vertebrate Paleontology 2010) but may include younger remains (subfossils) when viewed in the context of local extinction of the organism or habitat, for example. Fossils are considered a nonrenewable resource under state, county, and local guidelines (Section II of this report).

Fossil Locality Search

A paleontological records search was performed for the project, based on record searches for prior projects by Brian F. Smith and Associates, and locality files of the Division of Geological Sciences at the San Bernardino County Museum (SBCM) in Redlands and the Vertebrate Paleontology Section of the Natural History Museum of Los Angeles County in Los Angeles (LACM). The closest-known fossil localities are located approximately four miles south of the project in Fontana, and include extinct species of Pleistocene mastodon, bison, and camel at depths as shallow as five feet below the surface (SBCM localities [locs.] 5.1.14 to 5.1.21). Another fossil locality about 4.5 miles south of the current project included mammoth remains at a depth of about 20 feet below the surface, in Ontario (SBCM loc. 5.1.8). The nearest-known fossil locality held by the LACM (LACM Loc. 7811) is located in Eastvale, Riverside County, about 11 miles southwest of the project, consisting of the fossil remains of a Pleistocene whipsnake.

V. PALEONTOLOGICAL SENSITIVITY

Overview

The degree of paleontological sensitivity of any particular area is based on a number of factors, including the documented presence of fossiliferous resources on a site or in nearby areas, the presence of documented fossils within a particular geologic formation or lithostratigraphic unit, and whether or not the original depositional environment of the sediments is one that might have been conducive to the accumulation of organic remains that might have become fossilized over time. Holocene alluvium is generally considered to be geologically too young to contain significant nonrenewable paleontological resources (*i.e.*, fossils) and is thus typically assigned a low paleontological sensitivity. Pleistocene (over 11,700 years old) alluvial and alluvial fan deposits in the Inland Empire, however, often yield important terrestrial vertebrate fossils, such as extinct mammoths, mastodons, giant ground sloths, extinct species of horse, bison, camel,

saber-toothed cats, and others (Jefferson 1991). These Pleistocene sediments are thus accorded a High paleontological resource sensitivity.

Professional Standards

The Society of Vertebrate Paleontology (SVP 2010) has drafted guidelines that include four categories of paleontological sensitivity for geologic units (formations) that might be impacted by a proposed project, as listed below:

- *High Potential:* Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered.
- *Undetermined Potential:* Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment, and that further study is needed to determine the potential of the rock unit.
- *Low Potential:* Rock units that are poorly represented by fossil specimens in institutional collections or based on a general scientific consensus that only preserve fossils in rare circumstances.
- *No Potential:* Rock units that have no potential to contain significant paleontological resources, such as high-grade metamorphic rocks and plutonic igneous rocks.

Using these criteria, based on the project's distance from significant fossil localities yielded by older, Pleistocene-aged alluvial deposits, the Holocene deposits at the project can be considered to have a low potential to yield significant paleontological resources.

City Assessment of Paleontological Sensitivity

Section 5.4.1.5 of the City of Fontana's draft EIR for the general plan (City of Fontana 2018b) describes the paleontological sensitivity of the strata underlying the city. Based on Pleistocene vertebrate fossils recovered from the city's southwestern area (SBCM locs. 5.1.11, 5.1.14 5.1.17, and 5.1.19 to 5.1.21), subsurface "older fan" Pleistocene deposits are considered by the City to have a high potential for yielding fossils. The overlying "younger fan" deposits at the surface are considered by the City as having no potential to yield significant paleontological resources. This geologic scenario includes the project, and therefore the paleontological context.

VI. CONCLUSIONS AND RECOMMENDATIONS

The existence of Holocene alluvial fan deposits at the project, and the lack of known fossil specimens or fossil localities from within a several-mile radius encompassing the subject property support the recommendation that paleontological monitoring need *not* be required during earth disturbance activities at the 8155 Banana Avenue Project. However, if fossils of any sort are discovered during grading and earthmoving activities, a paleontologist must be retained to develop a Paleontological Resources Impact Mitigation Program (PRIMP) consistent with the provisions of CEQA, those of the City of Fontana (2018a, 2018b), and those of the guidelines of the SVP (2010). Implementation of the PRIMP would mitigate any adverse impacts (loss or destruction) to potential nonrenewable paleontological resources, if present, to a level below significant.

PRIMP

If fossils are inadvertently discovered, suggested guidelines for a PRIMP are outlined below. The following suggested PRIMP guidelines, when implemented, would reduce potential impacts to paleontological resources to a level below significant. Paleontological monitoring may be reduced on the observations and recommendations of the professional-level project paleontologist:

1. If paleontological resources are discovered during earth disturbance activities, the discovery shall be cordoned off with a 100-foot radius buffer so as to protect the discovery from further potential damage, and a county-qualified paleontologist shall be consulted to assess the discovery.

If the discovery is determined to be significant by the paleontologist, a PRIMP shall be implemented, which will include notification of appropriate personnel involved and monitoring of earth disturbance activities:

1. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources shall be performed by a qualified paleontologist or paleontological monitor. Monitoring will be conducted at the discretion of the qualified paleontologist in areas of grading or excavation in undisturbed sedimentary deposits.
2. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or, if present, are determined on exposure and examination

by qualified paleontological personnel to have low potential to contain fossil resources. The monitor shall notify the project paleontologist, who will then notify the concerned parties of the discovery.

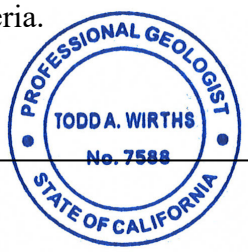
3. Paleontological salvage during trenching and boring activities is typically from the generated spoils and does not delay the trenching or drilling activities. Fossils are collected and placed in cardboard flats or plastic buckets and identified by field number, collector, and date collected. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated, and the fossils are removed to a safe place. On mass grading projects, discovered fossil sites are protected by flagging to prevent them from being overrun by earthmovers (scrapers) before salvage begins. Fossils are collected in a similar manner, with notes and photographs being taken before removing the fossils. Precise location of the site is determined with the use of handheld GPS units. If the site involves remains from a large terrestrial vertebrate, such as large bone(s) or a mammoth tusk, that is/are too large to be easily removed by a single monitor, a fossil recovery crew shall excavate around the find, encase the find within a plaster and burlap jacket, and remove it after the plaster is set. For large fossils, use of the contractor's construction equipment may be solicited to help remove the jacket to a safe location.
4. Isolated fossils are collected by hand, wrapped in paper, and placed in temporary collecting flats or five-gallon buckets. Notes are taken on the map location and stratigraphy of the site, which is photographed before it is vacated, and the fossils are removed to a safe place.
5. Particularly small invertebrate fossils typically represent multiple specimens of a limited number of organisms, and a scientifically suitable sample can be obtained from one to several five-gallon buckets of fossiliferous sediment. If it is possible to dry screen the sediment in the field, a concentrated sample may consist of one or two buckets of material. For vertebrate fossils, the test is usually the observed presence of small pieces of bones within the sediments. If present, multiple five-gallon buckets of sediment can be collected and returned to a separate facility to wet-screen the sediment.
6. In accordance with the "Microfossil Salvage" section of the Society of Vertebrate Paleontology guidelines (2010:7), bulk sampling and screening of fine-grained sedimentary deposits (including carbonate-rich paleosols) must be performed if the deposits are identified to possess indications of producing fossil "microvertebrates" to test the feasibility of the deposit to yield fossil bones and teeth.
7. In the laboratory, individual fossils are cleaned of extraneous matrix, any breaks are repaired, and the specimen, if needed, is stabilized by soaking in an archivally approved acrylic hardener (*e.g.*, a solution of acetone and Paraloid B-72).
8. Recovered specimens are prepared to a point of identification and permanent

preservation (not display), including screen-washing sediments to recover small invertebrates and vertebrates. Preparation of individual vertebrate fossils is often more time-consuming than for accumulations of invertebrate fossils.

9. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.*, the San Bernardino County Museum) shall be conducted. The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. Prior to curation, the lead agency (*e.g.*, the City of Fontana) will be consulted on the repository/museum to receive the fossil material.
10. A final report of findings and significance will be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location(s). The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.*, fossils) that might have been lost or otherwise adversely affected without such a program in place.

VII. CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this paleontological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief, and have been compiled in accordance with CEQA criteria.



September 29, 2022

Todd A. Wirths
Senior Paleontologist
California Professional Geologist No. 7588

Date

VIII. REFERENCES

City of Fontana. 2018a. Final Environmental Impact Report. Cultural Resources, Fontana Forward General Plan Update 2015-2035. State Clearinghouse #2016021099. https://www.fontana.org/DocumentCenter/View/29525/Final-Environmental-Impact-Report-for-the-General-Plan-Update.

City of Fontana. 2018b. Draft Environmental Impact Report, Chapter 5.4. Cultural Resources, Fontana Forward General Plan Update 2015-2035. https://www.fontana.org/DocumentCenter/View/26716/54-Cultural-Resources.

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Jefferson, G.T. 1991. A catalogue of late Quaternary vertebrates from California: Part two, mammals. Natural History Museum of Los Angeles County, Technical Reports, no. 7: i-v + 1-129.

Morton, D.M. and Miller, F.K. 2006. Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California: U.S. Geological Survey Open-File Report 06-1217, scale 1:100,000.

Society of Vertebrate Paleontology. 2010. Standard procedures for the assessment and mitigation of adverse impacts to paleontological resources; by the SVP Impact Mitigation Guidelines Revision Committee. Electronic document, https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines-1.pdf.

APPENDIX A

Qualifications of Key Personnel

Todd A. Wirths, MS, PG No. 7588

Senior Paleontologist

Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: twirths@bfsa-ca.com

Education

Master of Science, Geological Sciences, San Diego State University, California **1995**

Bachelor of Arts, Earth Sciences, University of California, Santa Cruz **1992**

Professional Certifications

California Professional Geologist #7588, 2003
Riverside County Approved Paleontologist
San Diego County Qualified Paleontologist
Orange County Certified Paleontologist
OSHA HAZWOPER 40-hour trained; current 8-hour annual refresher

Professional Memberships

Board member, San Diego Geological Society
San Diego Association of Geologists; past President (2012) and Vice President (2011)
South Coast Geological Society
Southern California Paleontological Society

Experience

Mr. Wirths has more than a dozen years of professional experience as a senior-level paleontologist throughout southern California. He is also a certified California Professional Geologist. At BFSA, Mr. Wirths conducts on-site paleontological monitoring, trains and supervises junior staff, and performs all research and reporting duties for locations throughout Los Angeles, Ventura, San Bernardino, Riverside, Orange, San Diego, and Imperial Counties. Mr. Wirths was formerly a senior project manager conducting environmental investigations and remediation projects for petroleum hydrocarbon-impacted sites across southern California.

Selected Recent Reports

2019 *Paleontological Assessment for the 10575 Foothill Boulevard Project, City of Rancho Cucamonga, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Assessment for the MorningStar Marguerite Project, Mission Viejo, Orange County, California.* Prepared for T&B Planning. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Monitoring Report for the Nimitz Crossing Project, City of San Diego.* Prepared for Voltaire 24, LP. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2019 *Paleontological Resource Impact Mitigation Program (PRIMP) for the Jack Rabbit Trail Logistics Center Project, City of Beaumont, Riverside County, California.* Prepared for JRT BP 1, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Oceanside Beachfront Resort Project, Oceanside, San California.* Prepared for S.D. Malkin Properties. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Nakase Project, Lake Forest, Orange County, San California.* Prepared for Glenn Lukos Associates, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Impact Mitigation Program for the Sunset Crossroads Project, Banning, Riverside County*. Prepared for NP Banning Industrial, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Ortega Plaza Project, Lake Elsinore, Riverside County*. Prepared for Empire Design Group. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Resource Record Search Update for the Green River Ranch III Project, Green River Ranch Specific Plan SP00-001, City of Corona, California*. Prepared for Western Realco. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Assessment for the Cypress/Slover Industrial Center Project, City of Fontana, San Bernardino County, California*. Prepared for T&B Planning, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2020 *Paleontological Monitoring Report for the Imperial Landfill Expansion Project (Phase VI, Segment C-2), Imperial County, California*. Prepared for Republic Services, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Manitou Court Logistics Center Project, City of Jurupa Valley, Riverside County, California*. Prepared for Link Industrial. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Resource Impact Mitigation Program for the Del Oro (Tract 36852) Project, Menifee, Riverside County*. Prepared for D.R. Horton. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Assessment for the Alessandro Corporate Center Project (Planning Case PR-2020-000519), City of Riverside, Riverside County, California*. Prepared for OZI Alessandro, LLC. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

2021 *Paleontological Monitoring Report for the Boardwalk Project, La Jolla, City of San Diego*. Prepared for Project Management Advisors, Inc. Report on file at Brian F. Smith and Associates, Inc., Poway, California.

APPENDIX H
WQMP

PRELIMINARY

Water Quality Management Plan

For:

24-UNIT ARROW APARTMENT COMPLEX

8155 BANANA AVENUE

FONTANA, CA. 92335

APN: 0230-041-60

Prepared for:

SA GOLDEN INVESTMENTS

918 Teakwood Avenue

Bloomington, Ca. 92316

(909) 519-3346

Prepared by:

HP Engineering, Inc.

1465 Crestview Road

Redlands, Ca. 92374

909 335-8239

Submittal Date: February 24, 2022

Revision Date: _____

Preliminary for Entitlements Complete Date: _____

Construction WQMP Complete Date: _____

Final WQMP Approved Date: _____

MCN No. _____ **WQMP No. _____**

Project Owner's Certification

This Water Quality Management Plan (WQMP) has been prepared for SA Golden Investments by HP Engineering, Inc. The WQMP is intended to comply with the requirements of the City of Fontana and the NPDES Areawide Stormwater Program requiring the preparation of a WQMP. The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with San Bernardino County's Municipal Storm Water Management Program and the intent of the NPDES Permit for San Bernardino County and the incorporated cities of San Bernardino County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors in interest and the city/county shall be notified of the transfer. The new owner will be informed of its responsibility under this WQMP. A copy of the approved WQMP shall be available on the subject site in perpetuity.

"I certify under a penalty of law that the provisions (implementation, operation, maintenance, and funding) of the WQMP have been accepted and that the plan will be transferred to future successors."

.

Project Data			
Permit/Application Number(s):	Entitlement Application	Grading Permit Number(s):	N/A
Tract/Parcel Map Number(s):	N/A	Building Permit Number(s):	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0230-041-60

Owner's Signature		
Owner Name: Saber Awad		
Title	Owner	
Company	SA Golden Investments	
Address	918 Teakwood Avenue, Bloomington, Ca. 92316	
Email	Saberawad3346@gmail.com	
Telephone #	909 519-3346	
Signature	Date	

Preparer's Certification

Project Data			
Permit/Application Number(s):	Entitlement Application	Grading Permit Number(s):	N/A
Tract/Parcel Map Number(s):	N/A	Building Permit Number(s):	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract):			APN: 0230-041-60

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan were prepared under my oversight and meet the requirements of Regional Water Quality Control Board Order No. R8-2010-0036."

Engineer: Henry C. Poquiz		PE Stamp Below
Title	Project Engineer	
Company	HP Engineering, Inc.	
Address	1465 Crestview Road, Redlands, Ca. 92374	
Email	hcpoquiz@aol.com	
Telephone #	909 335-8239	
Signature		
Date		

Table of Contents

Section 1 Discretionary Permits 1-1

Section 2 Project Description 2-1

2.1 Project Information 2-1
2.2 Property Ownership / Management 2-2
2.3 Potential Stormwater Pollutants 2-3
2.4 Water Quality Credits 2-4

Section 3 Site and Watershed Description 3-1

Section 4 Best Management Practices 4-1

4.1 Source Control BMP 4-1
4.1.1 Pollution Prevention 4-1
4.1.2 Preventative LID Site Design Practices 4-6
4.2 Project Performance Criteria 4-7
4.3 Project Conformance Analysis 4-12
4.3.1 Site Design Hydrologic Source Control BMP 4-14
4.3.2 Infiltration BMP 4-16
4.3.3 Harvest and Use BMP 4-18
4.3.4 Biotreatment BMP 4.19
4.3.5 Conformance Summary 4-23
4.3.6 Hydromodification Control BMP 4-24
4.4 Alternative Compliance Plan (if applicable) 4-25

Section 5 Inspection & Maintenance Responsibility Post Construction BMPs 5-1

Section 6 Site Plan and Drainage Plan 6-1

6.1. Site Plan and Drainage Plan 6-1
Exhibits, Design Supporting Documents 6-1
6.2 Electronic Data Submittal 6-2
6.3 Post Construction, Memorandum of Agreement 6-3
6.4 BMP Facts 6-4

Forms

Form 1-1 Project Information 1-1
Form 2.1-1 Description of Proposed Project 2-1
Form 2.2-1 Property Ownership/Management 2-2
Form 2.3-1 Pollutants of Concern 2-3
Form 2.4-1 Water Quality Credits 2-4
Form 3-1 Site Location and Hydrologic Features 3-1
Form 3-2 Hydrologic Characteristics 3-2
Form 3-3 Watershed Description 3-3
Form 4.1-1 Non-Structural Source Control BMP 4-2
Form 4.1-2 Structural Source Control BMP 4-4
Form 4.1-3 Site Design Practices Checklist 4-6

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume 4-7
Form 4.2-2 Summary of HCOC Assessment 4-8
Form 4.2-3 HCOC Assessment for Runoff Volume 4-9
Form 4.2-4 HCOC Assessment for Time of Concentration 4-10
Form 4.2-5 HCOC Assessment for Peak Runoff 4-11
Form 4.3-1 Infiltration BMP Feasibility 4-13
Form 4.3-2 Site Design Hydrologic Source Control BMP 4-14
Form 4.3-3 Infiltration LID BMP 4-17
Form 4.3-4 Harvest and Use BMP 4-18
Form 4.3-5 Selection and Evaluation of Biotreatment BMP 4-19
Form 4.3-6 Volume Based Biotreatment – Bioretention and Planter Boxes w/Underdrains 4-20
Form 4.3-7 Volume Based Biotreatment- Constructed Wetlands and Extended Detention 4-21
Form 4.3-8 Flow Based Biotreatment 4-22
Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate 4-23
Form 4.3-10 Hydromodification Control BMP 4-24
Form 5-1 BMP Inspection and Maintenance 5-1

Section 1 Discretionary Permit(s)

Form 1-1 Project Information					
Project Name	Arrow Apartments				
Project Owner Contact Name:	Saber Awad				
Mailing Address:	918 Teakwood Avenue, Bloomington, Ca. 92316	E-mail Address:	Saberawad3346@gmail.com	Telephone:	909 519-3346
Permit/Application Number(s):	Entitlement Application		Tract/Parcel Map Number(s):	N/A	
Additional Information/ Comments:					
Description of Project:	The project is a proposed 24-unit apartment complex on a 38,390 S.F. property with existing single family home to be demolisehed to make room for this proposed development. It is located at 8155 Banana Avenue. It involves construction of new one (1) three storey apartment building with detached covered parking, visitor parking, landscaping, parking light, and trash enclosures. Runoff generally drains from Northeast to the Southwest. An underground Infiltration Chamber is proposed to treat the onsite runoff before draining into the City's storm drain system. The underground chambers BMP will be maintained by the owner. There is an existing street that serves the project, and is exempt per Transportation TGD.				
Provide summary of Conceptual WQMP conditions (if previously submitted and approved). Attach complete copy.	N/A				

Section 2 Project Description

2.1 Project Information

This section of the WQMP should provide the information listed below. The information provided for Conceptual/ Preliminary WQMP should give sufficient detail to identify the major proposed site design and LID BMPs and other anticipated water quality features that impact site planning. Final Project WQMP must specifically identify all BMP incorporated into the final site design and provide other detailed information as described herein.

The purpose of this information is to help determine the applicable development category, pollutants of concern, watershed description, and long term maintenance responsibilities for the project, and any applicable water quality credits. This information will be used in conjunction with the information in Section 3, Site Description, to establish the performance criteria and to select the LID BMP or other BMP for the project or other alternative programs that the project will participate in, which are described in Section 4.

Form 2.1-1 Description of Proposed Project

1 Development Category (Select all that apply):

☒ Significant re-development involving the addition or replacement of 5,000 ft² or more of impervious surface on an already developed site	☐ New development involving the creation of 10,000 ft² or more of impervious surface collectively over entire site	☐ Automotive repair shops with standard industrial classification (SIC) codes 5013, 5014, 5541, 7532- 7534, 7536-7539	☐ Restaurants (with SIC code 5812) where the land area of development is 5,000 ft² or more
☐ Hillside developments of 5,000 ft² or more which are located on areas with known erosive soil conditions or where the natural slope is 25 percent or more	☐ Developments of 2,500 ft² of impervious surface or more adjacent to (within 200 ft) or discharging directly into environmentally sensitive areas or waterbodies listed on the CWA Section 303(d) list of impaired waters.	☐ Parking lots of 5,000 ft² or more exposed to storm water	☐ Retail gasoline outlets that are either 5,000 ft² or more, or have a projected average daily traffic of 100 or more vehicles per day

☐ Non-Priority / Non-Category Project *May require source control LID BMPs and other LIP requirements. Please consult with local jurisdiction on specific requirements*.

2 Project Area (ft2):	38,390	**3** Number of Dwelling Units:	24	**4** SIC Code:	5521

5 Is Project going to be phased? Yes ☐ No ☒ *If yes, ensure that the WQMP evaluates each phase as a distinct DA, requiring LID BMPs to address runoff at time of completion.*

6 Does Project include roads? Yes ☐ No ☒ *If yes, ensure that applicable requirements for transportation projects are addressed (see Appendix A of TGD for WQMP)*

2.2 Property Ownership/Management

Describe the ownership/management of all portions of the project and site. State whether any infrastructure will transfer to public agencies (City, County, Caltrans, etc.) after project completion. State if a homeowners or property owners association will be formed and be responsible for the long-term maintenance of project stormwater facilities. Describe any lot-level stormwater features that will be the responsibility of individual property owners.

Form 2.2-1 Property Ownership/Management

Describe property ownership/management responsible for long-term maintenance of WQMP stormwater facilities:

The property owner is responsible for is responsible for long term maintenance of the WQMP stormwater facilities.

The inspection and monitoring, and record keeping requirements for the BMP's mentioned in Section 4.1.1 is the responsibility of the owner:

Saber Awad
938 Teakwood Avenue
Bloomington, Ca. 92316
(909) 519-3346

The responsible party for each BMP and O&M is listed below:
Saber Awad
938 Teakwood Avenue
Bloomington, Ca. 92316
(909) 519-3346

Funding source for the operation and maintenance of each BMP within the WQMP is listed below:
Saber Awad
938 Teakwood Avenue
Bloomington, Ca. 92316
(909) 519-3346

2.3 Potential Stormwater Pollutants

Determine and describe expected stormwater pollutants of concern based on land uses and site activities (refer to Table 3-3 in the TGD for WQMP).

Form 2.3-1 Pollutants of Concern			
Pollutant	Please check: E=Expected, N=Not Expected		Additional Information and Comments
Pathogens (Bacterial / Virus)	E ☒	N ☐	These are microorganism typically caused by the transport of animal or human fecal waste into the site
Nutrients - Phosphorous	E ☒	N ☐	These are inorganic substances that usually come from fertilizers that are applied to the landsacpe areas and from eroded soils from planter areas of the site
Nutrients - Nitrogen	E ☒	N ☐	These are inorganic substances that usually come from fertilizers that are applied to the landsacpe areas and from eroded soils from planter areas of the site
Noxious Aquatic Plants	E ☐	N ☒	No aquatic plants will be onsite
Sediment	E ☒	N ☐	These are solid materials that are eroded from the land surfaces. They can increase turbidity, clog fish gills, reduce spawning habitat, lower survival rate of young aquatic organisms, smother bottom dwelling organisms, and suppress aquatic vegetation growth.
Metals	E ☒	N ☐	The metals typically come from commercially available metals and metal products, as well as emissions from brake pad and tire tread wear associated with driving. Primary metals of concern include cadmium, chromium, copper, lead, mercury, and zinc
Oil and Grease	E ☒	N ☐	Oil and grease come from petroleum hydrocarbon products, motor prodcuts from leaking vehicles
Trash/Debris	E ☒	N ☐	Trash (such as paper, plastic, polysterene packing foam, and aluminum materials) and biodegradable organic matter (such as leaves, grass cuttings, and food waste) are general waste prodcuts on the landscape
Pesticides / Herbicides	E ☒	N ☐	Pesticides and herbicides are organic compounds used to destroy and/or prevent insects, rodents, fungi, weeds, and other undesirable pests. Pesticides and hebicides can be washed off urban landscapes during storm events
Organic Compounds	E ☒	N ☐	Organic compounds are organic based. They are naturally ocurring organic compounds found in solvents and hydrocarbons. Organic compounds can, at certain concentrations, indirectly or directly constitute a hazard to life or health. When rinsing off objects, toxic levels of solvents and cleaning compounds can be discharged to storm drains
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	
Other:	E ☐	N ☐	

2.4 Water Quality Credits

A water quality credit program is applicable for certain types of development projects if it is not feasible to meet the requirements for on-site LID. Proponents for eligible projects, as described below, can apply for water quality credits that would reduce project obligations for selecting and sizing other treatment BMP or participating in other alternative compliance programs. Refer to Section 6.2 in the TGD for WQMP to determine if water quality credits are applicable for the project.

Form 2.4-1 Water Quality Credits

1 Project Types that Qualify for Water Quality Credits: *Select all that apply*

☐ Redevelopment projects that reduce the overall impervious footprint of the project site. [Credit = % impervious reduced]	Higher density development projects ☐ Vertical density [20%] ☐ 7 units/ acre [5%]	☐ Mixed use development, (combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that demonstrate environmental benefits not realized through single use projects) [20%]	☐ Brownfield redevelopment (redevelop real property complicated by presence or potential of hazardous contaminants) [25%]
☐ Redevelopment projects in established historic district, historic preservation area, or similar significant core city center areas [10%]	☐ Transit-oriented developments (mixed use residential or commercial area designed to maximize access to public transportation) [20%]	☐ In-fill projects (conversion of empty lots & other underused spaces < 5 acres, substantially surrounded by urban land uses, into more beneficially used spaces, such as residential or commercial areas) [10%]	☐ Live-Work developments (variety of developments designed to support residential and vocational needs) [20%]

2 Total Credit % 0

(Total all credit percentages up to a maximum allowable credit of 50 percent)

Description of Water Quality Credit Eligibility (if applicable)	0

Section 3 Site and Watershed Description

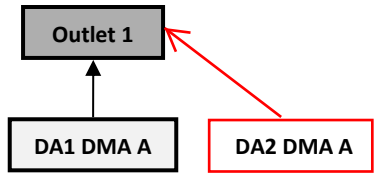
Describe the project site conditions that will facilitate the selection of BMP through an analysis of the physical conditions and limitations of the site and its receiving waters. Identify distinct drainage areas (DA) that collect flow from a portion of the site and describe how runoff from each DA (and sub-watershed DMAs) is conveyed to the site outlet(s). Refer to Section 3.2 in the TGD for WQMP. The form below is provided as an example. Then complete Forms 3.2 and 3.3 for each DA on the project site. ***If the project has more than one drainage area for stormwater management, then complete additional versions of these forms for each DA / outlet.***

Form 3-1 Site Location and Hydrologic Features

Site coordinates *take GPS measurement at approximate center of site*	Latitude 34.10534	Longitude -117.49617	Thomas Bros Map page 604

1 San Bernardino County climatic region: ☒ Valley ☐ Mountain

2 Does the site have more than one drainage area (DA): Yes☐ No☒ *If no, proceed to Form 3-2. If yes, then use this form to show a conceptual schematic describing DMAs and hydrologic feature connecting DMAs to the site outlet(s). An example is provided below that can be modified for proposed project or a drawing clearly showing DMA and flow routing may be attached*



Example only – modify for project specific WQMP using additional form

Conveyance	Briefly describe on-site drainage features to convey runoff that is not retained within a DMA
DA1 DMA C flows to DA1 DMA A	*Ex. Bioretention overflow to vegetated bioswale with 4' bottom width, 5:1 side slopes and bed slope of 0.01. Conveys runoff for 1000' through DMA 1 to existing catch basin on SE corner of property*
DA1 DMA A to Outlet 1	DA1 drains into the underground infiltration chamber, any overflow drains to the street
DA1 DMA B to Outlet 1	DA2 drains into the underground infiltration chamber, any overflow drains to the street
DA2 to Outlet 2	

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1

For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA A	DMA B	DMA C	DMA D
1 DMA drainage area (ft^2)	38,390	8,198		
2 Existing site impervious area (ft^2)	1,200	0		
3 Antecedent moisture condition *For desert areas, use* *http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*	II	II		
4 Hydrologic soil group *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	A	A		
5 Longest flowpath length (ft)	360	287		
6 Longest flowpath slope (ft/ft)	0.0072	0.0132		
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*	Single Family	Barren		
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*	Poor	Poor		

Form 3-2 Existing Hydrologic Characteristics for Drainage Area 1 (use only as needed for additional DMA w/in DA 1)				
For Drainage Area 1's sub-watershed DMA, provide the following characteristics	DMA E	DMA F	DMA G	DMA H
1 DMA drainage area (ft^2)				
2 Existing site impervious area (ft^2)				
3 Antecedent moisture condition *For desert areas, use http://www.sbcounty.gov/dpw/floodcontrol/pdf/20100412_map.pdf*				
4 Hydrologic soil group *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*				
5 Longest flowpath length (ft)				
6 Longest flowpath slope (ft/ft)				
7 Current land cover type(s) *Select from Fig C-3 of Hydrology Manual*				
8 Pre-developed pervious area condition: *Based on the extent of wet season vegetated cover good >75%; Fair 50-75%; Poor <50% Attach photos of site to support rating*				

Form 3-3 Watershed Description for Drainage Area

Receiving waters *Refer to Watershed Mapping Tool - http://permitrack.sbcounty.gov/wap/ See 'Drainage Facilities" link at this website*	San Sevaine Channel, Santa Ana River, Runoff from the site drains into the City storm drainage system into San Sevaine Channel, then into Santa Ana River, then into the Pacific Ocean.
Applicable TMDLs *Refer to Local Implementation Plan*	Pathogen for San Sevaine, Santa Ana River Reach 4, and 5 Pathogen and Heavy Metal for Santa Ana River Reach 3
303(d) listed impairments *Refer to Local Implementation Plan and Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/ and State Water Resources Control Board website – http://www.waterboards.ca.gov/santaana/water_issues/programs/tmdl/index.shtml*	San Sevaine Channel Channel impaired due to pathogen pollution. Santa Ana River Reach 4 is impaired due to pathogen pollution Santa Ana River Reach 3 is impaired due to pathogen pollution and heavy metals
Environmentally Sensitive Areas (ESA) *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	N/A
Unlined Downstream Water Bodies *Refer to Watershed Mapping Tool – http://permitrack.sbcounty.gov/wap/*	Santa Ana River
Hydrologic Conditions of Concern	☐ Yes *Complete Hydrologic Conditions of Concern (HCOC) Assessment. Include Forms 4.2-2 through Form 4.2-5 and Hydromodification BMP Form 4.3-10 in submittal* ☒ No
Watershed–based BMP included in a RWQCB approved WAP	☐ Yes *Attach verification of regional BMP evaluation criteria in WAP* • *More Effective than On-site LID* • *Remaining Capacity for Project DCV* • *Upstream of any Water of the US* • *Operational at Project Completion* • *Long-Term Maintenance Plan* ☒ No

Section 4 Best Management Practices (BMP)

4.1 Source Control BMP

4.1.1 Pollution Prevention

Non-structural and structural source control BMP are required to be incorporated into all new development and significant redevelopment projects. Form 4.1-1 and 4.1-2 are used to describe specific source control BMPs used in the WQMP or to explain why a certain BMP is not applicable. Table 7-3 of the TGD for WQMP provides a list of applicable source control BMP for projects with specific types of potential pollutant sources or activities. The source control BMP in this table must be implemented for projects with these specific types of potential pollutant sources or activities.

The preparers of this WQMP have reviewed the source control BMP requirements for new development and significant redevelopment projects. The preparers have also reviewed the specific BMP required for project as specified in Forms 4.1-1 and 4.1-2. All applicable non-structural and structural source control BMP shall be implemented in the project.

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N1	Education of Property Owners, Tenants and Occupants on Stormwater BMPs	☒	☐	Practical information materials will be provided to the occupants/tenants/employees. These materials include good housekeeping practices that contribute to the protection of stormwater quality and BMP's that eliminate or reduce pollution during property improvements
N2	Activity Restrictions	☒	☐	When using pesticides, contact licensed pesticide applicator to do the application. Car washing onsite is not allowed. The owner will coordinate the distribution of the activity restrictions
N3	Landscape Management BMPs	☒	☐	Planting of drought resistant plants to reduce irrigation runoff, installation of irrigation timer with rain triggered valve sensor
N4	BMP Maintenance	☒	☐	The Owner/tenant/occupant will coordinate the inspection and maintenance of all BMP's in a quarterly basis
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	Not a community Care Facility
N6	Local Water Quality Ordinances	☒	☐	Complied with City Water Quality Ordinance No. 1442
N7	Spill Contingency Plan	☐	☒	Not expected, No hazardous materials onsite
N8	Underground Storage Tank Compliance	☐	☒	No underground tank proposed
N9	Hazardous Materials Disclosure Compliance	☐	☒	Not expected, No hazardous materials onsite

Form 4.1-1 Non-Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, if not applicable, state reason
		Included	Not Applicable	
N10	Uniform Fire Code Implementation	☒	☐	Complies with Local Fire Code Ordinance
N11	Litter/Debris Control Program	☒	☐	Site inspection and clean-up every six months
N12	Employee Training	☒	☐	Every new employee will be given orientation and training regarding general and good housekeeping practices at the start of employment. Existing employees will be required to attend orientation every four months and/or at the start of policy
N13	Housekeeping of Loading Docks	☐	☒	Not a project feature
N14	Catch Basin Inspection Program	☒	☐	Catch Basin shall be inspected and cleaned at least twice a year, in the late summer or early fall and cleaned as needed
N15	Vacuum Sweeping of Private Streets and Parking Lots	☒	☐	Parking lots will be swept quarterly and/or before a big storm
N16	Other Non-structural Measures for Public Agency Projects	☐	☒	Not a public agency project
N17	Comply with all other applicable NPDES permits	☐	☒	Project is exempt from SWPPP requirements

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S1	Provide storm drain system stencilling and signage (CASQA New Development BMP Handbook SD-13)	☒	☐	Stencil "No Dumping, Drains to Ocean"
S2	Design and construct outdoor material storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-34)	☐	☒	Not a project feature
S3	Design and construct trash and waste storage areas to reduce pollution introduction (CASQA New Development BMP Handbook SD-32)	☒	☐	Trash Bins have permanent covers inside the trash enclosure
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control (Statewide Model Landscape Ordinance; CASQA New Development BMP Handbook SD-12)	☒	☐	Installation of irrigation timer with rain triggered valve sensor
S5	Finish grade of landscaped areas at a minimum of 1-2 inches below top of curb, sidewalk, or pavement	☒	☐	Landscape areas are approximately 1.5" below top of curb, sidewalk and pavement
S6	Protect slopes and channels and provide energy dissipation (CASQA New Development BMP Handbook SD-10)	☐	☒	Not a project feature
S7	Covered dock areas (CASQA New Development BMP Handbook SD-31)	☐	☒	Not a project feature
S8	Covered maintenance bays with spill containment plans (CASQA New Development BMP Handbook SD-31)	☐	☒	Not a project feature
S9	Vehicle wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not a project feature
S10	Covered outdoor processing areas (CASQA New Development BMP Handbook SD-36)	☐	☒	Not a project feature

Form 4.1-2 Structural Source Control BMPs

Identifier	Name	Check One		Describe BMP Implementation OR, If not applicable, state reason
		Included	Not Applicable	
S11	Equipment wash areas with spill containment plans (CASQA New Development BMP Handbook SD-33)	☐	☒	Not a project feature
S12	Fueling areas (CASQA New Development BMP Handbook SD-30)	☐	☒	Not a project feature
S13	Hillside landscaping (CASQA New Development BMP Handbook SD-10)	☐	☒	Not a project feature
S14	Wash water control for food preparation areas	☐	☒	Not a project feature
S15	Community car wash racks (CASQA New Development BMP Handbook SD-33)	☐	☒	Not a project feature

4.1.2 Preventative LID Site Design Practices

Site design practices associated with new LID requirements in the MS4 Permit should be considered in the earliest phases of a project. Preventative site design practices can result in smaller DCV for LID BMP and hydromodification control BMP by reducing runoff generation. Describe site design and drainage plan including:

- A narrative of site design practices utilized or rationale for not using practices
- A narrative of how site plan incorporates preventive site design practices
- Include an attached Site Plan layout which shows how preventative site design practices are included in WQMP

Refer to Section 5.2 of the TGD for WQMP for more details.

Form 4.1-3 Preventative LID Site Design Practices Checklist

Site Design Practices *If yes, explain how preventative site design practice is addressed in project site plan. If no, other LID BMPs must be selected to meet targets*
Minimize impervious areas: Yes ☒ No ☐ Explanation: The site was designed in compliance with land use regulations to limit impervious surfaces. Total pervious area is within allowable ratio
Maximize natural infiltration capacity: Yes ☒ No ☐ Explanation: Incorporated underground infiltration chamber for 100% capture
Preserve existing drainage patterns and time of concentration: Yes ☒ No ☐ Explanation: Drainage pattern remains the same
Disconnect impervious areas: Yes ☒ No ☐ Explanation: Concrete sidewalks and buildings drain into the landscaping area
Protect existing vegetation and sensitive areas: Yes ☐ No ☒ Explanation: There are no existing vegetation onsite
Re-vegetate disturbed areas: Yes ☒ No ☐ Explanation: Open areas will be landscaped and vegetated
Minimize unnecessary compaction in stormwater retention/infiltration basin/trench areas: Yes ☒ No ☐ Explanation: There will be no compaction in the area of the infiltration basin
Utilize vegetated drainage swales in place of underground piping or imperviously lined swales: Yes ☒ No ☐ Explanation: Incorporated underground infiltration chamber
Stake off areas that will be used for landscaping to minimize compaction during construction : Yes ☒ No ☐ Explanation: Landscape areas will be scarified, treated and reconditioned before application of vegetation

4.2 Project Performance Criteria

The purpose of this section of the Project WQMP is to establish targets for post-development hydrology based on performance criteria specified in the MS4 Permit. These targets include runoff volume for water quality control (referred to as LID design capture volume), and runoff volume, time of concentration, and peak runoff for protection of any downstream waterbody segments with a HCOC. ***If the project has more than one outlet for stormwater runoff, then complete additional versions of these forms for each DA / outlet.***

Methods applied in the following forms include:

- For LID BMP Design Capture Volume (DCV), the San Bernardino County Stormwater Program requires use of the P_6 method (MS4 Permit Section XI.D.6a.ii) – Form 4.2-1
- For HCOC pre- and post-development hydrologic calculation, the San Bernardino County Stormwater Program requires the use of the Rational Method (San Bernardino County Hydrology Manual Section D). Forms 4.2-2 through Form 4.2-5 calculate hydrologic variables including runoff volume, time of concentration, and peak runoff from the project site pre- and post-development using the Hydrology Manual Rational Method approach. For projects greater than 640 acres (1.0 mi^2), the Rational Method and these forms should not be used. For such projects, the Unit Hydrograph Method (San Bernardino County Hydrology Manual Section E) shall be applied for hydrologic calculations for HCOC performance criteria.

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 1)

1 Project area DA 1 (ft^2): 38,390	**2** Imperviousness after applying preventative site design practices (Imp%): 85%	**3** Runoff Coefficient (Rc): _0.66 *$R_c = 0.858(Imp\%)^{\wedge 3} - 0.78(Imp\%)^{\wedge 2} + 0.774(Imp\%) + 0.04$*
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.559 *http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html*		
5 Compute P_6, Mean 6-hr Precipitation (inches): 0.828 *P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*		
6 Drawdown Rate *Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.*		24-hrs ☐ 48-hrs ☒
7 Compute design capture volume, DCV (ft^3): 3,432 *DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)* *Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2*		

Refer to Section 4 in the TGD for WQMP for detailed guidance and instructions.

Form 4.2-1 LID BMP Performance Criteria for Design Capture Volume (DA 2)

1 Project area DA 1 (ft^2): 8,198	**2** Imperviousness after applying preventative site design practices (Imp%): 100%	**3** Runoff Coefficient (Rc): _0.89 *$R_c = 0.858(Imp\%)^{\wedge 3}-0.78(Imp\%)^{\wedge 2}+0.774(Imp\%)+0.04$*
4 Determine 1-hour rainfall depth for a 2-year return period $P_{2yr\text{-}1hr}$ (in): 0.559 *http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html*		
5 Compute P_6, Mean 6-hr Precipitation (inches): 0.828 *P_6 = Item 4 *C_1, where C_1 is a function of site climatic region specified in Form 3-1 Item 1 (Valley = 1.4807; Mountain = 1.909; Desert = 1.2371)*		
6 Drawdown Rate *Use 48 hours as the default condition. Selection and use of the 24 hour drawdown time condition is subject to approval by the local jurisdiction. The necessary BMP footprint is a function of drawdown time. While shorter drawdown times reduce the performance criteria for LID BMP design capture volume, the depth of water that can be stored is also reduced.*		24-hrs ☐ 48-hrs ☒
7 Compute design capture volume, DCV (ft^3): 988 *DCV = 1/12 * [Item 1* Item 3 *Item 5 * C_2], where C_2 is a function of drawdown rate (24-hr = 1.582; 48-hr = 1.963)* *Compute separate DCV for each outlet from the project site per schematic drawn in Form 3-1 Item 2*		

Form 4.2-2 Summary of HCOC Assessment (DA 1)

Does project have the potential to cause or contribute to an HCOC in a downstream channel: Yes ☐ No ☒

Go to: *http://permitrack.sbcounty.gov/wap/*

If "Yes", then complete HCOC assessment of site hydrology for 2yr storm event using Forms 4.2-3 through 4.2-5 and insert results below

(Forms 4.2-3 through 4.2-5 may be replaced by computer software analysis based on the San Bernardino County Hydrology Manual)

If "No," then proceed to Section 4.3 Project Conformance Analysis

Condition	Runoff Volume (ft^3)	Time of Concentration (min)	Peak Runoff (cfs)
Pre-developed	**1** *Form 4.2-3 Item 12*	**2** *Form 4.2-4 Item 13*	**3** *Form 4.2-5 Item 10*
Post-developed	**4** *Form 4.2-3 Item 13*	**5** *Form 4.2-4 Item 14*	**6** *Form 4.2-5 Item 14*
Difference	**7** *Item 4 – Item 1*	**8** *Item 2 – Item 5*	**9** *Item 6 – Item 3*
Difference (as % of pre-developed)	**10** % *Item 7 / Item 1*	**11** % *Item 8 / Item 2*	**12** % *Item 9 / Item 3*

Form 4.2-3 HCOC Assessment for Runoff Volume (DA 1)

Weighted Curve Number Determination for: Pre-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1a Land Cover type								
2a Hydrologic Soil Group (HSG)								
3a DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4a Curve Number (CN) *use Items 1 and 2 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								
Weighted Curve Number Determination for: Post-developed DA	DMA A	DMA B	DMA C	DMA D	DMA E	DMA F	DMA G	DMA H
1b Land Cover type								
2b Hydrologic Soil Group (HSG)								
3b DMA Area, ft^2 *sum of areas of DMA should equal area of DA*								
4b Curve Number (CN) *use Items 5 and 6 to select the appropriate CN from Appendix C-2 of the TGD for WQMP*								

5 Pre-Developed area-weighted CN:	**7** Pre-developed soil storage capacity, S (in): *S = (1000 / Item 5) - 10*	**9** Initial abstraction, I_a (in): *I_a = 0.2 * Item 7*
6 Post-Developed area-weighted CN:	**8** Post-developed soil storage capacity, S (in): *S = (1000 / Item 6) - 10*	**10** Initial abstraction, I_a (in): *I_a = 0.2 * Item 8*

11 Precipitation for 2 yr, 24 hr storm (in):
Go to: http://hdsc.nws.noaa.gov/hdsc/pfds/sa/sca_pfds.html

12 Pre-developed Volume (ft^3):
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 9)^2 / ((Item 11 – Item 9 + Item 7)*

13 Post-developed Volume (ft^3):
*V_{pre} =(1 / 12) * (Item sum of Item 3) * [(Item 11 – Item 10)^2 / ((Item 11 – Item 10 + Item 8)*

14 Volume Reduction needed to meet HCOC Requirement, (ft^3):
*V_{HCOC} = (Item 13 * 0.95) – Item 12*

Form 4.2-4 HCOC Assessment for Time of Concentration (DA 1)

Compute time of concentration for pre and post developed conditions for each DA *(For projects using the Hydrology Manual complete the form below)*

Variables	Pre-developed DA1 *Use additional forms if there are more than 4 DMA*				Post-developed DA1 *Use additional forms if there are more than 4 DMA*			
	DMA A	DMA B	DMA C	DMA D	DMA A	DMA B	DMA C	DMA D
1 Length of flowpath (ft) *Use Form 3-2 Item 5 for pre-developed condition*								
2 Change in elevation (ft)								
3 Slope (ft/ft), S_o = *Item 2 / Item 1*								
4 Land cover								
5 Initial DMA Time of Concentration (min) *Appendix C-1 of the TGD for WQMP*								
6 Length of conveyance from DMA outlet to project site outlet (ft) *May be zero if DMA outlet is at project site outlet*								
7 Cross-sectional area of channel (ft^2)								
8 Wetted perimeter of channel (ft)								
9 Manning's roughness of channel (n)								
10 Channel flow velocity (ft/sec) V_{fps} = *(1.49 / Item 9) * (Item 7/Item 8)^0.67 * (Item 3)^0.5*								
11 Travel time to outlet (min) T_t = *Item 6 / (Item 10 * 60)*								
12 Total time of concentration (min) T_c = *Item 5 + Item 11*								
13 Pre-developed time of concentration (min): *Minimum of Item 12 pre-developed DMA*								
14 Post-developed time of concentration (min): *Minimum of Item 12 post-developed DMA*								
15 Additional time of concentration needed to meet HCOC requirement (min): $T_{C\text{-}HCOC}$ = *(Item 13 * 0.95) – Item 14*								

Form 4.2-5 HCOC Assessment for Peak Runoff (DA 1)

Compute peak runoff for pre- and post-developed conditions

Variables		Pre-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*			Post-developed DA to Project Outlet (*Use additional forms if more than 3 DMA)*		
		DMA A	DMA B	DMA C	DMA A	DMA B	DMA C
1 Rainfall Intensity for storm duration equal to time of concentration *I_{peak} = 10^(LOG Form 4.2-1 Item 4 - 0.6 LOG Form 4.2-4 Item 5 /60)*							
2 Drainage Area of each DMA (Acres) *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
3 Ratio of pervious area to total area *For DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
4 Pervious area infiltration rate (in/hr) *Use pervious area CN and antecedent moisture condition with Appendix C-3 of the TGD for WQMP*							
5 Maximum loss rate (in/hr) *F_m = Item 3 * Item 4* *Use area-weighted F_m from DMA with outlet at project site outlet, include upstream DMA (Using example schematic in Form 3-1, DMA A will include drainage from DMA C)*							
6 Peak Flow from DMA (cfs) *Q_p =Item 2 * 0.9 * (Item 1 - Item 5)*							
7 Time of concentration adjustment factor for other DMA to site discharge point *Form 4.2-4 Item 12 DMA / Other DMA upstream of site discharge point (If ratio is greater than 1.0, then use maximum value of 1.0)*	DMA A	*n/a*			*n/a*		
	DMA B		*n/a*			*n/a*	
	DMA C			*n/a*			*n/a*

8 Pre-developed Q_p at T_c for DMA A: *Q_p = Item 6_{DMAA} + [Item 6_{DMAB} * (Item 1_{DMAA} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAA/2}$] + [Item 6_{DMAC} * (Item 1_{DMAA} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAA/3}$]*	**9** Pre-developed Q_p at T_c for DMA B: *Q_p = Item 6_{DMAB} + [Item 6_{DMAA} * (Item 1_{DMAB} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAB/1}$] + [Item 6_{DMAC} * (Item 1_{DMAB} - Item 5_{DMAC})/(Item 1_{DMAC} - Item 5_{DMAC})* Item $7_{DMAB/3}$]*	**10** Pre-developed Q_p at T_c for DMA C: *Q_p = Item 6_{DMAC} + [Item 6_{DMAA} * (Item 1_{DMAC} - Item 5_{DMAA})/(Item 1_{DMAA} - Item 5_{DMAA})* Item $7_{DMAC/1}$] + [Item 6_{DMAB} * (Item 1_{DMAC} - Item 5_{DMAB})/(Item 1_{DMAB} - Item 5_{DMAB})* Item $7_{DMAC/2}$]*
10 Peak runoff from pre-developed condition confluence analysis (cfs):	*Maximum of Item 8, 9, and 10 (including additional forms as needed)*	
11 Post-developed Q_p at T_c for DMA A: *Same as Item 8 for post-developed values*	**12** Post-developed Q_p at T_c for DMA B: *Same as Item 9 for post-developed values*	**13** Post-developed Q_p at T_c for DMA C: *Same as Item 10 for post-developed values*
14 Peak runoff from post-developed condition confluence analysis (cfs):	*Maximum of Item 11, 12, and 13 (including additional forms as needed)*	
15 Peak runoff reduction needed to meet HCOC Requirement (cfs):	*$Q_{p\text{-}HCOC}$ = (Item 14 * 0.95) – Item 10*	

4.3 Project Conformance Analysis

Complete the following forms for each project site DA to document that the proposed LID BMPs conform to the project DCV developed to meet performance criteria specified in the MS4 Permit (WQMP Template Section 4.2). For the LID DCV, the forms are ordered according to hierarchy of BMP selection as required by the MS4 Permit (see Section 5.3.1 in the TGD for WQMP). The forms compute the following for on-site LID BMP:

- Site Design and Hydrologic Source Controls (Form 4.3-2)
- Retention and Infiltration (Form 4.3-3)
- Harvested and Use (Form 4.3-4) or
- Biotreatment (Form 4.3-5).

At the end of each form, additional fields facilitate the determination of the extent of mitigation provided by the specific BMP category, allowing for use of the next category of BMP in the hierarchy, if necessary.

The first step in the analysis, using Section 5.3.2.1 of the TGD for WQMP, is to complete Forms 4.3-1 and 4.3-3) to determine if retention and infiltration BMPs are infeasible for the project. For each feasibility criterion in Form 4.3-1, if the answer is "Yes," provide all study findings that includes relevant calculations, maps, data sources, etc. used to make the determination of infeasibility.

Next, complete Forms 4.3-2 and 4.3-4 to determine the feasibility of applicable HSC and harvest and use BMPs, and, if their implementation is feasible, the extent of mitigation of the DCV.

If no site constraints exist that would limit the type of BMP to be implemented in a DA, evaluate the use of combinations of LID BMPs, including all applicable HSC BMPs to maximize on-site retention of the DCV. If no combination of BMP can mitigate the entire DCV, implement the single BMP type, or combination of BMP types, that maximizes on-site retention of the DCV within the minimum effective area.

If the combination of LID HSC, retention and infiltration, and harvest and use BMPs are unable to mitigate the entire DCV, then biotreatment BMPs may be implemented by the project proponent. If biotreatment BMPs are used, then they must be sized to provide sufficient capacity for effective treatment of the remainder of the volume-based performance criteria that cannot be achieved with LID BMPs (TGD for WQMP Section 5.4.4.2). **Under no circumstances shall any portion of the DCV be released from the site without effective mitigation and/or treatment**.

Form 4.3-1 Infiltration BMP Feasibility (DA 1)

Feasibility Criterion – Complete evaluation for each DA on the Project Site

[1] Would infiltration BMP pose significant risk for groundwater related concerns? Yes ☐ No ☒
Refer to Section 5.3.2.1 of the TGD for WQMP

If Yes, Provide basis: (attach)

[2] Would installation of infiltration BMP significantly increase the risk of geotechnical hazards? Yes ☐ No ☒
(Yes, if the answer to any of the following questions is yes, as established by a geotechnical expert):

- The location is less than 50 feet away from slopes steeper than 15 percent
- The location is less than eight feet from building foundations or an alternative setback.
- A study certified by a geotechnical professional or an available watershed study determines that stormwater infiltration would result in significantly increased risks of geotechnical hazards.

If Yes, Provide basis: (attach)

[3] Would infiltration of runoff on a Project site violate downstream water rights? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[4] Is proposed infiltration facility located on hydrologic soil group (HSG) D soils or does the site geotechnical investigation indicate presence of soil characteristics, which support categorization as D soils? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[5] Is the design infiltration rate, after accounting for safety factor of 2.0, below proposed facility less than 0.3 in/hr (accounting for soil amendments)? Yes ☐ No ☒

If Yes, Provide basis: (attach)

[6] Would on-site infiltration or reduction of runoff over pre-developed conditions be partially or fully inconsistent with watershed management strategies as defined in the WAP, or impair beneficial uses? Yes ☐ No ☒
See Section 3.5 of the TGD for WQMP and WAP

If Yes, Provide basis: (attach)

[7] Any answer from Item 1 through Item 3 is "Yes": Yes ☐ No ☒
If yes, infiltration of any volume is not feasible onsite. Proceed to Form 4.3-4, Harvest and Use BMP. If no, then proceed to Item 8 below.

[8] Any answer from Item 4 through Item 6 is "Yes": Yes ☐ No ☒
If yes, infiltration is permissible but is not required to be considered. Proceed to Form 4.3-2, Hydrologic Source Control BMP.
If no, then proceed to Item 9, below.

[9] All answers to Item 1 through Item 6 are "No":
Infiltration of the full DCV is potentially feasible, LID infiltration BMP must be designed to infiltrate the full DCV to the MEP.
Proceed to Form 4.3-2, Hydrologic Source Control BMP.

4.3.1 Site Design Hydrologic Source Control BMP

Section XI.E. of the Permit emphasizes the use of LID preventative measures; and the use of LID HSC BMPs reduces the portion of the DCV that must be addressed in downstream BMPs. Therefore, all applicable HSC shall be provided except where they are mutually exclusive with each other, or with other BMPs. Mutual exclusivity may result from overlapping BMP footprints such that either would be potentially feasible by itself, but both could not be implemented. Please note that while there are no numeric standards regarding the use of HSC, if a project cannot feasibly meet BMP sizing requirements or cannot fully address HCOCs, feasibility of all applicable HSC must be part of demonstrating that the BMP system has been designed to retain the maximum feasible portion of the DCV. Complete Form 4.3-2 to identify and calculate estimated retention volume from implementing site design HSC BMP. Refer to Section 5.4.1 in the TGD for more detailed guidance.

Form 4.3-2 Site Design Hydrologic Source Control BMPs (DA 1)

1 Implementation of Impervious Area Dispersion BMP (i.e. routing runoff from impervious to pervious areas), excluding impervious areas planned for routing to on-lot infiltration BMP: Yes ☐ No ☒ *If yes, complete Items 2-5; If no, proceed to Item 6*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Total impervious area draining to pervious area (ft^2)			
3 Ratio of pervious area receiving runoff to impervious area			
4 Retention volume achieved from impervious area dispersion (ft^3) *V = Item2 * Item 3 * (0.5/12), assuming retention of 0.5 inches of runoff*			
5 Sum of retention volume achieved from impervious area dispersion (ft^3): 0 *$V_{retention}$ =Sum of Item 4 for all BMPs*			
6 Implementation of Localized On-lot Infiltration BMPs (e.g. on-lot rain gardens): Yes ☐ No ☒ *If yes, complete Items 7-13 for aggregate of all on-lot infiltration BMP in each DA; If no, proceed to Item 14*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
7 Ponding surface area (ft^2)			
8 Ponding depth (ft)			
9 Surface area of amended soil/gravel (ft^2)			
10 Average depth of amended soil/gravel (ft)			
11 Average porosity of amended soil/gravel			
12 Retention volume achieved from on-lot infiltration (ft^3) *$V_{retention}$ = (Item 7 *Item 8) + (Item 9 * Item 10 * Item 11)*			
13 Runoff volume retention from on-lot infiltration (ft^3): 0 *$V_{retention}$ =Sum of Item 12 for all BMPs*			

Form 4.3-2 cont. Site Design Hydrologic Source Control BMPs (DA 1)

14 Implementation of evapotranspiration BMP (green, brown, or blue roofs): Yes ☐ No ☒ *If yes, complete Items 15-20. If no, proceed to Item 21*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
15 Rooftop area planned for ET BMP (ft^2)			
16 Average wet season ET demand (in/day) *Use local values, typical ~ 0.1*			
17 Daily ET demand (ft^3/day) *Item 15 * (Item 16 / 12)*			
18 Drawdown time (hrs) *Copy Item 6 in Form 4.2-1*			
19 Retention Volume (ft^3) *$V_{retention}$ = Item 17 * (Item 18 / 24)*			
20 Runoff volume retention from evapotranspiration BMPs (ft^3): 0 *$V_{retention}$ =Sum of Item 19 for all BMPs*			
21 Implementation of Street Trees: Yes ☐ No ☒ *If yes, complete Items 22-25. If no, proceed to Item 26*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
22 Number of Street Trees			
23 Average canopy cover over impervious area (ft^2)			
24 Runoff volume retention from street trees (ft^3) *$V_{retention}$ = Item 22 * Item 23 * (0.05/12) assume runoff retention of 0.05 inches*			
25 Runoff volume retention from street tree BMPs (ft^3): *$V_{retention}$ = Sum of Item 24 for all BMPs*			
26 Implementation of residential rain barrel/cisterns: Yes☐ No ☒ *If yes, complete Items 27-29; If no, proceed to Item 30*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
27 Number of rain barrels/cisterns			
28 Runoff volume retention from rain barrels/cisterns (ft^3) *$V_{retention}$ = Item 27 * 3*			
29 Runoff volume retention from residential rain barrels/Cisterns (ft3): 0 *$V_{retention}$ =Sum of Item 28 for all BMPs*			
30 Total Retention Volume from Site Design Hydrologic Source Control BMPs: 0 *Sum of Items 5, 13, 20, 25 and 29*			

4.3.2 Infiltration BMPs

Use Form 4.3-3 to compute on-site retention of runoff from proposed retention and infiltration BMPs. Volume retention estimates are sensitive to the percolation rate used, which determines the amount of runoff that can be infiltrated within the specified drawdown time. The infiltration safety factor reduces field measured percolation to account for potential inaccuracy associated with field measurements, declining BMP performance over time, and compaction during construction. Appendix D of the TGD for WQMP provides guidance on estimating an appropriate safety factor to use in Form 4.3-3.

If site constraints limit the use of BMPs to a single type and implementation of retention and infiltration BMPs mitigate no more than 40% of the DCV, then they are considered infeasible and the Project Proponent may evaluate the effectiveness of BMPs lower in the LID hierarchy of use (Section 5.5.1 of the TGD for WQMP)

If implementation of infiltrations BMPs is feasible as determined using Form 4.3-1, then LID infiltration BMPs shall be implemented to the MEP (section 4.1 of the TGD for WQMP).

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Form 4.3-3 Infiltration LID BMP - including underground BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC BMP (ft^3): 4,420 *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30*

BMP Type *Use columns to the right to compute runoff volume retention from proposed infiltration BMP (select BMP from Table 5-4 in TGD for WQMP) - Use additional forms for more BMPs*	DA 1 DMA BMP Type Underground Chamber	DA 2 DMA BMP Type Underground Chamber	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Infiltration rate of underlying soils (in/hr) *See Section 5.4.2 and Appendix D of the TGD for WQMP for minimum requirements for assessment methods*	7.0	7.0	
3 Infiltration safety factor *See TGD Section 5.4.2 and Appendix D*	2.58	2.58	
4 Design percolation rate (in/hr) *P_{design} = Item 2 / Item 3*	2.33	2.33	
5 Ponded water drawdown time (hr) *Copy Item 6 in Form 4.2-1*	48	48	
6 Maximum ponding depth (ft) *BMP specific, see Table 5-4 of the TGD for WQMP for BMP design details*	5	5	
7 Ponding Depth (ft) *d_{BMP} = Minimum of (1/12*Item 4*Item 5) or Item 6*	5	5	
8 Infiltrating surface area, SA_{BMP} (ft^2) *the lesser of the area needed for infiltration of full DCV or minimum space requirements from Table 5.7 of the TGD for WQMP*	921	285	
9 Amended soil depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 in the TGD for WQMP for reference to BMP design details*	0	0	
10 Amended soil porosity	0	0	
11 Gravel depth, d_{media} (ft) *Only included in certain BMP types, see Table 5-4 of the TGD for WQMP for BMP design details*	0	0	
12 Gravel porosity	0	0	
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*	3	3	
14 Above Ground Retention Volume (ft^3) *$V_{retention}$ = Item 8 * [Item7 + (Item 9 * Item 10) + (Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*	0	0	
15 Underground Retention Volume (ft^3) *Volume determined using manufacturer's specifications and calculations*	3,733	1,137	

16 Total Retention Volume from LID Infiltration BMPs: 4,870 *(Sum of Items 14 and 15 for all infiltration BMP included in plan)*

17 Fraction of DCV achieved with infiltration BMP: 110% *Retention% = Item 16 / Form 4.2-1 Item 7*

18 Is full LID DCV retained onsite with combination of hydrologic source control and LID retention/infiltration BMPs? Yes ☒ No ☐

If yes, demonstrate conformance using Form 4.3-10; If no, then reduce Item 3, Factor of Safety to 2.0 and increase Item 8, Infiltrating Surface Area, such that the portion of the site area used for retention and infiltration BMPs equals or exceeds the minimum effective area thresholds (Table 5-7 of the TGD for WQMP) for the applicable category of development and repeat all above calculations.

4.3.3 Harvest and Use BMP

Harvest and use BMP may be considered if the full LID DCV cannot be met by maximizing infiltration BMPs. Use Form 4.3-4 to compute on-site retention of runoff from proposed harvest and use BMPs.

Volume retention estimates for harvest and use BMPs are sensitive to the on-site demand for captured stormwater. Since irrigation water demand is low in the wet season, when most rainfall events occur in San Bernardino County, the volume of water that can be used within a specified drawdown period is relatively low. The bottom portion of Form 4.3-4 facilitates the necessary computations to show infeasibility if a minimum incremental benefit of 40 percent of the LID DCV would not be achievable with MEP implementation of on-site harvest and use of stormwater (Section 5.5.4 of the TGD for WQMP).

Form 4.3-4 Harvest and Use BMPs (DA 1)

1 Remaining LID DCV not met by site design HSC or infiltration BMP (ft^3): 0 *V_{unmet} = Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16*			
BMP Type(s) *Compute runoff volume retention from proposed harvest and use BMP (Select BMPs from Table 5-4 of the TGD for WQMP) - Use additional forms for more BMPs*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
2 Describe cistern or runoff detention facility			
3 Storage volume for proposed detention type (ft^3) *Volume of cistern*			
4 Landscaped area planned for use of harvested stormwater (ft^2)			
5 Average wet season daily irrigation demand (in/day) Use local values, typical ~ 0.1 in/day			
6 Daily water demand (ft^3/day) *Item 4 * (Item 5 / 12)*			
7 Drawdown time (hrs) *Copy Item 6 from Form 4.2-1*			
8 Retention Volume (ft^3) *$V_{retention}$ = Minimum of (Item 3) or (Item 6 * (Item 7 / 24))*			
9 Total Retention Volume (ft^3) from Harvest and Use BMP *Sum of Item 8 for all harvest and use BMP included in plan*			
10 Is the full DCV retained with a combination of LID HSC, retention and infiltration, and harvest & use BMPs? Yes ☐ No ☐ *If yes, demonstrate conformance using Form 4.3-10. If no, then re-evaluate combinations of all LID BMP and optimize their implementation such that the maximum portion of the DCV is retained on-site (using a single BMP type or combination of BMP types). If the full DCV cannot be mitigated after this optimization process, proceed to Section 4.3.4.*			

4.3.4 Biotreatment BMP

Biotreatment BMPs may be considered if the full LID DCV cannot be met by maximizing retention and infiltration, and harvest and use BMPs. A key consideration when using biotreatment BMP is the effectiveness of the proposed BMP in addressing the pollutants of concern for the project (see Table 5-5 of the TGD for WQMP).

Use Form 4.3-5 to summarize the potential for volume based and/or flow based biotreatment options to biotreat the remaining unmet LID DCV w. Biotreatment computations are included as follows:

- Use Form 4.3-6 to compute biotreatment in small volume based biotreatment BMP (e.g. bioretention w/underdrains);
- Use Form 4.3-7 to compute biotreatment in large volume based biotreatment BMP (e.g. constructed wetlands);
- Use Form 4.3-8 to compute sizing criteria for flow-based biotreatment BMP (e.g. bioswales)

Form 4.3-5 Selection and Evaluation of Biotreatment BMP (DA 1)

1 Remaining LID DCV not met by site design HSC, infiltration, or harvest and use BMP for potential biotreatment (ft^3): *Form 4.2-1 Item 7 - Form 4.3-2 Item 30 – Form 4.3-3 Item 16- Form 4.3-4 Item 9*	List pollutants of concern *Copy from Form 2.3-1.* Sediment, Trash/Debris, Pesticide/Herbicide	
2 Biotreatment BMP Selected *(Select biotreatment BMP(s) necessary to ensure all pollutants of concern are addressed through Unit Operations and Processes, described in Table 5-5 of the TGD for WQMP)*	Volume-based biotreatment *Use Forms 4.3-6 and 4.3-7 to compute treated volume*	Flow-based biotreatment *Use Form 4.3-8 to compute treated volume*
	☐ Bioretention with underdrain ☐ Planter box with underdrain ☐ Constructed wetlands ☐ Wet extended detention ☐ Dry extended detention	☐ Vegetated swale ☐ Vegetated filter strip ☐ Proprietary biotreatment
3 Volume biotreated in volume based biotreatment BMP (ft^3): *Form 4.3-6 Item 15 + Form 4.3-7 Item 13*	**4** Compute remaining LID DCV with implementation of volume based biotreatment BMP (ft^3): *Item 1 – Item 3*	**5** Remaining fraction of LID DCV for sizing flow based biotreatment BMP: % *Item 4 / Item 1*
6 Flow-based biotreatment BMP capacity provided (cfs): *Use Figure 5-2 of the TGD for WQMP to determine flow capacity required to provide biotreatment of remaining percentage of unmet LID DCV (Item 5), for the project's precipitation zone (Form 3-1 Item 1)*		
7 Metrics for MEP determination: • Provided a WQMP with the portion of site area used for suite of LID BMP equal to minimum thresholds in Table 5-7 of the TGD for WQMP for the proposed category of development: ☐ *If maximized on-site retention BMPs is feasible for partial capture, then LID BMP implementation must be optimized to retain and infiltrate the maximum portion of the DCV possible within the prescribed minimum effective area. The remaining portion of the DCV shall then be mitigated using biotreatment BMP.*		

Form 4.3-6 Volume Based Biotreatment (DA 1) – Bioretention and Planter Boxes with Underdrains

Biotreatment BMP Type *(Bioretention w/underdrain, planter box w/underdrain, other comparable BMP)*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*			
2 Amended soil infiltration rate *Typical ~ 5.0*			
3 Amended soil infiltration safety factor *Typical ~ 2.0*			
4 Amended soil design percolation rate (in/hr) P_{design} *= Item 2 / Item 3*			
5 Ponded water drawdown time (hr) *Copy Item 6 from Form 4.2-1*			
6 Maximum ponding depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Ponding Depth (ft) d_{BMP} *= Minimum of (1/12 * Item 4 * Item 5) or Item 6*			
8 Amended soil surface area (ft^2)			
9 Amended soil depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Amended soil porosity, *n*			
11 Gravel depth (ft) *see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
12 Gravel porosity, *n*			
13 Duration of storm as basin is filling (hrs) *Typical ~ 3hrs*			
14 Biotreated Volume (ft^3) $V_{biotreated}$ *= Item 8 * [(Item 7/2) + (Item 9 * Item 10) +(Item 11 * Item 12) + (Item 13 * (Item 4 / 12))]*			
15 Total biotreated volume from bioretention and/or planter box with underdrains BMP: 0 *Sum of Item 14 for all volume-based BMPs included in this form*			

Form 4.3-7 Volume Based Biotreatment (DA 1) – Constructed Wetlands and Extended Detention

Biotreatment BMP Type *Constructed wetlands, extended wet detention, extended dry detention, or other comparable proprietary BMP. If BMP includes multiple modules (e.g. forebay and main basin), provide separate estimates for storage and pollutants treated in each module.*	DA DMA BMP Type		DA DMA BMP Type *(Use additional forms for more BMPs)*	
	Forebay	Basin	Forebay	Basin
1 Pollutants addressed with BMP forebay and basin *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in Table 5-5 of the TGD for WQMP*				
2 Bottom width (ft)				
3 Bottom length (ft)				
4 Bottom area (ft^2) A_{bottom} = *Item 2 * Item 3*				
5 Side slope (ft/ft)				
6 Depth of storage (ft)				
7 Water surface area (ft^2) $A_{surface}$ =*(Item 2 + (2 * Item 5 * Item 6)) * (Item 3 + (2 * Item 5 * Item 6))*				
8 Storage volume (ft^3) *For BMP with a forebay, ensure fraction of total storage is within ranges specified in BMP specific fact sheets, see Table 5-6 of the TGD for WQMP for reference to BMP design details* V =*Item 6 / 3 * [Item 4 + Item 7 + (Item 4 * Item 7)^0.5]*				
9 Drawdown Time (hrs) *Copy Item 6 from Form 2.1*				
10 Outflow rate (cfs) Q_{BMP} = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) / (Item 9 * 3600)*				
11 Duration of design storm event (hrs)				
12 Biotreated Volume (ft^3) $V_{biotreated}$ = *(Item* $8_{forebay}$ *+ Item* 8_{basin}*) +(Item 10 * Item 11 * 3600)*				
13 Total biotreated volume from constructed wetlands, extended dry detention, or extended wet detention : 0 *(Sum of Item 12 for all BMP included in plan)*				

Form 4.3-8 Flow Based Biotreatment (DA 1)

Biotreatment BMP Type *Vegetated swale, vegetated filter strip, or other comparable proprietary BMP*	DA DMA BMP Type	DA DMA BMP Type	DA DMA BMP Type *(Use additional forms for more BMPs)*
1 Pollutants addressed with BMP *List all pollutant of concern that will be effectively reduced through specific Unit Operations and Processes described in TGD Table 5-5*			
2 Flow depth for water quality treatment (ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
3 Bed slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
4 Manning's roughness coefficient			
5 Bottom width (ft) b_w *= (Form 4.3-5 Item 6 * Item 4) / (1.49 * Item 2^1.67 * Item 3^0.5)*			
6 Side Slope (ft/ft) *BMP specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
7 Cross sectional area (ft^2) *A = (Item 5 * Item 2) + (Item 6 * Item 2^2)*			
8 Water quality flow velocity (ft/sec) *V = Form 4.3-5 Item 6 / Item 7*			
9 Hydraulic residence time (min) *Pollutant specific, see Table 5-6 of the TGD for WQMP for reference to BMP design details*			
10 Length of flow based BMP (ft) *L = Item 8 * Item 9 * 60*			
11 Water surface area at water quality flow depth (ft^2) SA_{top} *= (Item 5 + (2 * Item 2 * Item 6)) * Item 10*			

4.3.5 Conformance Summary

Complete Form 4.3-9 to demonstrate how on-site LID DCV is met with proposed site design hydrologic source control, infiltration, harvest and use, and/or biotreatment BMP. The bottom line of the form is used to describe the basis for infeasibility determination for on-site LID BMP to achieve full LID DCV, and provides methods for computing remaining volume to be addressed in an alternative compliance plan. If the project has more than one outlet, then complete additional versions of this form for each outlet.

Form 4.3-9 Conformance Summary and Alternative Compliance Volume Estimate (DA 1)

1 Total LID DCV for the Project DA-1 (ft^3): 4,420 *Copy Item 7 in Form 4.2-1*

2 On-site retention with site design hydrologic source control LID BMP (ft^3): 0 *Copy Item 30 in Form 4.3-2*

3 On-site retention with LID infiltration BMP (ft^3): 4,870 *Copy Item 16 in Form 4.3-3*

4 On-site retention with LID harvest and use BMP (ft^3): 0 *Copy Item 9 in Form 4.3-4*

5 On-site biotreatment with volume based biotreatment BMP (ft^3): *Copy Item 3 in Form 4.3-5*

6 Flow capacity provided by flow based biotreatment BMP (cfs): *Copy Item 6 in Form 4.3-5*

7 LID BMP performance criteria are achieved if answer to any of the following is "Yes":

- Full retention of LID DCV with site design HSC, infiltration, or harvest and use BMP: Yes ☒ No ☐
  If yes, sum of Items 2, 3, and 4 is greater than Item 1
- Combination of on-site retention BMPs for a portion of the LID DCV and volume-based biotreatment BMP that address all pollutants of concern for the remaining LID DCV: Yes ☐ No ☐
  If yes, a) sum of Items 2, 3, 4, and 5 is greater than Item 1, and Items 2, 3 and 4 are maximized; or b) Item 6 is greater than Form 4.3--5 Item 6 and Items 2, 3 and 4 are maximized
- On-site retention and infiltration is determined to be infeasible and biotreatment BMP provide biotreatment for all pollutants of concern for full LID DCV: Yes ☐ No ☐
  If yes, Form 4.3-1 Items 7 and 8 were both checked yes

8 If the LID DCV is not achieved by any of these means, then the project may be allowed to develop an alternative compliance plan. Check box that describes the scenario which caused the need for alternative compliance:

- Combination of HSC, retention and infiltration, harvest and use, and biotreatment BMPs provide less than full LID DCV capture: ☐
  Checked yes for Form 4.3-5 Item 7, Item 6 is zero, and sum of Items 2, 3, 4, and 5 is less than Item 1. If so, apply water quality credits and calculate volume for alternative compliance, V_{alt} *= (Item 1 – Item 2 – Item 3 – Item 4 – Item 5) * (100 - Form 2.4-1 Item 2)%*
- An approved Watershed Action Plan (WAP) demonstrates that water quality and hydrologic impacts of urbanization are more effective when managed in at an off-site facility: ☐
  Attach appropriate WAP section, including technical documentation, showing effectiveness comparisons for the project site and regional watershed

4.3.6 Hydromodification Control BMP

Use Form 4.3-10 to compute the remaining runoff volume retention, after LID BMP are implemented, needed to address HCOC, and the increase in time of concentration and decrease in peak runoff necessary to meet targets for protection of waterbodies with a potential HCOC. Describe hydromodification control BMP that address HCOC, which may include off-site BMP and/or in-stream controls. Section 5.6 of the TGD for WQMP provides additional details on selection and evaluation of hydromodification control BMP.

Form 4.3-10 Hydromodification Control BMPs (DA 1)

1 Volume reduction needed for HCOC performance criteria (ft^3): 0 *(Form 4.2-2 Item 4 * 0.95) – Form 4.2-2 Item 1*	**2** On-site retention with site design hydrologic source control, infiltration, and harvest and use LID BMP (ft^3): *Sum of Form 4.3-9 Items 2, 3, and 4 Evaluate option to increase implementation of on-site retention in Forms 4.3-2, 4.3-3, and 4.3-4 in excess of LID DCV toward achieving HCOC volume reduction*
3 Remaining volume for HCOC volume capture (ft^3): *Item 1 – Item 2*	**4** Volume capture provided by incorporating additional on-site or off-site retention BMPs (ft^3): *Existing downstream BMP may be used to demonstrate additional volume capture (if so, attach to this WQMP a hydrologic analysis showing how the additional volume would be retained during a 2-yr storm event for the regional watershed)*

5 If Item 4 is less than Item 3, incorporate in-stream controls on downstream waterbody segment to prevent impacts due to hydromodification ☐ *Attach in-stream control BMP selection and evaluation to this WQMP*

6 Is Form 4.2-2 Item 11 less than or equal to 5%: Yes ☐ No ☐

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate increase in time of concentration achieved by proposed LID site design, LID BMP, and additional on-site or off-site retention BMP ☐
  BMP upstream of a waterbody segment with a potential HCOC may be used to demonstrate increased time of concentration through hydrograph attenuation (if so, show that the hydraulic residence time provided in BMP for a 2-year storm event is equal or greater than the addition time of concentration requirement in Form 4.2-4 Item 15)
- Increase time of concentration by preserving pre-developed flow path and/or increase travel time by reducing slope and increasing cross-sectional area and roughness for proposed on-site conveyance facilities ☐
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

7 Form 4.2-2 Item 12 less than or equal to 5%: Yes ☐ No ☐

If yes, HCOC performance criteria is achieved. If no, select one or more mitigation options below:

- Demonstrate reduction in peak runoff achieved by proposed LID site design, LID BMPs, and additional on-site or off-site retention BMPs ☐
  BMPs upstream of a waterbody segment with a potential HCOC may be used to demonstrate additional peak runoff reduction through hydrograph attenuation (if so, attach to this WQMP, a hydrograph analysis showing how the peak runoff would be reduced during a 2-yr storm event)
- Incorporate appropriate in-stream controls for downstream waterbody segment to prevent impacts due to hydromodification, in a plan approved and signed by a licensed engineer in the State of California ☐

4.4 Alternative Compliance Plan (if applicable)

Describe an alternative compliance plan (if applicable) for projects not fully able to infiltrate, harvest and use, or biotreat the DCV via on-site LID practices. A project proponent must develop an alternative compliance plan to address the remainder of the LID DCV. Depending on project type some projects may qualify for water quality credits that can be applied to reduce the DCV that must be treated prior to development of an alternative compliance plan (see Form 2.4-1, Water Quality Credits). Form 4.3-9 Item 8 includes instructions on how to apply water quality credits when computing the DCV that must be met through alternative compliance. Alternative compliance plans may include one or more of the following elements:

- On-site structural treatment control BMP - All treatment control BMP should be located as close to possible to the pollutant sources and should not be located within receiving waters;
- Off-site structural treatment control BMP - Pollutant removal should occur prior to discharge of runoff to receiving waters;
- Urban runoff fund or In-lieu program, if available

Depending upon the proposed alternative compliance plan, approval by the executive officer may or may not be required (see Section 6 of the TGD for WQMP).

Section 5 Inspection and Maintenance Responsibility for Post Construction BMP

All BMP included as part of the project WQMP are required to be maintained through regular scheduled inspection and maintenance (refer to Section 8, Post Construction BMP Requirements, in the TGD for WQMP). Fully complete Form 5-1 summarizing all BMP included in the WQMP. Attach additional forms as needed. The WQMP shall also include a detailed Operation and Maintenance Plan for all BMP and may require a Maintenance Agreement (consult the jurisdiction's LIP). If a Maintenance Agreement is required, it must also be attached to the WQMP.

Form 5-1 BMP Inspection and Maintenance (use additional forms as necessary)

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
N1 Education of Property Owner, Tenants and Occupants	Property owner/Occupants	Practical information materials will be provided to every occupants/tenants. These materials shall include general good housekeeping practices that contribute to the protection of stormwater quality. Distribution of information materials shall commence immediately after obtaining building occupancy. The owners, tenants or occupants will be updated of new information and training materials annually or as new information or training materials become available. The owner is responsible for distributing these information materials.	Beginning of occupancy, annually thereafter or when new materials beacome available
N2 Activity Restrictions	Property owner/Occupants	Pesticides to be applied by licensed applicator. Car washing onsite is not allowed. Restrictions information shall be given immediately after obtaining building occupancy. Restriction information materials shall be distributed every six months to every tenants and occupants to prevent pollutant loading onsite runoff.	Every six months
N3 Landscape Management BMP's	Property owner/Occupants	Landscape planning should couple consideration of land suitability for urban uses. Landscaping shall correlate to the climate, soils, related natural resources and existing vegetation of the site, as well as the type of development. Landscape operation and maintenance shall commence immediately after obtaining building occupancy. Inspection and	Every six months

		maintenance of landscape areas shall be done at least twice a year.	
N4 BMP Maintenance	Property owner/Occupants	The Owner/tenant/occupant will coordinate the inspection and maintanance of all BMP's in a quarterly basis. Inspection and maintenance begins immediately after obtaining building occupancy.	Quarterly basis
N6 Local Water Quality Ordinances	Property owner/Occupants	Complies with City Water Quality Orinance. Inspection and maintenance commences immediately after obtaining building occupancy.	Every six months
N10 Uniform Fire Code Implementation	Property owner/Occupants	Complies with Local Fire Code Ordinance. Inspection and maintenance commences immediately after obtaining building occupancy.	Every six month
N11 Litter/Debris Control Program	Property owner/Occupants	Site inspection and cleaning of debris and litters shall be performed by the owner at the beginning and ending of rainy season.	Every six months
N12 Employee Training	Property owner/Occupants	Every new employee will be given orientation and training regarding general and good housekeeping practices at the start of employment. Existing employees will be required to attend orientation every four months and/or at the start of the policy. Copies of the training or orientation attendance will be retained for five years.	Every 4 months
N14 Catch Basin Inspection Program	Property owner/Occupants	Catch basin for the underground infiltration system shall be inspected and cleaned twice a year in the late summer or early fall and at the beginning of rainy season. Remove accumulated trash and debris if there are any. The owner/tenant will coordinate the inspection and cleaning of catch basin and infiltration basin. Commence this activity immediately after obtaining building occupancy.	Twice a year, beginning and end of rainy season
N15	Property owner/Occupants	Parking lots must be swept at least four times annually (quarterly basis), prior to the storm season and in the late summer or early fall, to	Monthly basis

Vacuum Sweeping of Private Streets and Parking Lots		reduce the amount of sediment, garden waste, and trash entering the storm drain system. Sweeping of parking lots shall commence immediately after obtaining building occupancy. Inspection of the parking lots and drive aisles shall be done at least in a monthly basis and remove trash, debris and immediately as it becomes necessary.	
S1 Provide storm drain system stenciling and signage	Property Owner/Occupant	Stencil "No Dumping-Drains to Ocean" and maintained by owner. Commence this activity immediately after obtaining building occupancy.	Every January 1st and July 1st
S3 Design and Construct trash and waste storage areas	Property owner/Occupants	Trash containers (Dumpster) areas shall have drainage from the adjoining roof and pavements diverted around the areas. Dumpsters shall be leak proof and have attached workable covers. Maintenance include implementation of trash management and litter control procedures aimed at reducing pollution of stormwater. This procedure include regularly scheduled litter patrol, emptying of trash receptacles in common areas. Provide self inspection at least 4 times annually. This measure will commence immediately after obtaining building occupancy.	Every January 1st, April 1st, July 1st, October 1st
S4 Use efficient irrigation systems & landscape design, water conservation, smart controllers and source control	Property owner/Occupants	Irrigation methods should be utilized to minimize runoff of excess irrigation water across impervious surfaces and into the stormwater conveyance system. Such method include employing rain-triggered shutoff devices to eliminate or reduce irrigation during and after precipitation. Water conservation devices such as programmable irrigation timers and soils sensors will be considered. Provide self inspection at least 4 times annually. This measure will commence immediately after installation of landscaping and obtaining of building occupancy.	Every January 1st, April 1st, July 1st, October 1st
S5	Property owner/Occupants	Landscape areas are approximately 1.5" below top of walkway, top of curb or pavement	Beginning of landscape

Landscape areas at a minimum of 1-2" below top of curb, sidewalk, or pavement			construction and yearly inspection thereafter
TC-11 Underground Infiltration m Chamber (Stormtech)	Property owner/Occupants	Maintenance is accomplished with the Jetvac process. The Jetvac process utilizes a high pressure mater nozzle to propel itself down the isolator row while scouring and suspending sediments mimicking the raking process. As the nozzle is retrieved, the captured pollutants such as sediments, etc., are flushed back into the manhole for vacuuming.	Twice a year and/or beginning and ending of wet season
MP-52 Drain Inserts	Property owner/Occupants	The drain inserts shall be inspected and maintained on a quarterly basis and at the beginning and end of wet season. Remove accumulated trash and debris inside the drain insert. The owner is responsible for inspection and maintenance of the drain inserts.	Every three months and/or beginning and ending of wet season.

Section 6 WQMP Attachments

6.1. Site Plan and Drainage Plan

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural Source Control BMP locations
- Site Design Hydrologic Source Control BMP locations
- LID BMP details
- Drainage delineations and flow information
- Drainage connections

6.2 Electronic Data Submittal

Minimum requirements include submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open. If the local jurisdiction requires specialized electronic document formats (as described in their local Implementation Plan), this section will describe the contents (e.g., layering, nomenclature, geo-referencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

6.3 Post Construction

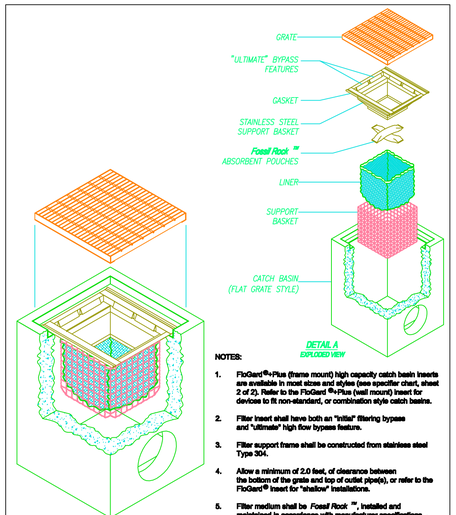
Attach all O&M Plans and Maintenance Agreements for BMP to the WQMP.

6.4 Other Supporting Documentation

- BMP Educational Materials
- Activity Restriction – C, C&R's & Lease Agreements

SECTION 6.1

Site Plan and Drainage Plan



FLOGARD+PLUS® FILTER
-INSTALLED INTO CATCH BASIN-

U.S. PATENT # 6,00,023 & 6,877,029

NOTES:

1. FloGard®+Plus (frame mount) high capacity catch basin inserts are available in most sizes and styles (see specifier chart, sheet 2 of 2). Refer to the FloGard®+Plus (wall mount) insert for devices to fit non-standard, or combination style catch basins.
2. Filter insert shall have both an "initial" filtering bypass and "ultimate" high flow bypass feature.
3. Filter support frame shall be constructed from stainless steel Type 304.
4. Allow a minimum of 2.0 feet, of clearance between the bottom of the grate and top of outlet pipe(s), or refer to the FloGard® insert for "shallow" installations.
5. Filter medium shall be *Fossil Rock ™*, installed and maintained in accordance with manufacturer specifications .
6. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
7. Filtered flow rate includes a safety factor of two.

TITLE FloGard +PLUS
CATCH BASIN FILTER INSERT
(Flat Grated Inlet Style)

KriStar Enterprises, Inc.

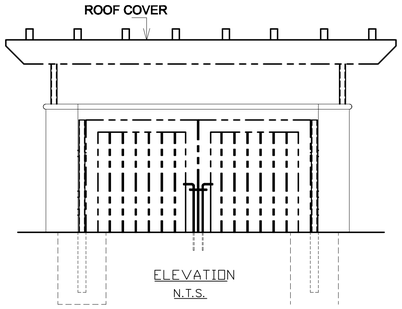
DRAWING NO.	REV	ECO	DATE
FGP-0001	E	0098 JPR 12/7/11	JPR 11/3/06

SHEET 1 OF 2

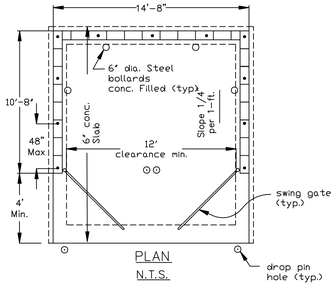
SPECIFIER CHART

MODEL NO. / STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columns is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-	
	INLET ID Inside Dimension (Inch x Inch)	GRATE OD Outside Dimension (Inch x Inch)	TOTAL BYPASS CAPACITY (cu. ft. / sec.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-36F	36 X 36	36 X 40	6.1	4.6	2.4
FGP-18F	18 X 18	18 X 24	4.7	0.8	0.70

⑧ CATCH BASIN FILTER INSERT
N.T.S. MP-52

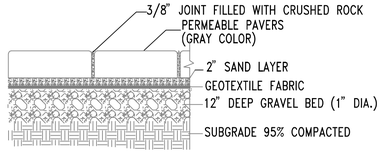


⑥ TRASH ENCLOSURE, SD-32
NOT TO SCALE





⑦ STORM DRAIN INLET STENCIL
N.T.S. SD-13



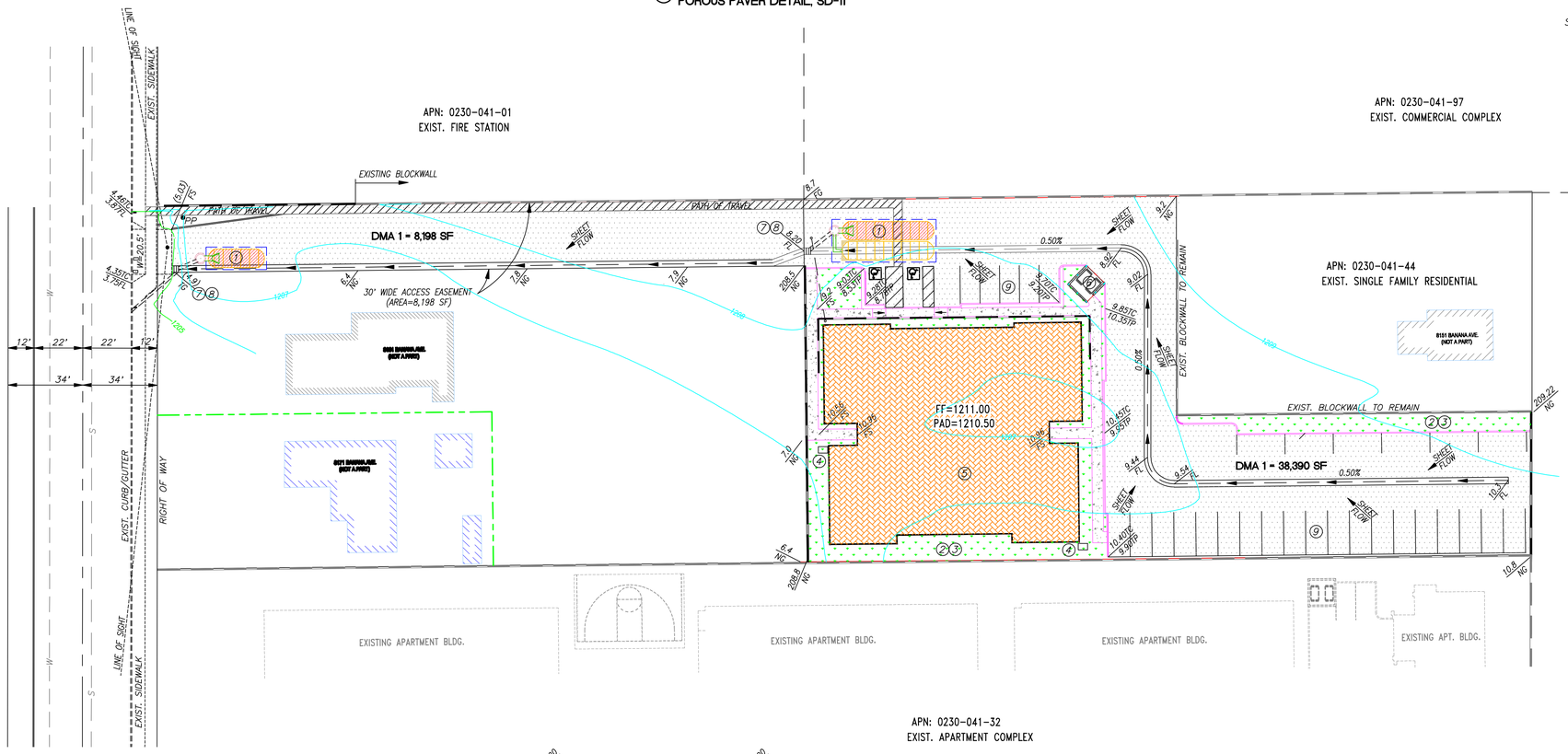
④ ROOF RUNOFF SPLASH PAD (2'X3')
POROUS PAVER DETAIL, SD-11

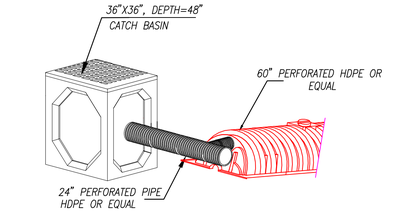
BMP NOTES

1. TC-11, UNDERGROUND INFILTRATION BASIN (STORMTECH)
2. SD-12, EFFICIENT IRRIGATION
3. SD-10, SITE DESIGN AND LANDSCAPE PLANNING
4. SD-11, SPASH PAD, ROOF RUNOFF CONTROL
5. SD-21, ALTERNATIVE BUILDING MATERIALS
6. SD-32, TRASH STORAGE AREA
7. SD-13, STORM DRAIN SIGNAGE
8. MP-52, CATCH BASIN INSERT FILTER
9. SC-43, PARKING/STORAGE AREA MAINTENANCE
10. SC-60, HOUSEKEEPING PRACTICES
11. EDUCATION OF PROPERTY OWNERS, TENANTS AND OCCUPANTS
12. ACTIVITY RESTRICTIONS
13. LOCAL WATER QUALITY ORDINANCE
14. UNIFORM FIRE CODE IMPLEMENTATION
15. LITTER/DEBRIS CONTROL PROGRAM
16. EMPLOYEE TRAINING
17. COMPLY WITH ALL OTHER APPLICABLE NPDES PERMITS

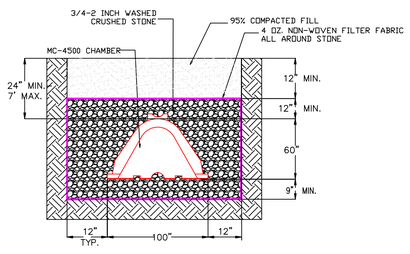


SCALE: 1"=30'

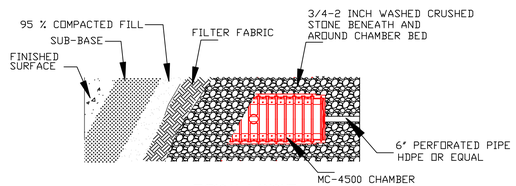




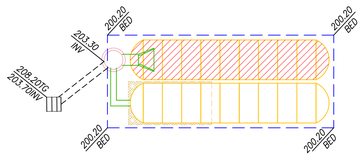
TYPICAL CONNECTION
N.T.S.

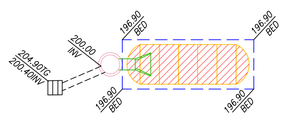


TYPICAL ELEVATION
N.T.S.



TYPICAL LAYOUT
N.T.S.





DRAINAGE MANAGEMENT AREA SUMMARY

DMA	DMA AREA (SF)	DCV (CF)	V PROVIDED (CF)
1	37,895	3,432 CF	3,733 CF
2	8,198	988 CF	1,137 CF
TOTAL	46,093	4,420 CF	4,870 CF

= ASPHALT PAVING
= LANDSCAPE AREA
= APARTMENT BLDG.
= PCC PAVING

PROPERTY AREA = 38,390 S.F.
ACCESS EASEMENT AREA = 8,198 S.F.

REGISTERED PROFESSIONAL ENGINEER HENRY C. POOTE No. 37037 Exp. 6-30-22 CIVIL STATE OF CALIFORNIA

HP ENGINEERING, INC.
CIVIL ENGINEERING ◦ LAND SURVEYING
1465 CRESTVIEW ROAD, REDLANDS, CA. 92374
Tel. (909) 335-8239 Fax (909) 335-9940

SCALE: 1"=20'
DATE: FEB. 23, 2022

BENCH MARK:
DESCRIPTION: 2" BRASS CAP ON TOP OF CURB AT THE EASTERLY END OF OF THE CURB RET. , N.E. COR. SIERRA AVE. AND MILLER AVE.
ELEVATION: 1364.32

WQMP SITE MAP
APN: 0230-041-60
8155 BANANA AVENUE

FOR: S.A. GOLDEN INVESTMENTS

SECTION 6.2

Electronic Data Submittal

(At Final Acceptance)

SECTION 6.3

POST CONSTRUCTION

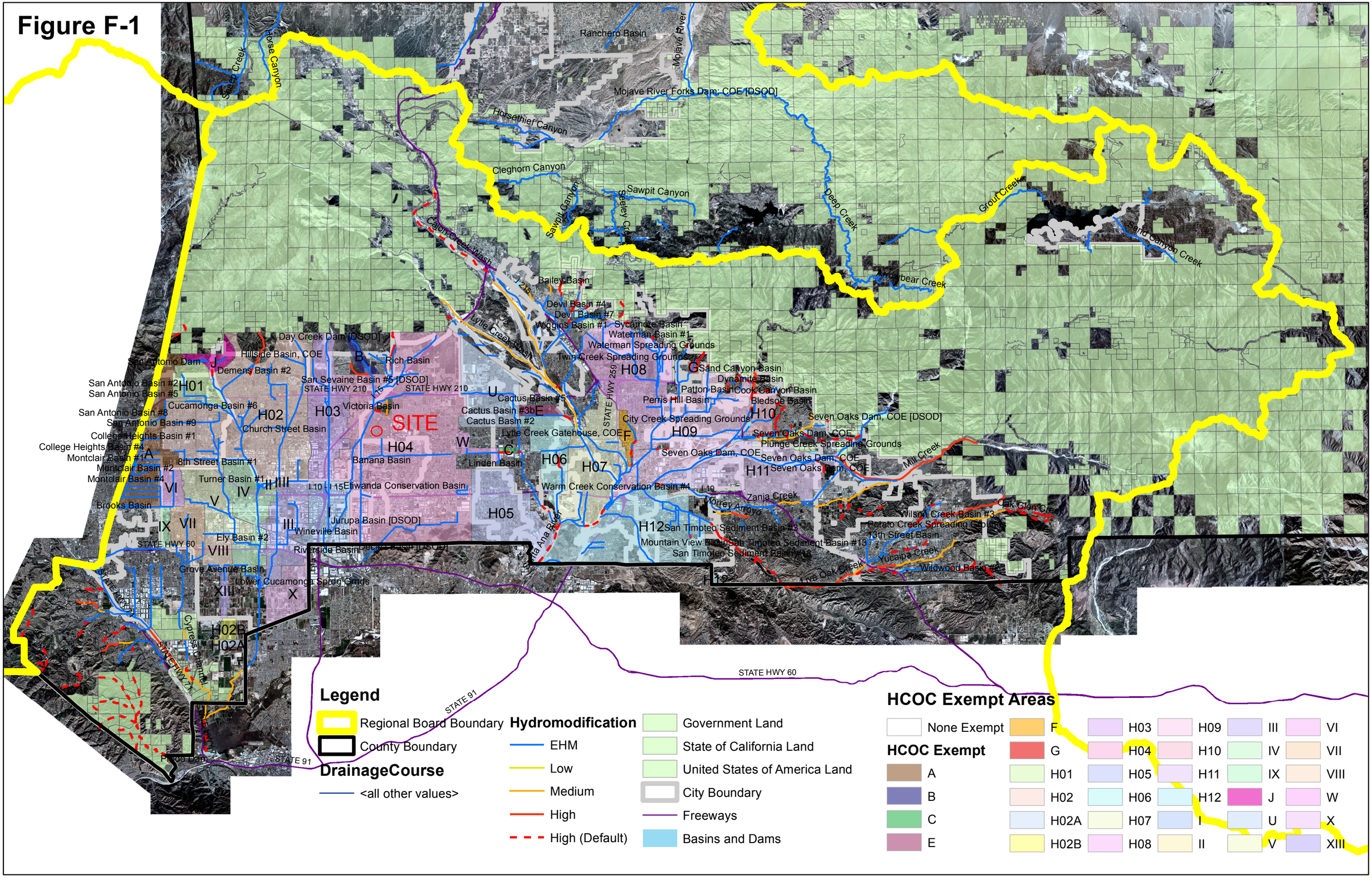
- **Memorandum of Agreement**

(TO BE SUBMIITED AT FINAL WQMP)

SECTION 6.4

- **Supporting Documents**
- **Educational Materials**
- **BMP Facts**

Figure F-1



Legend

- Regional Board Boundary
- County Boundary

DrainageCourse

- <all other values>

Hydromodification

- EHM
- Low
- Medium
- High
- High (Default)

- Government Land
- State of California Land
- United States of America Land
- City Boundary
- Freeways
- Basins and Dams

HCOC Exempt Areas

- None Exempt

HCOC Exempt

- A
- B
- C
- E
- F
- G
- H01
- H02
- H02A
- H02B
- H03
- H04
- H05
- H06
- H07
- H08
- H09
- H10
- H11
- H12
- I
- II
- III
- IV
- V
- VI
- VII
- VIII
- IX
- J
- U
- W
- X
- XIII

User Inputs

Chamber Model:	MC-4500
Outlet Control Structure:	No
Project Name:	BANANA
Engineer:	Henry Poquiz
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	3432 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	24 in.
Design Constraint Dimensions:	(24 ft. x 60 ft.)

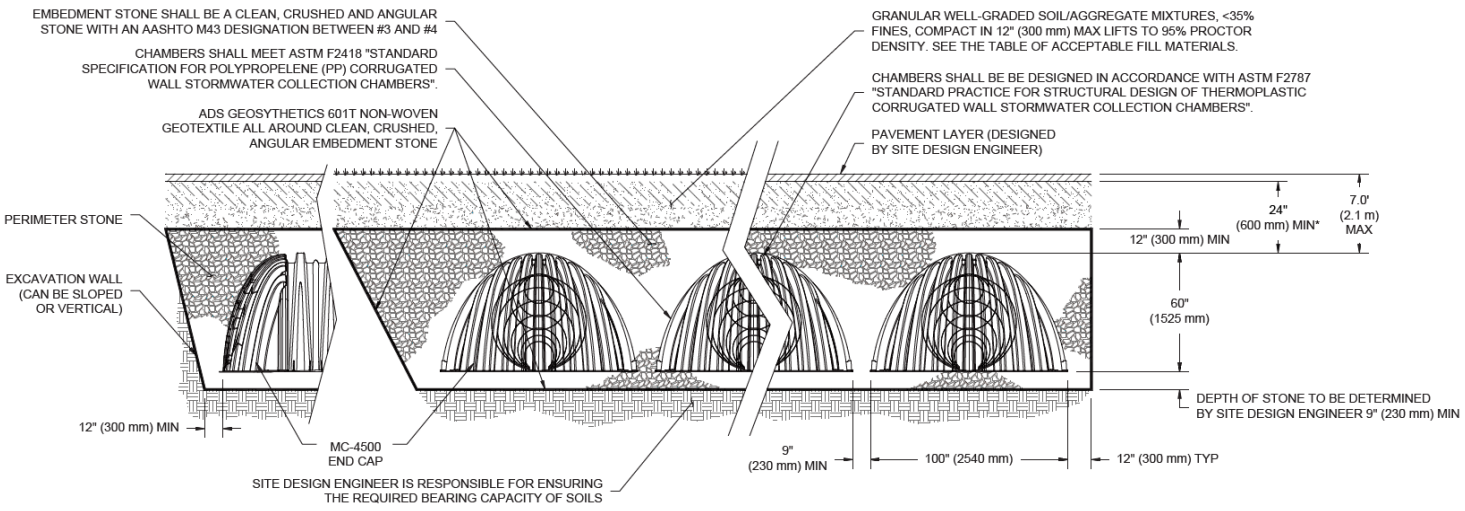
Results

System Volume and Bed Size

Installed Storage Volume:	3733.11 cubic ft.
Storage Volume Per Chamber:	106.50 cubic ft.
Number Of Chambers Required:	18
Number Of End Caps Required:	4
Chamber Rows:	2
Maximum Length:	47.46 ft.
Maximum Width:	19.42 ft.
Approx. Bed Size Required:	921.52 square ft.

System Components

Amount Of Stone Required:	153.53 cubic yards
Volume Of Excavation (Not Including Fill):	230.38 cubic yards
Total Non-woven Geotextile Required:	366.12 square yards
Woven Geotextile Required (excluding Isolator Row):	21.23 square yards
Woven Geotextile Required (Isolator Row):	97.28 square yards
Total Woven Geotextile Required:	118.51 square yards



User Inputs

Chamber Model:	MC-4500
Outlet Control Structure:	No
Project Name:	BANANA 2
Engineer:	Henry Poquiz
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	988 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	24 in.
Design Constraint Dimensions:	(20 ft. x 60 ft.)

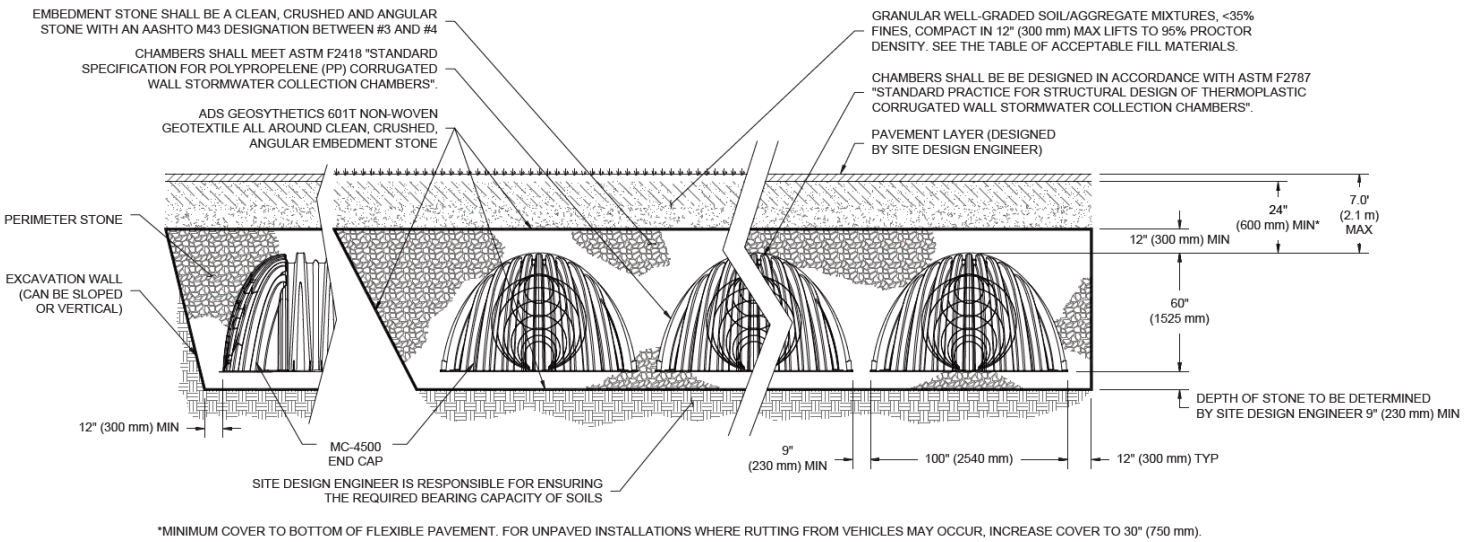
Results

System Volume and Bed Size

Installed Storage Volume:	1136.71 cubic ft.
Storage Volume Per Chamber:	106.50 cubic ft.
Number Of Chambers Required:	5
Number Of End Caps Required:	2
Chamber Rows:	1
Maximum Length:	27.59 ft.
Maximum Width:	10.33 ft.
Approx. Bed Size Required:	285.11 square ft.

System Components

Amount Of Stone Required:	48.63 cubic yards
Volume Of Excavation (Not Including Fill):	71.28 cubic yards
Total Non-woven Geotextile Required:	144.30 square yards
Woven Geotextile Required (excluding Isolator Row):	0 square yards
Woven Geotextile Required (Isolator Row):	59.71 square yards
Total Woven Geotextile Required:	59.71 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

Worksheet H: Factor of Safety and Design Infiltration Rate Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	1.0	0.25
		Predominant soil texture	0.25	1.0	0.25
		Site soil variability	0.25	1.0	0.25
		Depth to groundwater / impervious layer	0.25	1.0	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			1.0
B	Design	Tributary area size	0.25	1.3	0.33
		Level of pretreatment/ expected sediment loads	0.25	2.00	0.50
		Redundancy	0.25	2.00	0.50
		Compaction during construction	0.25	1.00	0.25
		Design Safety Factor, $S_B = \Sigma p$			1.58
Combined Safety Factor, $S_{TOT} = S_A + S_B$					2.58
Measured Infiltration Rate, inch/hr, K_M (corrected for test-specific bias)					7.00
Design Infiltration Rate, in/hr, $K_{DESIGN} = S_{TOT} / K_M$					2.71

Supporting Data

Briefly describe infiltration test and provide reference to test forms:

Attached is Infiltration Testing Report

Water Height =60”

Design Infiltration Rate = 2.71”/hour

Drawdown = 60/2.33= 22 hours < 48.00 hours o.k.

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

Project Res. Units
February 25, 2022

Sampson and Associates
CONSULTING ENGINEERS
Soil, ***Geology,*** *Environmental*

TO: SA Golden Investment Inc.
6226 Cooper Avenue
Fontana, California 92336

SUBJECT: Infiltration Evaluation,, 24 Units Residential Units, Located at 8155 Banana Avenue, City Of Fontana, County of San-Bernardino, California.

INTRODUCTION:

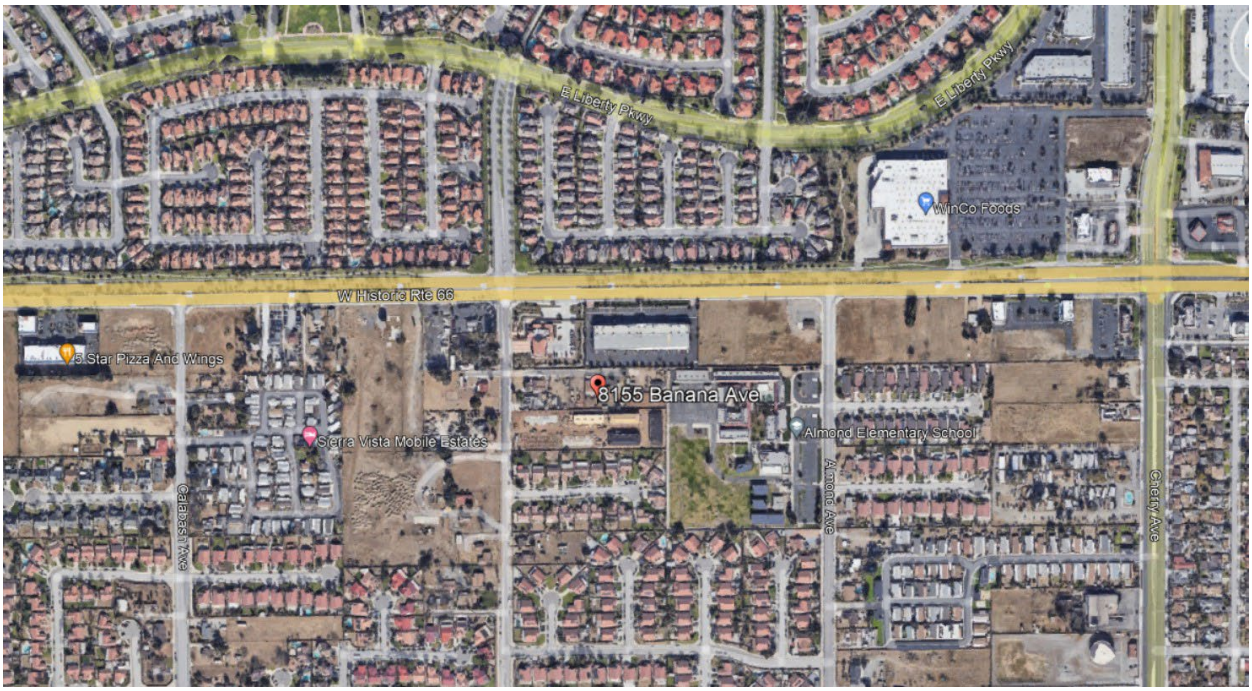
We sincerely appreciate the opportunity to be of service to you on this project. The primary objective of this study was to evaluate an infiltration rate of the onsite subsurface soils for the design of the infiltration drainage system to be constructed at designated area for the above subject site.

If you have any questions regarding this report please do not hesitate to contact this office at your convenience. We appreciate the opportunity to be of service on this project.

Respectfully Submitted;
Sampson and Associates

M. E. Samiee MS, Calif RCE 46172
MS/db
Distribution: ddressee





Index Map

Of

8155 Banana Avenue
City Of Fontana
County Of San Bernardino, California

ACCOMPANYING MAPS & ILLUSTRATIONS,:

Index Map - Page 2
Plate 1 - Site Plan and Approximate Location of Infiltration Tests
Appendix "A" - Field Test Logs

SITE LOCATION, PROPOSED DEVELOPMENT, and CONDITION:

The site area is approximately 38000 square feet and the proposed development consists of (24) new apartment units each with associated open lawn areas and parking lots located 8155 Banana Avenue in the City of Fontana County Of San Bernardino, California.
The subject site is flat regular shape lot bounded by Banana Avenue on east and by multi residential on north, south, and west. Access to the site is available from Banana Avenue which is paved.

Project is covered with minor dry annual weeds, bushes, and minor scattered trash.

SUBSURFACE CONDITIONS:

Soil materials encountered in our trenches consisted of top-soils over alluvium material to a depth of approximately 12 inches below surface. Upper 2 feet consists of dry, loose, silty sand with gravels and some rocks with roots and minor trash on surface. The soils below 2 feet is loose and dry silty sand, sandy silt with minor roots to depth of 4 feet below grade. The soils encountered below approximately 4 feet grade consists of dense brown silty sand with rocks, cobbles, and boulders.

GROUND WATER:

No ground water or any perched ground water was observed at our test locations onsite during the course of our investigation.

INFILTRATION TEST:

Shallow percolation tests were performed at the approximate locations of the proposed infiltration drainage system. Two 8-inch diameter boring holes were drilled to a depth of 3 feet as shown on grading plan and test location (Plate 1). The bottom elevation of the test hole is corresponded to the bottom elevation of the proposed infiltration system. The holes were filled with water and left for presoaking period.

TEST PROCEDURE:

Once the minimum required numbers of testing intervals were determined, water was added. The time and the drop in water level were recorded until the stabilized rate of drop was obtained. The average drop of the stabilized rate over the last readings is the pre-adjusted percolation rate at the test location. Logs of field data are presented in Appendix "A" of this report.

The design engineer must use the factor of safety with the average measured infiltration rate to achieve the design value as needed.

RECOMMENDATIONS:

Bases on the result of the tests, the site is suitable for the storm-water infiltration system from a geotechnical viewpoint. Recommendations are provided as follows:

1- The on-site storm-water infiltration drainage system may be designed utilizing the slowest conservative infiltration rate of 7.00 inches per hour after the rate of percolation was generally stabilized.

2- The potential for creating perched water conditions that may adversely affect the proposed and existing structures is nil due to the onsite permeable soils.

3- It must be noted that over the lifetime of the disposal area the infiltration rate may be affected by sediment build ups and biological activities as well as local variation in soils subsurface condition.

LIMITATONS:

Based on our visual observation it appears that the soils condition appears to be the same throughout the site however; soils material may vary in character between excavations and natural outcrops or conditions exposed during construction. Should soil conditions be encountered during construction that appear different this office must be notified immediately so that our recommendations may be re-evaluated.

Project Res. Units
February 25, 2022

A P P E N D I X “A”

Approximate Location Of Infiltration Test

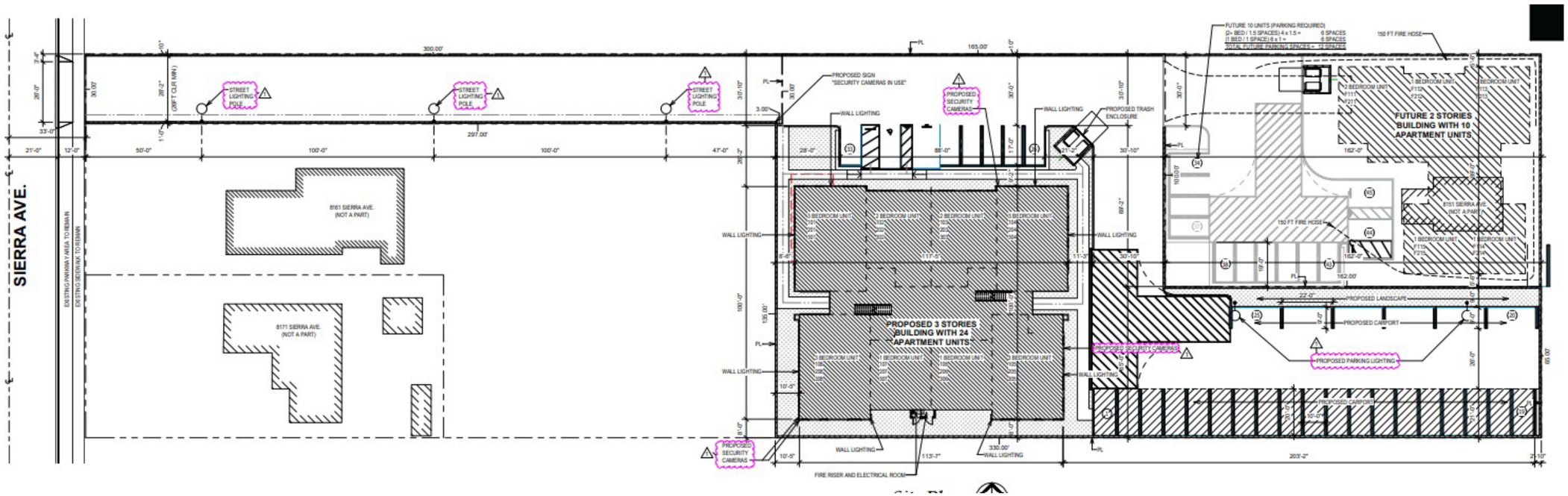


Plate-1 Approximate Location Of Infiltration Test Map

8155 Banana Avenue

Project Res. Units
February 25, 2022

PERCOLATION TESTING FIELD LOG

Boring/Excavation Percolation Testing Field Log

Date: 02/19/2022

Project Location 8155 banana Ave.
Earth Description: Silty Gravelly Sand
Tested by: TB/MS

Liquid Description: Tap Water
Measurement Method: Measuring Tape
Time Interval Standard:
Start Date for Pre-Soak: 02/19/2022
Start Time for Standard: 11:00

Boring/test Number: B-1
Diameter of Boring: 8-inch
Depth of Boring: 3' below grade
Depth to Invert of BMP's: 3' below grade
Depth to Water Table: >50'
Depth to initial water Depth(d1): 36"

Water Remaining In Boring (Y/N): Yes
Standard Time Interval Between Readings: 30 Minutes

Reading Number	Time Start/End (hh:mm)	Elapsed Time △ Time (mins)	Water Drop During Standard Time Interval △ D (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	11:00 11:30	30	6.75	13.50	Medium to Coarse, Silty Gravelly Sand
2	12:00 12:30	30	5.75	11.50	
3	13:00 13:30	30	5.5	11.0	
4	14:00 14:30	30	4.25	8.50	
5	15:00 15:305	30	3.50	7.00	
			Infiltration Rate	7.00 In/Hr.	Use 7.0

Project Location: 8155 Banana Ave.	**Project No:** Res. Units	**PLATE-2**

Project Res. Units
February 25, 2022

PERCOLATION TESTING FIELD LOG

Boring/Excavation Percolation Testing Field Log Date: 02/19/2022

Project Location 8155 banana Ave.
Earth Description: Silty Gravelly Sand
Tested by: TB/MS

Liquid Description: Tap Water
Measurement Method: Measuring Tape
Time Interval Standard:
Start Date for Pre-Soak: 02/19/2022
Start Time for Standard: 11:20

Boring/test Number: B-2
Diameter of Boring: 8-inch
Depth of Boring: 3' below grade
Depth to Invert of BMP's: 3' below grade
Depth to Water Table: >50'
Depth to initial water Depth(d1): 36"

Water Remaining In Boring (Y/N): Yes
Standard Time Interval Between Readings: 30 Minutes

Reading Number	Time Start/End (hh:mm)	Elapsed Time △ Time (mins)	Water Drop During Standard Time Interval △ D (inches)	Percolation Rate for Reading (in/hr)	Soil Description/Notes/Comments
1	11:20 11:50	30	4.75	8.50	Medium to Coarse, Silty Gravelly Sand
2	12:55 13:25	30	4.50	9.00	
3	13:30 14:00	30	4.50	9.00	
4	14:05 14:35	30	4.25	8.50	
5	14:40 15:10	30	3.75	7.50	
6	15:15 15:45	30	3.75	7.50	
			Infiltration Rate	7.50 In/Hr.	Use 7.50 in/hr

Project Location: 8155 Banana Ave	**Project No:** Res. Units	**PLATE-3**

EDUCATIONAL MATERIALS

ABOUT

What is Stormwater Pollution?

Stormwater is urban runoff water that has picked up pollutants as it flows through the storm drain system–a network of channels, gutters and pipes that collect runoff from city streets, neighborhoods, farms, construction sites and parking lots–and empties directly into local waterways.

Unlike sewage, which goes to treatment plants to remove toxins, urban runoff flows untreated through the storm drain system and directly into our local water bodies.

Anything thrown, swept or poured into the street, gutter or a catch basin–the curbside openings that lead into the storm drain system–can flow into our channels, rivers and eventually to the ocean.

This includes a list of pollutants like:

- Trash
- Pet Waste
- Cigarette Butts
- Motor Oil
- Anti Freeze
- Pesticides and Fertilizers
- Paint

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Join 8,000+ neighbors & receive e-Updates.

FREE DOG WASTE BAG CANISTERS

Pick up after your pet to prevent pollution.



DISPOSE OF TOXIC ITEMS

Get directions and hours for local household hazardous waste collection centers.

> *Unlike sewage, which goes to treatment plants to remove toxins, urban runoff flows untreated through the storm drain system and directly into our local water bodies.*

+ **Health Effects of Stormwater Pollution**
+ **Environmental Effects of Stormwater Pollution**
+ **Neighborhood Effects of Stormwater Pollution**
+ **How To Prevent Stormwater Pollution**

SEARCH

Search ...

SAN BERNARDINO COUNTY POLLUTION PREVENTION TIPS

- Pick up after your dog every time
- Drop off your toxic items at a collection facility
- Recycle your used oil and filters

PERMITTEE RESOURCES

- Directory
- Outreach Materials
- Permittee Resources

HOW YOU CAN HELP

- Drop off your toxic items
- Report a pollution violation
- Learn about stormwater pollution
- Read the WQMP

REGULATORY INFORMATION

The Federal Water Pollution Control Act prohibits the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by a National Pollutant Discharge Elimination System (NPDES) permit.

Industrial, Manufacturing or Transportation

Industrial facilities and construction sites are regulated by the Regional Water Quality Control Board (RWQCB) and State Water Resources Control Board (SWRCB), through general storm water permits. Most businesses that store materials or process operations outdoors are required to obtain coverage under the SWRCB's General Industrial Activities Stormwater Permit. These businesses are required to comply with the General Industrial Activities Stormwater Permit.

Construction

If your business conducts construction activities, including clearing, grading, stockpiling or excavation that results in soil disturbances of at least one acre, you are subject to the State Water Resources Control Board's General Construction Activities Stormwater Permit.

Government

Cities and counties are regulated through permits issued by the Regional Boards. Since 1990, operators of large storm drain systems such as San Bernardino County's have been required to:

- Develop a storm water management program designed to prevent harmful pollutants from being dumped or washed by storm water runoff, into the storm water system, then discharged into local water bodies; and

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FREE DOG WASTE BAG CANISTERS

Pick up after your pet to prevent pollution.

- Obtain a National Pollutant Discharge Elimination System (NPDES) permit.

Rules and Regulations

The 1987 passage of the Water Quality Act established NPDES permit requirements for discharges of storm water. The NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

To download copies of the Basin Plan, NPDES permit, Water Quality Management Plan, and other important documents, visit our Reference Materials section.

More Information

The NPDES permit is determined by which Regional Board oversees any given area. In the case of San Bernardino County, it is the Santa Ana Regional Water Quality Control Board. This board is responsible for overseeing the County's MS4 NPDES permit and ensuring compliance with the discharge of pollutants into receiving water bodies.

DISPOSE OF TOXIC ITEMS

Get directions and hours for local household hazardous waste collection centers.

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POLLUTION PREVENTION TIPS

Simple best management practices (BMPs) can prevent stormwater pollution and prevention is good business! It means clean water, clean neighborhoods and it shows your customers that you care about your community.

BMPs

- + **Evaluate Your Actions**
- + **Don't Trash It**
- + **Choose Non-Toxic**
- + **Spread the Word**

DOWNLOAD INDUSTRY FACT SHEETS

California Materials Exchange

CalRecycle's materials exchange portal contains effective online resources for exchanging materials. By reusing materials, we conserve energy, resources, and landfill space, while reducing disposal, green house gas emissions, and purchasing costs.

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Join 8,000+ neighbors & receive e-Updates.

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EDUCATIONAL/INFORMATIONAL MATERIALS FOR OWNERS/OCCUPANTS/TENANTS

1. GOOD HOUSEKEEPING – THIS INCLUDES REGULAR MAINTAINING AND MOWING OF THE GRASS COVERED LAWN, CLEARING THE DESIGNED FLOW LINES, CLEANING OF THE ROOF RAIN GUTTERS, DISPENSING OF TRASH INTO THE CITY PROVIDED COVERED TRASH CONTAINER.

2. YARD IMPROVEMENT - DURING YARD IMPROVEMENT AND/OR PROPERTY IMPROVEMENT AND CONCRETE WORK, PROVIDE SAND BAGS AROUND DISTURBED DIRT AREAS TO AVOID EROSION OF LOOSE DIRT INTO THE STORM DRAIN, DO NOT CLEAN CONCRETE EQUIPMENT AT STREET GUTTERS OR AT CATCH BASIN INLETS.

3. BUILDING PAINTING – EMPTY PAINT CANS, USED PAINT BRUSH AND ROLLERS SHALL BE DISCARDED AT A CITY DESIGNATED OR APPROVED COLLECTION AREA.

4. LANDSCAPING – ALL OPEN AREAS SHALL BE LANDSCAPE AND MAINTAINED TO MAXIMIZE NATURAL WATER STORAGE AND INFILTRATION OPPORTUNITIES. PLANTS SHALL BE GROUPED WITH SIMILAR WATER REQUIREMENTS IN ORDER TO REDUCE EXCESS IRRIGATION RUNOFF AND PROMOTE SURFACE INFILTRATION. SLOPES SHALL BE LANDSCAPE WITH DEEP-ROOTED DROUGHT TOLERANT PLANT SPECIES SELECTED FOR EROSION CONTROL, SATISFACTORY TO THE CITY.

5. IRRIGATION – BUILDING OWNERS, OCCUPANTS, AND TENANTS SHALL INSTALL AND MAINTAIN IRRIGATION TIMERS AND RAIN-TRIGGERED SHUTOFF DEVICES TO ELIMINATE OR REDUCE IRRIGATION DURING AND IMMEDIATELY AFTER PRECIPITATION.

6. ACTIVITY RESTRICTIONS – WHEN USING PESTICIDES, CONTACT LICENSED PESTICIDE APPLICATOR TO DO THE APPLICATION. CAR WASHING AND MAINTENANCE ONSITE ARE NOT ALLOWED.

7. EMPLOYEE TRAINING/EDUCATION – EVERY NEW EMPLOYEE WILL BE GIVEN ORIENTATION AND TRANING REGARDING GENERAL AND GOOD HOUSEKEEPING PRACTICES AT THE START OF EMPLOYMENT. EXISTING EMPLOYEES WIIL BE REQUIRED TO ATTEND ORIENTATION EVERY FOUR MONTHS AND/OR AT THE START OF THE POLICY.

8. SWEEPING PARKING LOTS – THE PARKING LOTS AND DRIVE AISLES WILL BE SWEPT AT LEAST TWICE ANNUALLY, PRIOR TO STORM SEASON AND IN THE LATE SUMME OR EARLY FALL, TO REMOVE ANY ACCUMULATION OF TRASH, DEBRIS,, DUST, SEDIMENT AND GARDEN WASTE.

9. FILTRATION BASIN AND VEGETATED SWALE – FILTRATION BASIN AND VEGETATED SWALE WILL BE MAINTAINED REGULARLY AS PART OF THE LANDSCAPING AREA. REMOVE ANY ACCUMULATED TRASH AND DEBRIS INSIDE THE BASIN AT THE BEGINNING AND END OF WET SEASON

BMP FACT SHEETS

Housekeeping Practices SC-60

Description

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. Related information is provided in BMP fact sheets SC-11 Spill Prevention, Control & Cleanup and SC-34 Waste Handling & Disposal.

Approach

Pollution Prevention

- Purchase only the amount of material that will be needed for foreseeable use. In most cases this will result in cost savings in both purchasing and disposal. See SC-61 Safer Alternative Products for additional information.
- Be aware of new products that may do the same job with less environmental risk and for less or the equivalent cost. Total cost must be used here; this includes purchase price, transportation costs, storage costs, use related costs, clean up costs and disposal costs.

Suggested Protocols

General

- Keep work sites clean and orderly. Remove debris in a timely fashion. Sweep the area.
- Dispose of wash water, sweepings, and sediments, properly.
- Recycle or dispose of fluids properly.
- Establish a daily checklist of office, yard and plant areas to confirm cleanliness and adherence to proper storage and security. Specific employees should be assigned specific inspection responsibilities and given the authority to remedy any problems found.
- Post waste disposal charts in appropriate locations detailing for each waste its hazardous nature (poison, corrosive, flammable), prohibitions on its disposal (dumpster, drain, sewer) and the recommended disposal method (recycle, sewer, burn, storage, landfill).
- Summarize the chosen BMPs applicable to your operation and post them in appropriate conspicuous places.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

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- Require a signed checklist from every user of any hazardous material detailing amount taken, amount used, amount returned and disposal of spent material.
- Do a before audit of your site to establish baseline conditions and regular subsequent audits to note any changes and whether conditions are improving or deteriorating.
- Keep records of water, air and solid waste quantities and quality tests and their disposition.
- Maintain a mass balance of incoming, outgoing and on hand materials so you know when there are unknown losses that need to be tracked down and accounted for.
- Use and reward employee suggestions related to BMPs, hazards, pollution reduction, work place safety, cost reduction, alternative materials and procedures, recycling and disposal.
- Have, and review regularly, a contingency plan for spills, leaks, weather extremes etc. Make sure all employees know about it and what their role is so that it comes into force automatically.

Training

- Train all employees, management, office, yard, manufacturing, field and clerical in BMPs and pollution prevention and make them accountable.
- Train municipal employees who handle potentially harmful materials in good housekeeping practices.
- Train personnel who use pesticides in the proper use of the pesticides. The California Department of Pesticide Regulation license pesticide dealers, certify pesticide applicators and conduct onsite inspections.
- Train employees and contractors in proper techniques for spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and Countermeasure (SPCC) plant up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- There are no major limitations to this best management practice.
- There are no regulatory requirements to this BMP. Existing regulations already require municipalities to properly store, use, and dispose of hazardous materials

Requirements

Costs

- Minimal cost associated with this BMP. Implementation of good housekeeping practices may result in cost savings as these procedures may reduce the need for more costly BMPs.

Maintenance

- Ongoing maintenance required to keep a clean site. Level of effort is a function of site size and type of activities.

Supplemental Information

Further Detail of the BMP

- The California Integrated Waste Management Board's Recycling Hotline, 1-800-553-2962, provides information on household hazardous waste collection programs and facilities.

Examples

There are a number of communities with effective programs. The most pro-active include Santa Clara County and the City of Palo Alto, the City and County of San Francisco, and the Municipality of Metropolitan Seattle (Metro).

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000.
http://www.nalms.org/bclss/bmphome.html#bmp

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities, Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, Revised by California Coastal Commission, February 2002.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Mateo STOPPP - (http://stoppp.tripod.com/bmp.html)

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11



Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

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barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

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Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Alternative Building Materials SD-21



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Source Control
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutant
- Collect and Convey

Description

Alternative building materials are selected instead of conventional materials for new construction and renovation. These materials reduce potential sources of pollutants in stormwater runoff by eliminating compounds that can leach into runoff, reducing the need for pesticide application, reducing the need for painting and other maintenance, or by reducing the volume of runoff.

Approach

Alternative building materials are available for use as lumber for decking, roofing materials, home siding, and paving for driveways, decks, and sidewalks.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Decking

One of the most common materials for construction of decks and other outdoor construction has traditionally been pressure treated wood, which is now being phased out. The standard treatment is called CCA, for chromated copper arsenate. The key ingredients are arsenic (which kills termites, carpenter ants and other insects), copper (which kills the fungi that cause wood to rot) and chromium (which reacts with the other ingredients to bind them to the wood). The amount of arsenic is far from trivial. A deck just 8 feet x 10 feet contains more than 1 1/3 pounds of this highly potent poison. Replacement materials include a new type of pressure treated wood, plastic and composite lumber.

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There are currently over 20 products in the market consisting of plastic or plastic-wood composites. Plastic lumber is made from 100% recycled plastic, # 2 HDPE and polyethylene plastic milk jugs and soap bottles. Plastic-wood composites are a combination of plastic and wood fibers or sawdust. These materials are a long lasting exterior weather, insect, and chemical resistant wood lumber replacement for non structural applications. Use it for decks, docks, raised garden beds and planter boxes, pallets, hand railings, outdoor furniture, animal pens, boat decks, etc.

New pressure treated wood uses a much safer recipe, ACQ, which stands for ammoniacal copper quartenary. It contains no arsenic and no chromium. Yet the American Wood Preservers Association has found it to be just as effective as the standard formula. ACQ is common in Japan and Europe.

Roofing

Several studies have indicated that metal used as roofing material, flashing, or gutters can leach metals into the environment. The leaching occurs because rainfall is slightly acidic and slowly dissolved the exposed metals. Common traditional applications include copper sheathing and galvanized (zinc) gutters.

Coated metal products are available for both roofing and gutter applications. These products eliminate contact of bare metal with rainfall, eliminating one source of metals in runoff. There are also roofing materials made of recycled rubber and plastic that resemble traditional materials.

A less traditional approach is the use of green roofs. These roofs are not just green, they're alive. Planted with grasses and succulents, low- profile green roofs reduce the urban heat island effect, stormwater runoff, and cooling costs, while providing wildlife habitat and a connection to nature for building occupants. These roofs are widely used on industrial facilities in Europe and have been established as experimental installations in several locations in the US, including Portland, Oregon. Their feasibility is questionable in areas of California with prolonged, dry, hot weather.

Paved Areas

Traditionally, concrete is used for construction of patios, sidewalks, and driveways. Although it is non-toxic, these paved areas reduce stormwater infiltration and increase the volume and rate of runoff. This increase in the amount of runoff is the leading cause of stream channel degradation in urban areas.

There are a number of alternative materials that can be used in these applications, including porous concrete and asphalt, modular blocks, and crushed granite. These materials, especially modular paving blocks, are widely available and a well established method to reduce stormwater runoff.

Building Siding

Wood siding is commonly used on the exterior of residential construction. This material weathers fairly rapidly and requires repeated painting to prevent rotting. Alternative “new” products for this application include cement-fiber and vinyl. Cement-fiber siding is a masonry product made from Portland cement, sand, and cellulose and will not burn, cup, swell, or shrink.

Pesticide Reduction
A common use of powerful pesticides is for the control of termites. Chlordane was used for many years for this purpose and is now found in urban streams and lakes nationwide. There are a number of physical barriers that can be installed during construction to help reduce the use of pesticides.

Sand barriers for subterranean termites are a physical deterrent because the termites cannot tunnel through it. Sand barriers can be applied in crawl spaces under pier and beam foundations, under slab foundations, and between the foundation and concrete porches, terraces, patios and steps. Other possible locations include under fence posts, underground electrical cables, water and gas lines, telephone and electrical poles, inside hollow tile cells and against retaining walls.

Metal termite shields are physical barriers to termites which prevent them from building invisible tunnels. In reality, metal shields function as a helpful termite detection device, forcing them to build tunnels on the outside of the shields which are easily seen. Metal termite shields also help prevent dampness from wicking to adjoining wood members which can result in rot, thus making the material more attractive to termites and other pests. Metal flashing and metal plates can also be used as a barrier between piers and beams of structures such as decks, which are particularly vulnerable to termite attack.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of "redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

There are no good, independent, comprehensive sources of information on alternative building materials for use in minimizing the impacts of stormwater runoff. Most websites or other references to "green" or "alternative" building materials focus on indoor applications, such as formaldehyde free plywood and low VOC paints, carpets, and pads. Some supplemental information on alternative materials is available from the manufacturers.

Fires are a source of concern in many areas of California. Information on the flammability of alternative decking materials is available from the University of California Forest Product Laboratory (UCFPL) website at: http://www.ucfpl.ucop.edu/WDDeckIntro.htm

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Drain Inserts MP-52

Description

Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are one box; that is, the setting area and filtration through media occur in the same box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

California Experience

The number of installations is unknown but likely exceeds a thousand. Some users have reported that these systems require considerable maintenance to prevent plugging and bypass.

Advantages

- Does not require additional space as inserts as the drain inlets are already a component of the standard drainage systems.
- Easy access for inspection and maintenance.
- As there is no standing water, there is little concern for mosquito breeding.
- A relatively inexpensive retrofit option.

Limitations

Performance is likely significantly less than treatment systems that are located at the end of the drainage system such as ponds and vaults. Usually not suitable for large areas or areas with trash or leaves than can plug the insert.

Design and Sizing Guidelines

Refer to manufacturer's guidelines. Drain inserts come any many configurations but can be placed into three general groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are

Design Considerations

- Use with other BMPs
- Fit and Seal Capacity within Inlet

Targeted Constituents

- ✓ Sediment
- ✓ Nutrients
- ✓ Trash
- ✓ Metals
- Bacteria
- ✓ Oil and Grease
- ✓ Organics

Removal Effectiveness

See New Development and Redevelopment Handbook-Section 5.

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one box; that is, the setting area and filtration through media occurs in the same box. One manufacturer has a double-box. Stormwater enters the first box where setting occurs. The stormwater flows into the second box where the filter media is located. Some products consist of one or more trays or mesh grates. The trays can hold different types of media. Filtration media vary with the manufacturer: types include polypropylene, porous polymer, treated cellulose, and activated carbon.

Construction/Inspection Considerations

Be certain that installation is done in a manner that makes certain that the stormwater enters the unit and does not leak around the perimeter. Leakage between the frame of the insert and the frame of the drain inlet can easily occur with vertical (drop) inlets.

Performance

Few products have performance data collected under field conditions.

Siting Criteria

It is recommended that inserts be used only for retrofit situations or as pretreatment where other treatment BMPs presented in this section area used.

Additional Design Guidelines

Follow guidelines provided by individual manufacturers.

Maintenance

Likely require frequent maintenance, on the order of several times per year.

Cost

- The initial cost of individual inserts ranges from less than $100 to about $2,000. The cost of using multiple units in curb inlet drains varies with the size of the inlet.
- The low cost of inserts may tend to favor the use of these systems over other, more effective treatment BMPs. However, the low cost of each unit may be offset by the number of units that are required, more frequent maintenance, and the shorter structural life (and therefore replacement).

References and Sources of Additional Information

Hrachovec, R., and G. Minton, 2001, Field testing of a sock-type catch basin insert, Planet CPR, Seattle, Washington

Interagency Catch Basin Insert Committee, Evaluation of Commercially-Available Catch Basin Inserts for the Treatment of Stormwater Runoff from Developed Sites, 1995

Larry Walker Associates, June 1998, NDMP Inlet/In-Line Control Measure Study Report

Manufacturers literature

Santa Monica (City), Santa Monica Bay Municipal Stormwater/Urban Runoff Project - Evaluation of Potential Catch basin Retrofits, Woodward Clyde, September 24, 1998

Woodward Clyde, June 11, 1996, Parking Lot Monitoring Report, Santa Clara Valley Nonpoint Source Pollution Control Program.

Parking/Storage Area Maintenance SC-43



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

SC-43 Parking/Storage Area Maintenance

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

MC-4500 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



STORMTECH MC-4500 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
52” x 100” x 60”
1,321 mm x 2,540 mm x 1,524 mm

Chamber Storage
106.5 ft^3 (3.01 m^3)

Min. Installed Storage*
162.6 ft^3 (4.60 m^3)

Weight
120 lbs (54.4 kg)

Shipping
7 chambers/pallet
11 pallets/truck

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below chambers, 9” (230 mm) of stone between chambers/end caps and 40% stone porosity.

STORMTECH MC-4500 END CAP
(not to scale)

Nominal End Cap Specifications

Size (L x W x H)
35.1” x 90.2” x 59.4”
891 mm x 2,291 mm x 1,509 mm

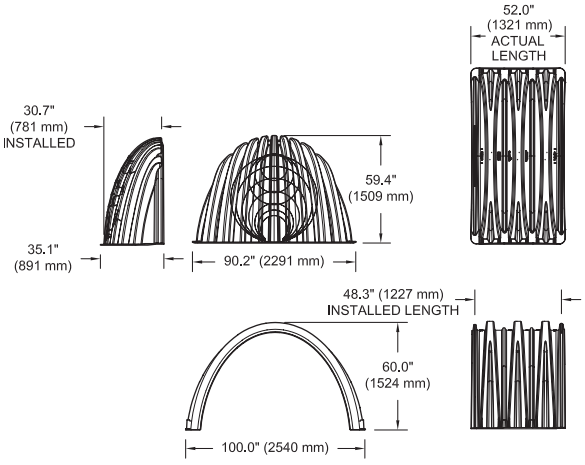
End Cap Storage
35.7 ft^3 (1.01 m^3)

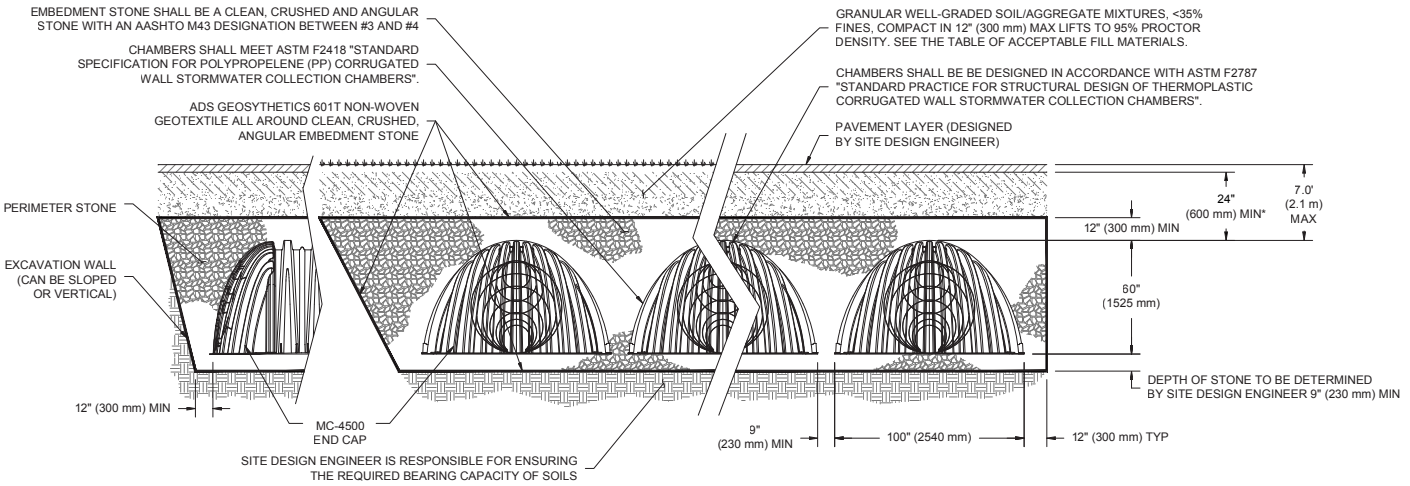
Min. Installed Storage*
108.7 ft^3 (3.08 m^3)

Weight
120 lbs (54.4 kg)

Shipping
7 end caps/pallet
11 pallets/truck

*Assumes a minimum of 12” (300 mm) of stone above, 9” (230 mm) of stone below, 6” (150 mm) of stone perimeter, 9” (230 mm) of stone between chambers/end caps and 40% stone porosity.





*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

MC-4500 CHAMBER SPECIFICATIONS

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)			
		9" (230 mm)	12" (300 mm)	15" (375 mm)	18" (450 mm)
MC-4500 Chamber	106.5 (3.02)	162.6 (4.60)	166.3 (4.71)	169.6 (4.81)	173.6 (4.91)
MC-4500 End Cap	35.7 (1.0)	108.7 (3.08)	111.9 (3.17)	115.2 (3.26)	118.4 (3.35)

Note: Assumes 9" (230 mm) row spacing, 40% stone porosity, 12" (300 mm) stone above and includes the bare chamber/end cap volume. End cap volume assumes 12" (300 mm) stone perimeter.

AMOUNT OF STONE PER CHAMBER

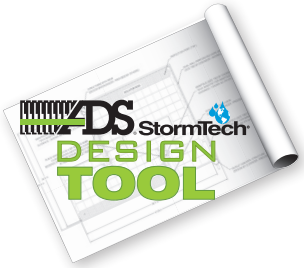
ENGLISH TONS (yds³)	Stone Foundation Depth			
	9"	12"	15"	18"
MC-4500 Chamber	7.4 (5.2)	7.8 (5.5)	8.3 (5.9)	8.8 (6.2)
MC-4500 End Cap	9.6 (6.8)	10.0 (7.1)	10.4 (7.4)	10.9 (7.7)
METRIC KILOGRAMS (m³)	230 mm	300 mm	375 mm	450 mm
MC-4500 Chamber	6,681 (4.0)	7,117 (4.2)	7,552 (4.5)	7,987 (4.7)
MC-4500 End Cap	8,691 (5.2)	9,075 (5.4)	9,460 (5.6)	9,845 (5.9)

Note: Assumes 12" (300 mm) of stone above and 9" (230 mm) row spacing and 12" (300 mm) of perimeter stone in front of end caps.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth			
	9" (230 mm)	12" (300 mm)	15" (375mm)	18" (450 mm)
MC-4500 Chamber	10.5 (8.0)	10.8 (8.3)	11.2 (8.5)	11.5 (8.8)
MC-4500 End Cap	9.3 (7.1)	9.6 (7.3)	9.9 (7.6)	10.2 (7.8)

Note: Assumes 9" (230 mm) of separation between chamber rows, 12" (300 mm) of perimeter in front of the end caps, and 24" (600 mm) of cover. The volume of excavation will varyas depth of cover increases.



Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech MC-4500 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

*THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™*

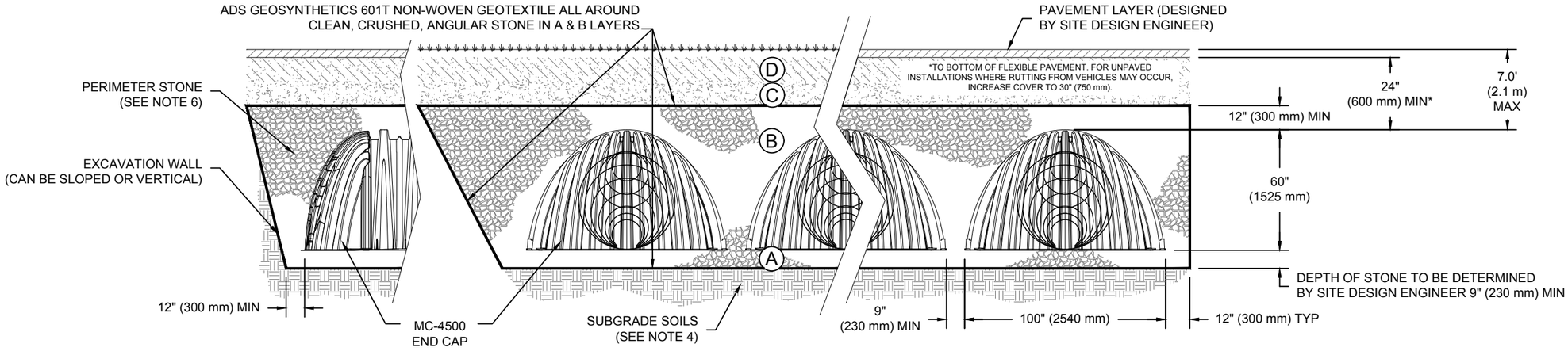
Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

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ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. [2] [3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



*FOR COVER DEPTHS GREATER THAN 7.0' (2.1 m) PLEASE CONTACT STORMTECH

NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

MC-4500
STANDARD CROSS SECTION

DATE: 11/18/14 | DRAWN: JLM | CHECKED: JLM | PROJECT #:

REV	DRW	CHK	DESCRIPTION

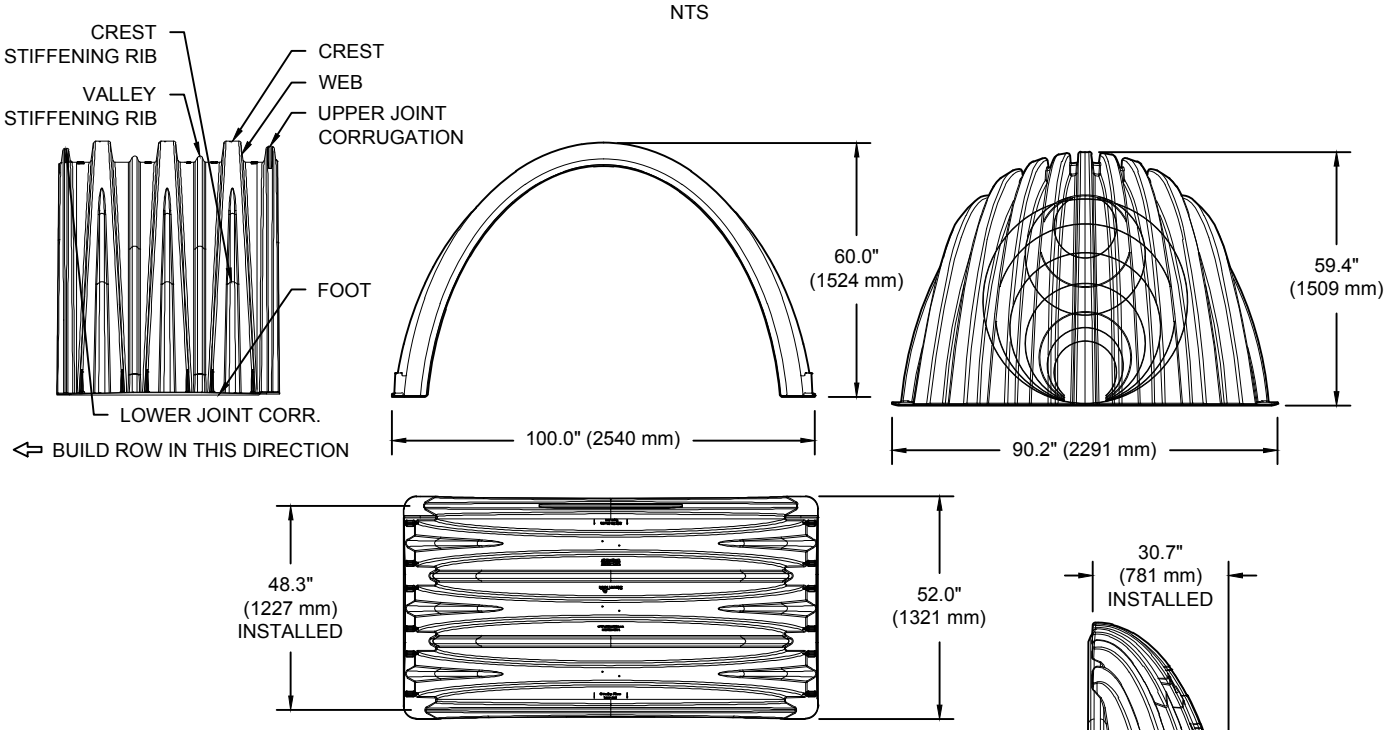
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HILLIARD, OH 43026
1-800-733-7473
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MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT	130.0 lbs.	(59.0 kg)

NOMINAL END CAP SPECIFICATIONS

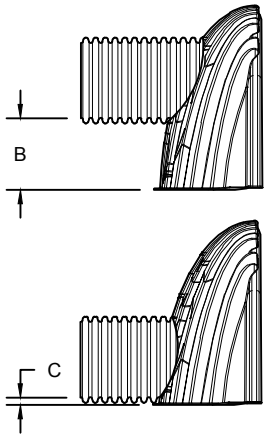
SIZE (W X H X INSTALLED LENGTH)	90.2" X 59.4" X 30.7"	(2291 mm X 1509 mm X 781 mm)
END CAP STORAGE	35.7 CUBIC FEET	(1.01 m³)
MINIMUM INSTALLED STORAGE*	108.7 CUBIC FEET	(3.08 m³)
WEIGHT	135.0 lbs.	(61.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

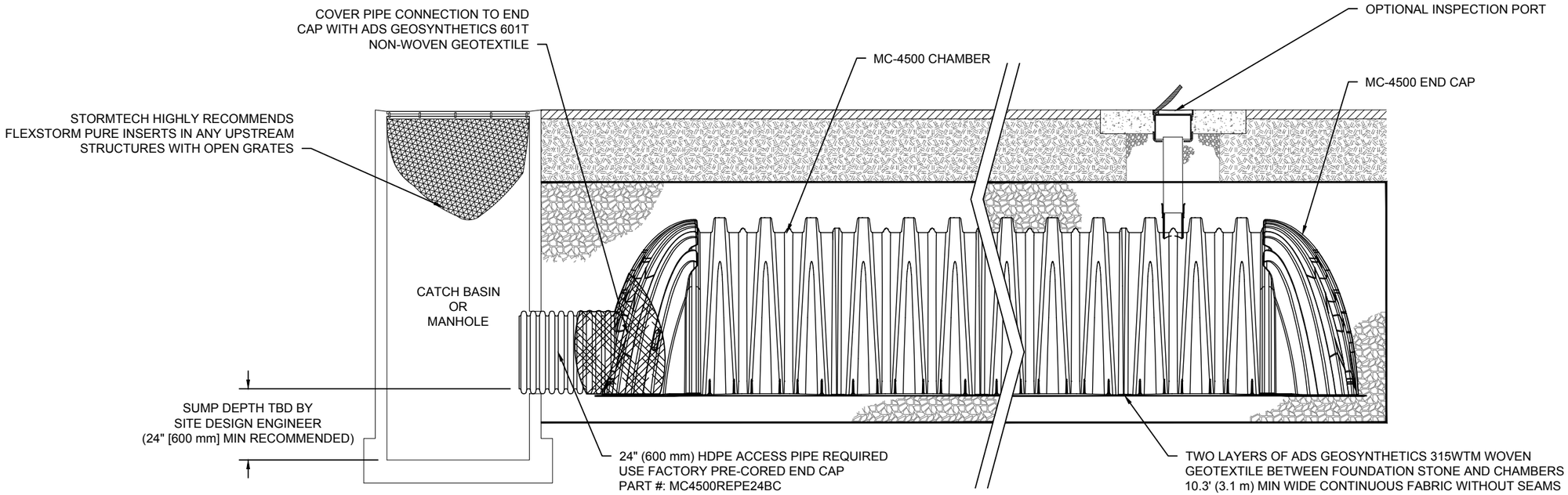
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1.081 m)	---
MC4500REPE06B		---	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1.029 m)	---
MC4500REPE08B		---	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	---
MC4500REPE10B		---	1.33" (34 mm)
MC4500REPE12T	12" (300 mm)	35.69" (907 mm)	---
MC4500REPE12B		---	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831 mm)	---
MC4500REPE15B		---	1.70" (43 mm)
MC4500REPE18TC	18" (450 mm)	29.36" (746 mm)	---
MC4500REPE18TW			
MC4500REPE18BC		---	1.97" (50 mm)
MC4500REPE18BW			
MC4500REPE24TC	24" (600 mm)	23.05" (585 mm)	---
MC4500REPE24TW			
MC4500REPE24BC		---	2.26" (57 mm)
MC4500REPE24BW			
MC4500REPE30BC	30" (750 mm)	---	2.95" (75 mm)
MC4500REPE36BC	36" (900 mm)	---	3.25" (83 mm)
MC4500REPE42BC	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.



MC-4500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

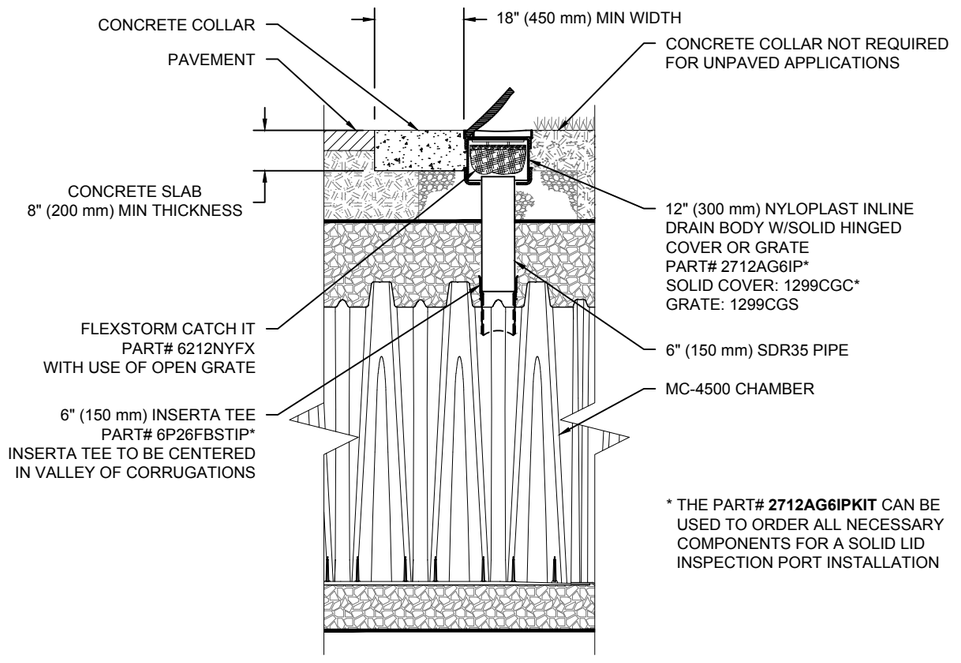
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



MC-4500 6" INSPECTION PORT DETAIL
NTS

ISOLATOR ROW DETAILS
MC-4500

DATE: 03/08/17 | DRAWN: JLM | CHECKED:
PROJECT #:

REV	DRW	CHK	DESCRIPTION

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Isolator® Row O&M Manual







THE MOST ADVANCED NAME IN WATER MANAGEMENT SOLUTIONS™

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THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) removal and provide easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160LP, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

Two different fabrics are used for the Isolator Row. A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The tough geotextile provides a media for storm water filtration and provides a durable surface for maintenance operations. It is also designed to prevent scour of the underlying stone and remain intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160LP, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole not only provides access to the Isolator Row but typically includes a high flow weir such that storm water flowrates or volumes that exceed the capacity of the Isolator Row overtop the over flow weir and discharge through a manifold to the other chambers.

The Isolator Row may also be part of a treatment train. By treating storm water prior to entry into the chamber system, the service life can be extended and pollutants such as hydrocarbons can be captured. Pre-treatment best management practices can be as simple as deep sump catch basins, oil-water separators or can be innovative storm water treatment devices. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

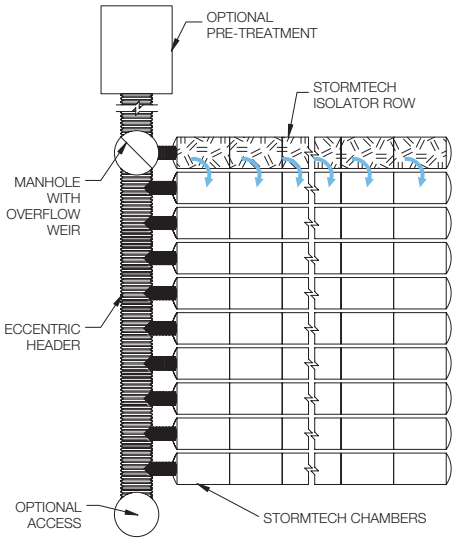
Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.



Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.



StormTech Isolator Row with Overflow Spillway (not to scale)





ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

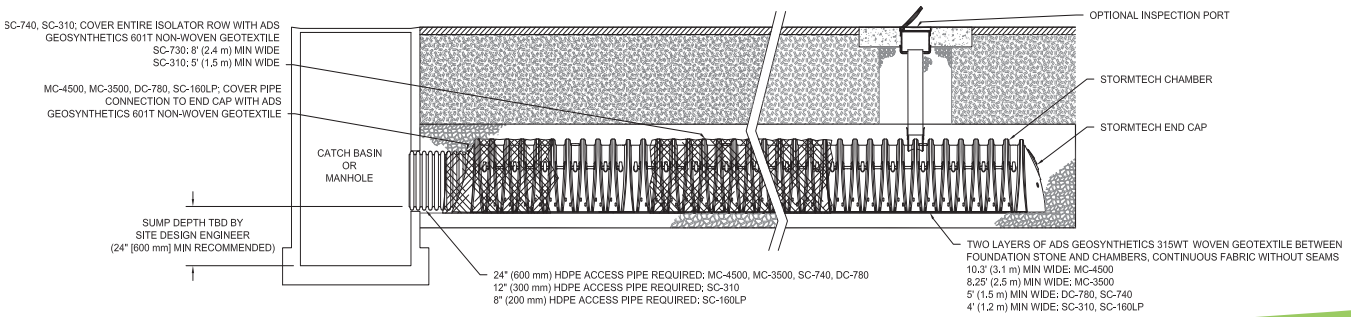
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



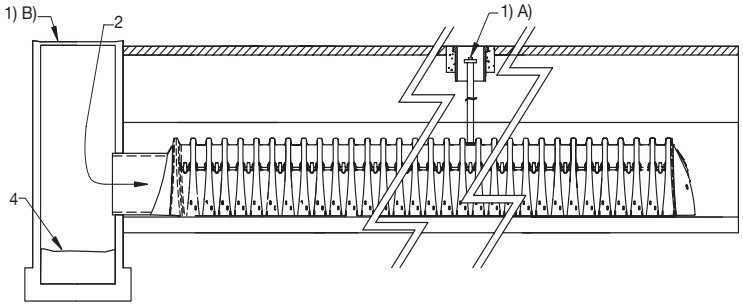
ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1
Inspect Isolator Row for sediment.
- A) Inspection ports (if present)
  - i. Remove lid from floor box frame
  - ii. Remove cap from inspection riser
  - iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
  - iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.
- B) All Isolator Rows
  - i. Remove cover from manhole at upstream end of Isolator Row
  - ii. Using a flashlight, inspect down Isolator Row through outlet pipe
    1. Mirrors on poles or cameras may be used to avoid a confined space entry
    2. Follow OSHA regulations for confined space entry if entering manhole
  - iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2
Clean out Isolator Row using the JetVac process.
- A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
- B) Apply multiple passes of JetVac until backflush water is clean
- C) Vacuum manhole sump as required

STEP 3
Replace all caps, lids and covers, record observations and actions.

STEP 4
Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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MC-3500/MC-4500

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StormTech Construction Guide

REQUIRED MATERIALS AND EQUIPMENT LIST

- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps, pre-cored and pre-fabricated end caps
- StormTech chambers, manifolds and fittings

NOTE: MC-3500 chamber pallets are 77” x 90” (2.0 m x 2.3 m) and weigh about 2010 lbs. (912 kg) and MC-4500 pallets are 100” x 52” (2.5 m x 1.3 m) and weigh about 840 lbs. (381 kg). Unloading chambers requires 72” (1.8 m) (min.) forks and/or tie downs (straps, chains, etc).

IMPORTANT NOTES:

A. This installation guide provides the minimum requirements for proper installation of chambers. Nonadherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the “dump and push” method are not covered under the StormTech standard warranty.

C. Care should be taken in the handling of chambers and end caps. End caps must be stored standing upright. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation



Excavate bed and prepare subgrade per engineer’s plans.



Place non-woven geotextile over prepared soils and up excavation walls.

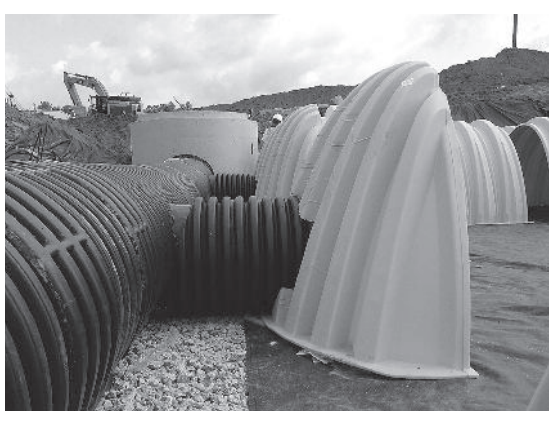


Place clean, crushed, angular stone foundation 9” (230 mm) min. Install underdrains if required. Compact to achieve a flat surface.

Manifold, Scour Fabric and Chamber Assembly



Install manifolds and lay out woven scour geotextile at inlet rows [min. 17.5 ft (5.33 m)] at each inlet end cap. Place a continuous piece (no seams) along entire length of Isolator® Row(s) in two layers.

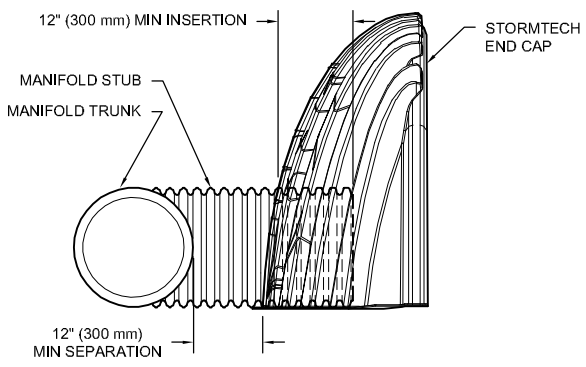


Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.



Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled “Lower Joint – Overlap Here” and “Build this direction – Upper Joint” Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 9” (300 mm) spacing between rows. For the Isolator Row place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet.

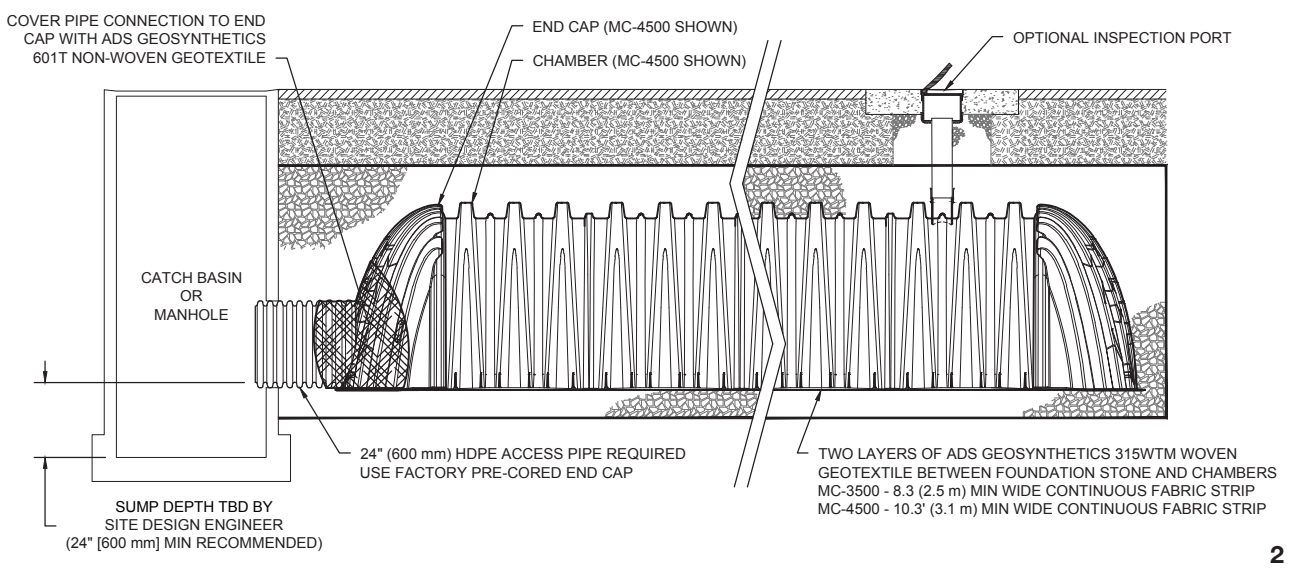
Manifold Insertion



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

Insert inlet and outlet manifolds a minimum 12” (300 mm) into chamber end caps. Manifold header should be a minimum 12” (300 mm) from base of end cap.

StormTech Isolator Row Detail



Initial Anchoring of Chambers – Embedment Stone

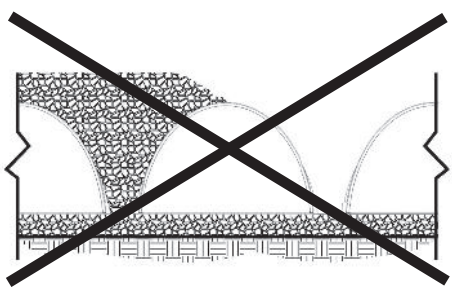


Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

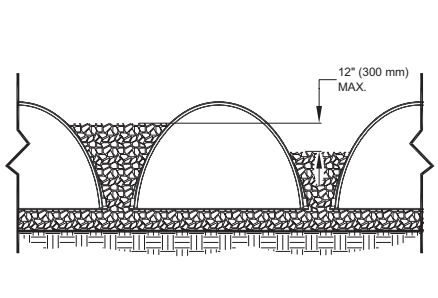


No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone

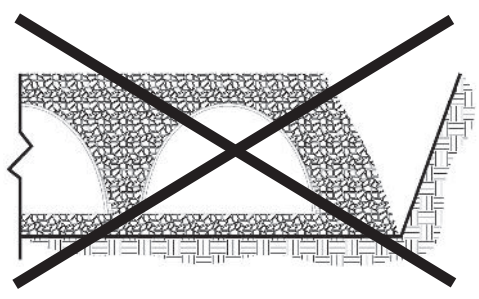


UNEVEN BACKFILL

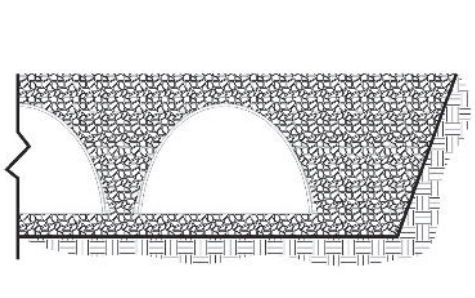


EVEN BACKFILL

Backfill chambers evenly. Stone column height should never differ by more than 12” (300 mm) between adjacent chamber rows or between chamber rows and perimeter.



PERIMETER NOT BACKFILLED



PERIMETER FULLY BACKFILLED

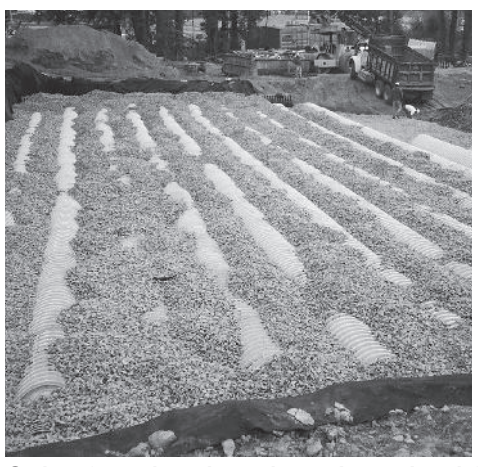
Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Backfill of Chambers – Embedment Stone and Cover Stone





Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers and a minimum 12” (300 mm) of cover stone is in place. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. The recommended backfill methods are with a stone conveyor outside of the bed or build as you go with an excavator inside the bed reaching along the rows. Backfilling while assembling chambers rows as shown in the picture will help to ensure that equipment reach is not exceeded.





Only after chambers have been backfilled to top of chamber and with a minimum 12” (300 mm) of cover stone on top of chambers can skid loaders and small LGP dozers be used to final grade cover stone and backfill material in accordance with ground pressure limits in Table 2. Equipment must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends the contractor inspect chamber rows before placing final backfill. Any chambers damaged by construction equipment shall be removed and replaced.

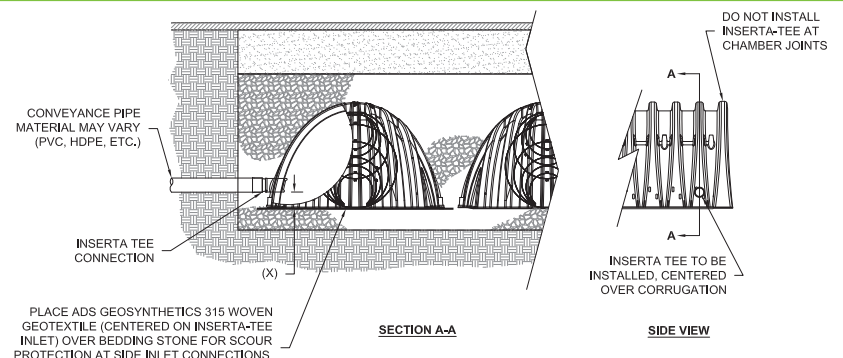
Final Backfill of Chambers – Fill Material





Install non-woven geotextile over stone. Geotextile must overlap 24” (600 mm) in. where edges meet. Compact at 24” (600 mm) of fill. Roller travel parallel with rows.

Inserta Tee Detail



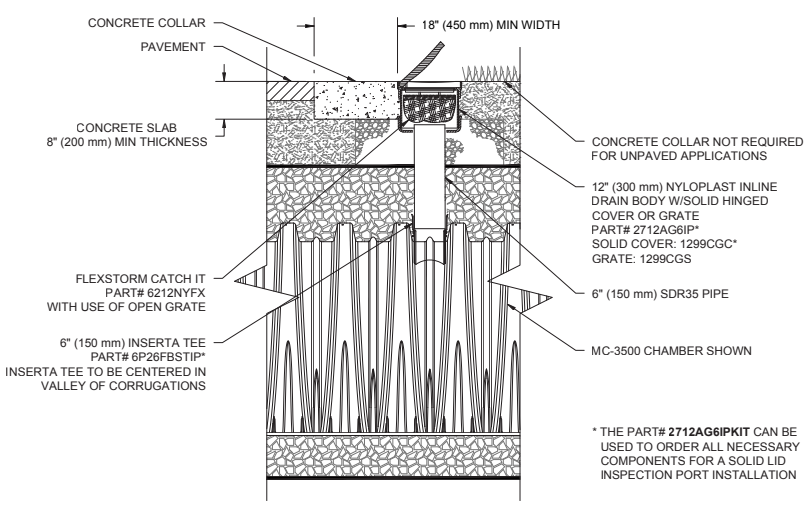
CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

Table 1- Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
Ⓓ **Final Fill:** Fill Material for layer ‘D’ starts from the top of the ‘C’ layer to the bottom of flexible pavement or unpaved finished grade above. Note that the pavement subbase may be part of the ‘D’ layer.	Any soil/rock materials, native soils or per engineer’s plans. Check plans for pavement subgrade requirements.	N/A	Prepare per site design engineer’s plans. Paved installations may have stringent material and preparation requirements.
Ⓒ **Initial Fill:** Fill Material for layer ‘C’ starts from the top of the embedment stone (‘B’ layer) to 24” (600 mm) above the top of the chamber. Note that pavement subbase may be part of the ‘C’ layer.	Granular well-graded soil/ aggregate mixtures, <35% fines or processed aggregate. Most pavement subbase materials can be used in lieu of this layer.	AASHTO M145 A-1, A-2-4, A-3 or AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 24” (600 mm) of material over the chambers is reached. Compact additional layers in 12” (300 mm) max. lifts to a min. 95% Proctor density for well-graded material and 95% relative density for processed aggregate materials.
Ⓑ **Embedment Stone:** Fill the surrounding surrounding chambers from the foundation stone (‘A’ layer) to the ‘C’ layer above.	Clean, crushed, angular stone	AASHTO M43[1] 3, 357, 4	No compaction required.
Ⓐ **Foundation Stone:** Fill below chambers from the subgrade up to the foot (bottom) of the chamber.	Clean, crushed, angular stone,	AASHTO M43[1] 3, 357, 4	Place and compact in 9” (230 mm) max lifts using two full coverages with a vibratory compactor.[2,3]

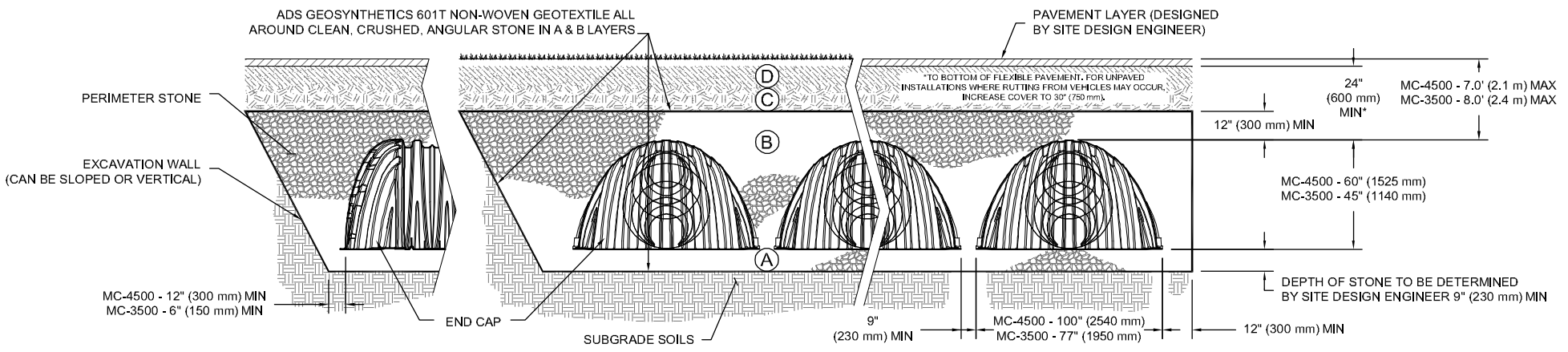
Figure 1- Inspection Port Detail



PLEASE NOTE:

1. ***The listed AASHTO designations are for gradations only. The stone must also be clean, crushed, angular. For example, a specification for #4 stone would state: “clean, crushed, angular no. 4 (AASHTO M43) stone”.***
2. ***StormTech compaction requirements are met for ‘A’ location materials when placed and compacted in 9” (230 mm) (max) lifts using two full coverages with a vibratory compactor.***
3. ***Where infiltration surfaces may be comprised by compaction, for standard installations and standard design load conditions, a flat surface may be achieved by raking or dragging without compaction equipment. For special load designs, contact StormTech for compaction requirements.***

Figure 2 - Fill Material Locations



NOTES:

1. ***36” (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.***
2. ***During paving operations, dump truck axle loads on 24” (600mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 24” (600 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.***
3. ***Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.***
4. ***Mini-excavators (<8,000lbs/3,628 kg) can be used with at least 12” (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.***
5. ***StormTech does not require compaction of initial fill at 18” (450 mm) of cover. However, requirements by others for 6” (150 mm) lifts may necessitate the use of small compactors at 18” (450 mm) of cover.***
6. ***Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.***
7. ***Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.***

Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs [kN]	Max Wheel Load for Loaders lbs [kN]	Track Width in. [mm]	Max Ground Pressure psf [kPa]	Max Drum Weight or Dynamic Force lbs [kN]
Ⓓ **Final Fill Material**	36” [900] Compacted	32,000 [142]	16,000 [71]	12” [305] 18” [457] 24” [610] 30” [762] 36” [914]	3420 [164] 2350 [113] 1850 [89] 1510 [72] 1310 [63]	38,000 [169]
Ⓒ **Initial Fill Material**	24” [600] Compacted	32,000 [142]	16,000 [71]	12” [305] 18” [457] 24” [610] 30” [762] 36” [914]	2480 [119] 1770 [85] 1430 [68] 1210 [58] 1070 [51]	20,000 [89]
	24” [600] Loose/Dumped	24,000 [107]	12,000 [53]	12” [305] 18” [457] 24” [610] 30” [762] 36” [914]	2245 [107] 1625 [78] 1325 [63] 1135 [54] 1010 [48]	16,000 [71]
	18” [450]	24,000 [107]	12,000 [53]	12” [305] 18” [457] 24” [610] 30” [762]	2010 [96] 1480 [71] 1220 [58] 1060 [51]	5,000 [22] (static loads only)[5]
Ⓑ **Embedment Stone**	12” [300]	NOT ALLOWED	NOT ALLOWED	12” [305] 18” [457] 24” [610] 30” [762]	1100 [53] 715 [34] 660 [32] 580 [28]	NOT ALLOWED
	6” [150]	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
Ⓓ **Final Fill Material**	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36” (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows.[4]	Roller travel parallel to rows only until 36” (900 mm) compacted cover is reached.
Ⓒ **Initial Fill Material**	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 24” (600 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 12” (300 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 24” (600 mm) over chambers. Roller travel parallel to chamber rows only.
Ⓑ **Embedment Stone**	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 12” (300 mm) cover stone is in place.	No rollers allowed.
Ⓐ **Foundation Stone**	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

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#10816 07/17 CS

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17.0 Standard Limited Warranty

STANDARD LIMITED WARRANTY OF STORMTECH LLC ("STORMTECH"): PRODUCTS

(A) This Limited Warranty applies solely to the StormTech chambers and end plates manufactured by StormTech and sold to the original purchaser (the "Purchaser"). The chambers and end plates are collectively referred to as the "Products."

(B) The structural integrity of the Products, when installed strictly in accordance with StormTech's written installation instructions at the time of installation, are warranted to the Purchaser against defective materials and workmanship for one (1) year from the date of purchase. Should a defect appear in the Limited Warranty period, the Purchaser shall provide StormTech with written notice of the alleged defect at StormTech's corporate headquarters within ten (10) days of the discovery of the defect. The notice shall describe the alleged defect in reasonable detail. StormTech agrees to supply replacements for those Products determined by StormTech to be defective and covered by this Limited Warranty. The supply of replacement products is the sole remedy of the Purchaser for breaches of this Limited Warranty. StormTech's liability specifically excludes the cost of removal and/or installation of the Products.

(C) THIS LIMITED WARRANTY IS EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE PRODUCTS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE.

(D) This Limited Warranty only applies to the Products when the Products are installed in a single layer. UNDER NO CIRCUMSTANCES, SHALL THE PRODUCTS BE INSTALLED IN A MULTI-LAYER CONFIGURATION.

(E) No representative of StormTech has the authority to change this Limited Warranty in any manner or to extend this Limited Warranty. This Limited Warranty does not apply to any person other than to the Purchaser.

(F) Under no circumstances shall StormTech be liable to the Purchaser or to any third party for product liability claims; claims arising from the design, shipment, or installation of the Products, or the cost of other goods or services related to the purchase and installation of the Products. For this Limited Warranty to apply, the Products must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and StormTech's written installation instructions.

(G) THE LIMITED WARRANTY DOES NOT EXTEND TO INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES. STORMTECH SHALL NOT BE LIABLE FOR PENALTIES OR LIQUIDATED DAMAGES, INCLUDING LOSS OF PRODUCTION AND PROFITS; LABOR AND MATERIALS; OVERHEAD COSTS; OR OTHER LOSS OR EXPENSE INCURRED BY THE PURCHASER OR ANY THIRD PARTY. SPECIFICALLY EXCLUDED FROM LIMITED WARRANTY COVERAGE ARE DAMAGE TO THE PRODUCTS ARISING FROM ORDINARY WEAR AND TEAR; ALTERATION, ACCIDENT, MISUSE, ABUSE OR NEGLECT; THE PRODUCTS BEING SUBJECTED TO VEHICLE TRAFFIC OR OTHER CONDITIONS WHICH ARE NOT PERMITTED BY STORMTECH'S WRITTEN SPECIFICATIONS OR INSTALLATION INSTRUCTIONS; FAILURE TO MAINTAIN THE MINIMUM GROUND COVERS SET FORTH IN THE INSTALLATION INSTRUCTIONS; THE PLACEMENT OF IMPROPER MATERIALS INTO THE PRODUCTS; FAILURE OF THE PRODUCTS DUE TO IMPROPER SITING OR IMPROPER SIZING; OR ANY OTHER EVENT NOT CAUSED BY STORMTECH. THIS LIMITED WARRANTY REPRESENTS STORMTECH'S SOLE LIABILITY TO THE PURCHASER FOR CLAIMS RELATED TO THE PRODUCTS, WHETHER THE CLAIM IS BASED UPON CONTRACT, TORT, OR OTHER LEGAL THEORY.

StormTech®
An ADS company

70 Inwood Road Suite 3 | Rocky Hill | Connecticut | 06067

888-892-2694

www.stormtech.com



ADS GEOSYNTHETICS 0601T NONWOVEN GEOTEXTILE

Scope

This specification describes ADS Geosynthetics 6.0 oz (0601T) nonwoven geotextile.

Filter Fabric Requirements

ADS Geosynthetics 6.0 oz (0601T) is a needle-punched nonwoven geotextile made of 100% polypropylene staple fibers, which are formed into a random network for dimensional stability. ADS Geosynthetics 6.0 oz (0601T) resists ultraviolet deterioration, rotting, biological degradation, naturally encountered basics and acids. Polypropylene is stable within a pH range of 2 to 13. ADS Geosynthetics 6.0 oz (0601T) conforms to the physical property values listed below:

Filter Fabric Properties

PROPERTY	TEST METHOD	UNIT	M.A.R.V. (Minimum Average Roll Value)
Grab Tensile	ASTM D 4632	lbs (kN)	160 (0.711)
Grab Elongation	ASTM D 4632	%	50
Trapezoid Tear Strength	ASTM D 4533	lbs (kN)	60 (0.267)
CBR Puncture Resistance	ASTM D 6241	lbs (kN)	410 (1.82)
Permittivity*	ASTM D 4491	sec^{-1}	1.5
Water Flow*	ASTM D 4491	gpm/ft^2 ($l/min/m^2$)	110 (4480)
AOS*	ASTM D 4751	US Sieve (mm)	70 (0.212)
UV Resistance	ASTM D 4355	%/hrs	70/500

	PACKAGING
Roll Dimensions (W x L) – ft	3.0/5.0/6.25/7.5/9.0/12.5 x 360 / 15 x 300
Square Yards Per Roll	120/200/250/300/360/500 / 500
Estimated Roll Weight – lbs	44/65/97.5/102/141/195 / 195

* At the time of manufacturing. Handling may change these properties.

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ADS GEOSYNTHETICS 315W WOVEN GEOTEXTILE

Scope

This specification describes ADS Geosynthetics 315W woven geotextile.

Filter Fabric Requirements

ADS Geosynthetics 315W is manufactured using high tenacity polypropylene yarns that are woven to form a dimensionally stable network, which allows the yarns to maintain their relative position. ADS Geosynthetics 315W resists ultraviolet deterioration, rotting and biological degradation and is inert to commonly encountered soil chemicals. ADS Geosynthetics 315W conforms to the physical property values listed below:

Filter Fabric Properties

PROPERTY	TEST METHOD	ENGLISH M.A.R.V. (Minimum Average Roll Value)	METRIC M.A.R.V. (Minimum Average Roll Value)
Tensile Strength (Grab)	ASTM D-4632	315 lbs	1400 N
Elongation	ASTM D-4632	15%	15%
CBR Puncture	ASTM D-6241	900 lbs	4005 N
Puncture	ASTM D-4833	150 lbs	667 N
Mullen Burst	ASTM D-3786	600 psi	4134 kPa
Trapezoidal Tear	ASTM D-4533	120 lbs	533 N
UV Resistance (at 500 hrs)	ASTM D-4355	70%	70%
Apparent Opening Size (AOS)*	ASTM D-4751	40 US Std. Sieve	0.425 mm
Permittivity	ASTM D-4491	.05 sec^{-1}	.05 sec^{-1}
Water Flow Rate	ASTM D-4491	4 gpm/ft^2	163 $l/min/m^2$
Roll Sizes		12.5' x 360' 15.0' x 300' 17.5' x 258'	3.81 m x 109.8 m 4.57 m x 91.5 m 5.33 m x 78.6 m

*Maximum average roll value.

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APPENDIX I
PUBLIC FACILITIES NEEDS LIST

DEVELOPMENT IMPACT FEE PROGRAM
PUBLIC FACILITIES NEEDS LIST

	Facility Name	Total Cost for Facility	Off-Setting Revenues	Net Cost to City	Percent of Cost Allocated to New Development	Cost Allocated to New Development	Policy Background or Objective
A. Traffic Facilities							
	Active Transportation Plan						
1	Cypress- Highland Ave to Valencia Ave. - Construct Class II Bike Lanes	$ 42,400	$ -	$ 42,400	14.00%	$5,934	Per the City Active Transportation
2	Alder Ave- Baseline Ave to Randall Ave. - Construct Class II Bike Lanes	$ 297,360	$ -	$ 297,360	14.00%	$41,618	Per the City Active Transportation
3	Mangoe Ave- Foothill Blvd to Merrill Ave. - Construct Class II Bike Lanes	$ 118,000	$ -	$ 118,000	14.00%	$16,515	Per the City Active Transportation
4	Sierra Ave- Slover Ave to Jurupa Ave. Construct Class IV Bike Lanes	$ 140,390	$ -	$ 140,390	14.00%	$19,649	Per the City Active Transportation
5	Juniper Ave- Baseline Ave to Foothill Blvd. Construct Class III Bike Lanes	$ 16,000	$ -	$ 16,000	14.00%	$2,239	Per the City Active Transportation
6	Juniper Ave- Foothill Blvd to Merrill Ave. - Construct Class II Bikes Lanes	$ 118,000	$ -	$ 118,000	14.00%	$16,515	Per the City Active Transportation
7	Miller Ave- Beech Ave to Maple Ave. - Construct Class II Bike Lanes	$ 444,860	$ -	$ 444,860	14.00%	$62,261	Per the City Active Transportation
8	Merrill Ave - Citrus Ave to Mango Ave. - Construct Class II Bike Lanes	$ 149,860	$ -	$ 149,860	14.00%	$20,974	Per the City Active Transportation
9	Merrill Ave - Mango Ave to Alder Ave. Construct Class II Bike Lanes	$ 88,500	$ -	$ 88,500	14.00%	$12,386	Per the City Active Transportation
10	Merrill Ave- Alder Ave to Maple Ave. - Construct Class II Bike Lanes	$ 88,500	$ -	$ 88,500	14.00%	$12,386	Per the City Active Transportation
11	San Bernardino Ave- Fontana Ave to Alder Ave. - Construct Class II Bike Lanes	$ 328,040	$ -	$ 328,040	14.00%	$45,912	Per the City Active Transportation
12	Foothill Blvd- Hemlock Ave to Sultana Ave. - Construct Class II Bike Lanes	$ 49,560	$ -	$ 49,560	14.00%	$6,936	Per the City Active Transportation
13	Foothill Blvd- Almeria Ave to Citrus Ave. - Construct Class II Bike Lanes	$ 44,840	$ -	$ 44,840	14.00%	$6,276	Per the City Active Transportation
14	Citrus Ave- Foothill Blvd to Valley Blvd. - Construct Class II Bike Lanes	$ 295,000	$ -	$ 295,000	14.00%	$41,287	Per the City Active Transportation
15	Arrow Blvd- Palmetto Ave to Almeria Ave. - Construct Class IV Bike Lanes	$ 278,000	$ -	$ 278,000	14.00%	$38,908	Per the City Active Transportation
16	SCE Coridor- Riverside Ave to Mange Ave. - Construct Class I Bike Lanes	$ 6,820,000	$ -	$ 6,820,000	14.00%	$954,508	Per the City Active Transportation
17	SCE Coridor- Bridlepath to Parkside Way. - Construct Class I Bike Lanes	$ 3,520,000	$ -	$ 3,520,000	14.00%	$492,649	Per the City Active Transportation
18	City Boundary- SCE to Wilson Rd. - Construct Class I Bike Lanes	$ 1,100,000	$ -	$ 1,100,000	14.00%	$153,953	Per the City Active Transportation
19	SCE Coridor- Sierra Ave to East Ave. - Construct Class I Bike Lanes	$ 14,300,000	$ -	$ 14,300,000	14.00%	$2,001,387	Per the City Active Transportation
20	Highland Channel (North)- San Sevaine Rd to Knox Ave. - Construct Class I Bike Lanes	$ 2,200,000	$ -	$ 2,200,000	14.00%	$307,906	Per the City Active Transportation
21	Highland Channel (South)- Knox Ave to Victoria Ave. - Construct Class I Bike Lanes	$ 5,500,000	$ -	$ 5,500,000	14.00%	$769,764	Per the City Active Transportation
22	San Sevaine Channel- Victoria Ave to PE Trail. - Construct Class I Bike Lanes	$ 1,100,000	$ -	$ 1,100,000	14.00%	$153,953	Per the City Active Transportation
23	San Sevaine Channel- I-10 to Philadelphia Ave.- Construct Class I Bike Lanes	$ 5,500,000	$ -	$ 5,500,000	14.00%	$769,764	Per the City Active Transportation
24	SCE South- San Sevaine Channel to Rancherias Dr. - Construct Class I Bike Lanes	$ 1,760,000	$ -	$ 1,760,000	14.00%	$246,325	Per the City Active Transportation
25	SCE South- Live Oak Ave to Poplar Ave.- Construct Class I Bike Lanes	$ 2,420,000	$ -	$ 2,420,000	14.00%	$338,696	Per the City Active Transportation
26	SCE South- Catawba Park to Locust Ave. - Construct Class I Bike Lanes	$ 6,600,000	$ -	$ 6,600,000	14.00%	$923,717	Per the City Active Transportation
27	Metrolink Trail Extension- Catawba Ave to Maple Ave. - Construct Class I Bike Lanes	$ 6,600,000	$ -	$ 6,600,000	14.00%	$923,717	Per the City Active Transportation
	Existing / Offsetting Revenues			$ -			
	Subtotal	**$ 59,919,310**	**$ -**	**$ 59,919,310**		**$8,386,135**	
	Landscaped Median						
1	Slover Avenue Ave - Jasmine Ave to Sierra Ave. - Construct Raised Landscaped Median	$ 8,610,000	$ -	$ 8,610,000	14.00%	$1,205,031	Per the City Active Transportation
2	Merrill Ave - Oleander Ave to Sierra Ave. - Construct Raised Landscaped Median Center	$ 1,354,500	$ -	$ 1,354,500	14.00%	$189,572	Per the City Active Transportation
3	Arrow Blvd - Citrus Ave to Juniper Ave. - Construct Raised Landscaped Median Center	$ 1,424,500	$ -	$ 1,424,500	14.00%	$199,369	Per the City Active Transportation
4	Arrow Blvd - Palmetto Ave to Alder Ave. - Construct Raised Landscaped Median Center	$ 910,000	$ -	$ 910,000	14.00%	$127,361	Per the City Active Transportation
5	South Highland Ave - Citrus Ave to Sierra Ave. - Construct Raised Landscaped Median (	$ 1,393,000	$ -	$ 1,393,000	14.00%	$194,960	Per the City Active Transportation
6	Beech Ave - Cherry Ave to I-15 NB On-Ramp. - Construct Raised Landscaped Median C	$ 1,050,000	$ -	$ 1,050,000	14.00%	$146,955	Per the City Active Transportation
7	Beech Ave - Baseline Ave to Miller Ave. - Construct Raised Landscaped Median Center	$ 855,750	$ -	$ 855,750	14.00%	$119,768	Per the City Active Transportation
8	Beech Ave - Slover Ave to Jurupa Ave. - Construct Raised Landscaped Median Center	$ 1,604,400	$ -	$ 1,604,400	14.00%	$224,547	Per the City Active Transportation
9	Etiwanda Ave - Slover Ave to Philadelphia Ave. - Construct Raised Landscaped Median	$ 5,392,380	$ -	$ 5,392,380	14.00%	$754,702	Per the City Active Transportation
10	Mulberry Ave - Slover Ave to Santa Ana Ave. - Construct Raised Landscaped Median Ce	$ 896,000	$ -	$ 896,000	14.00%	$125,402	Per the City Active Transportation
11	Citrus Ave - Sierra Lakes Pkwy to the 210 on/off Ramps. - Construct Raised Landscaped	$ 259,000	$ -	$ 259,000	14.00%	$36,249	Per the City Active Transportation
12	Armstrong Rd - Jurupa Ave to Riverside County Limits. - Construct Raised Landscaped	$ 1,971,900	$ -	$ 1,971,900	14.00%	$275,981	Per the City Active Transportation
13	Walnut Ave - missing gap between Helen Wy & Almeria Ave. - Construct Raised Landsc	$ 91,392	$ -	$ 91,392	14.00%	$12,791	Per the City Active Transportation
	Existing / Offsetting Revenues		**$ 4,696,256**	$ -			
	Subtotal	**$ 25,812,822**	**$ 4,696,256**	**$ 21,116,566**		**$2,956,319**	
	Local Streets (Arterials not on Measure I)						
1	Alder Ave. - Needs Interchange (Complete)	$ 689,394	$ -	$ 689,394	14.00%	$96,486	Per the City Active Transportation

2	Alder Ave. - Curb, gutter and sidewalk, add lanes	$ 157,197	$ -	$ 157,197	14.00%	$22,001	Per the City Active Transportation
3	Alder Ave. - Curb, gutter and sidewalk, add lanes	$ 318,182	$ -	$ 318,182	14.00%	$44,532	Per the City Active Transportation
4	Armstrong Road. - Add two lanes, curb gutter and sidewalk. Project to add Class 1 mul	$ 1,047,348	$ -	$ 1,047,348	14.00%	$146,584	Per the City Active Transportation
5	Beech Ave. - Improved to accommodate 4 lanes in each direction but is not at ultimate	$ 268,939	$ -	$ 268,939	14.00%	$37,640	Per the City Active Transportation
6	Beech Ave. - Improved to accommodate 4 lanes in each direction but is not at ultimate	$ 125,000	$ -	$ 125,000	14.00%	$17,495	Per the City Active Transportation
7	Beech Ave. - Improved to accommodate 4 lanes in each direction but is not at ultimate	$ 738,636	$ -	$ 738,636	14.00%	$103,377	Per the City Active Transportation
8	Ceres Ave. - Improved to accommodate 4 lanes in each direction but is not at ultimate	$ 1,001,894	$ -	$ 1,001,894	14.00%	$140,222	Per the City Active Transportation
9	Coyote Canyon Road. - Curb, gutter and sidewalk. Add Class 1 multi-purpose trail	$ 2,424,242	$ -	$ 2,424,242	14.00%	$339,290	Per the City Active Transportation
10	Cypress - Saw-tooth project add sidewalk	$ 1,018,939	$ -	$ 1,018,939	14.00%	$142,608	Per the City Active Transportation
11	Cypress - Saw-tooth project add sidewalk	$ 1,969,697	$ -	$ 1,969,697	14.00%	$275,673	Per the City Active Transportation
12	East Street. - Minor widening, add sidewalk	$ 491,477	$ -	$ 491,477	14.00%	$68,786	Per the City Active Transportation
13	Etiwanda. - Add north bound lane, curb gutter and sidewalk.	$ 2,759,848	$ -	$ 2,759,848	14.00%	$386,260	Per the City Active Transportation
14	Etawanda. - Minor improvements, add sidewalk	$ 930,114	$ -	$ 930,114	14.00%	$130,176	Per the City Active Transportation
15	Juniper. - Curb and Sidewalk	$ 145,833	$ -	$ 145,833	14.00%	$20,410	Per the City Active Transportation
16	Juniper. - Curb and Sidewalk	$ 379,167	$ -	$ 379,167	14.00%	$53,067	Per the City Active Transportation
17	Juniper. - Curb and Sidewalk	$ 1,003,788	$ -	$ 1,003,788	14.00%	$140,487	Per the City Active Transportation
18	Knox Ave. Underpass appears to be wide enough to allow for two additional lanes	$ 698,864	$ -	$ 698,864	14.00%	$97,811	Per the City Active Transportation
19	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 2,204,545	$ -	$ 2,204,545	14.00%	$308,542	Per the City Active Transportation
20	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 53,977	$ -	$ 53,977	14.00%	$7,555	Per the City Active Transportation
21	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 150,758	$ -	$ 150,758	14.00%	$21,100	Per the City Active Transportation
22	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 63,826	$ -	$ 63,826	14.00%	$8,933	Per the City Active Transportation
23	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 211,553	$ -	$ 211,553	14.00%	$29,608	Per the City Active Transportation
24	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 194,697	$ -	$ 194,697	14.00%	$27,249	Per the City Active Transportation
25	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 62,500	$ -	$ 62,500	14.00%	$8,747	Per the City Active Transportation
26	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 66,288	$ -	$ 66,288	14.00%	$9,277	Per the City Active Transportation
27	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 100,379	$ -	$ 100,379	14.00%	$14,049	Per the City Active Transportation
28	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 104,167	$ -	$ 104,167	14.00%	$14,579	Per the City Active Transportation
29	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 250,000	$ -	$ 250,000	14.00%	$34,989	Per the City Active Transportation
30	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 992,424	$ -	$ 992,424	14.00%	$138,897	Per the City Active Transportation
31	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 558,333	$ -	$ 558,333	14.00%	$78,143	Per the City Active Transportation
32	Locust Ave. - Minor widening, curb gutter sidewalk additions	$ 549,242	$ -	$ 549,242	14.00%	$76,870	Per the City Active Transportation
33	Miller Ave. - Sidewalk gap closure	$ 120,644	$ -	$ 120,644	14.00%	$16,885	Per the City Active Transportation
34	Miller - Sidewalk gap closure	$ 249,242	$ -	$ 249,242	14.00%	$34,883	Per the City Active Transportation
35	Miller - Sidewalk gap closure	$ 494,318	$ -	$ 494,318	14.00%	$69,183	Per the City Active Transportation
36	Miller - Sidewalk gap closure	$ 507,576	$ -	$ 507,576	14.00%	$71,039	Per the City Active Transportation
37	Mulberry - Sidewalk	$ 125,000	$ -	$ 125,000	14.00%	$17,495	Per the City Active Transportation
38	Orange Way. - Sawtooth project	$ 498,864	$ -	$ 498,864	14.00%	$69,820	Per the City Active Transportation
39	Orange Way. - Sawtooth project	$ 995,076	$ -	$ 995,076	14.00%	$139,268	Per the City Active Transportation
40	Philadelphia. - Crosses R/R Tracks	$ 312,500	$ -	$ 312,500	14.00%	$43,737	Per the City Active Transportation
41	Philadelphia. - Crosses San Sevaine Channel	$ 113,636	$ -	$ 113,636	14.00%	$15,904	Per the City Active Transportation
42	Poplar. - Minor widening, curb gutter and sidewalk	$ 1,376,515	$ -	$ 1,376,515	14.00%	$192,653	Per the City Active Transportation
43	Poplar. - Minor widening, curb gutter and sidewalk	$ 70,076	$ -	$ 70,076	14.00%	$9,808	Per the City Active Transportation
44	Poplar. - Minor widening, curb gutter and sidewalk	$ 248,106	$ -	$ 248,106	14.00%	$34,724	Per the City Active Transportation
45	Production Ave. - Sidewalk Fully Improved	$ 243,750	$ -	$ 243,750	14.00%	$34,115	Per the City Active Transportation
46	Prodection Ave. Fully Developed	$ 495,833	$ -	$ 495,833	14.00%	$69,395	Per the City Active Transportation
47	Randall Ave. - Minor widening, curb gutter and sidewalk	$ 250,379	$ -	$ 250,379	14.00%	$35,042	Per the City Active Transportation
48	Randall Ave. - Minor widening, curb gutter and sidewalk	$ 124,811	$ -	$ 124,811	14.00%	$17,468	Per the City Active Transportation
49	Randall Ave. - Minor widening, curb gutter and sidewalk	$ 123,106	$ -	$ 123,106	14.00%	$17,230	Per the City Active Transportation
50	Randall Ave. - Minor widening, curb gutter and sidewalk	$ 183,523	$ -	$ 183,523	14.00%	$25,685	Per the City Active Transportation
51	Riverside Ave. - Street widening and full improvements	$ 1,250,000	$ -	$ 1,250,000	14.00%	$174,946	Per the City Active Transportation
52	Sierra. - Sawtooth project	$ 198,864	$ -	$ 198,864	14.00%	$27,832	Per the City Active Transportation
53	Summit Ave. - Full Street improvements. Lane addition	$ 486,742	$ -	$ 486,742	14.00%	$68,123	Per the City Active Transportation
54	Summit Ave. - Full Street improvements. Lane addition	$ 1,003,788	$ -	$ 1,003,788	14.00%	$140,487	Per the City Active Transportation
55	Summit Ave. - Full Street improvements. Lane addition	$ 1,318,182	$ -	$ 1,318,182	14.00%	$184,489	Per the City Active Transportation
56	Valley Blvd. Sawtooth, add sidewalk curb and gutter	$ 987,879	$ -	$ 987,879	14.00%	$138,261	Per the City Active Transportation
	Existing / Offsetting Revenues						
	Subtotal	**$ 33,509,659**	**$ -**	**$ 33,509,659**		**$4,689,916**	

Traffic Signals (26)

1	Merrill Ave./Cypress Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
2	Arrow Blvd./Cypress Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
3	Live Oak Ave./Village Dr. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
4	Cherry Ave./Banana Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
5	Slover Ave./Almond Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
6	Alder Ave./Marygold Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
7	San Bernardino/Catawaba Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
8	Slover Ave./Bananna Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
9	Randall Ave./Mango Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
10	San Bernardino/Oleander - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
11	Miller Ave./Locust Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
12	RandallAve./Cypress Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
13	Cherry Ave./Village Dr. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
14	San Bernardino/Mango Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
15	Miller Ave./Juniper Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
16	Randall Ave./Oleander Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
17	Marley Ave./Pacific Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
18	South Highland./Juniper Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
19	Beech Ave./Walnut Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
20	Juniper Ave./Valencia Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
21	Walnut Ave./Juniper Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
22	West Liberty/Miller Ave. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
23	Cypress Ave. /Walnut St. - Replace All way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
24	Randall Ave. /Pepper Ave. - Replace 2 way stop with traffic signal - High Priority	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
25	South Heritage /East Liberty Parkway - Replace 2 way stop with traffic signal - High Pri	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
26	South Heritage /West Liberty Parkway - Replace 2 way stop with traffic signal - High Pr	$ 400,000	$ -	$ 400,000	14.00%	$55,983	Per the City
	Existing / Offsetting Revenues						
	Subtotal	**$ 10,400,000**	**$ -**	**$ 10,400,000**		**$ 1,455,554**	
	Total Traffic Facilities	**$ 129,641,791**	**$ 4,696,256**	**$ 124,945,535**		**$17,487,924**	

B. Parks Facilities

1	New Parks in underserved areas (2) 20 Acres Each	$ 34,000,000	$ -	$ 34,000,000	11.68%	$3,970,714	Parks Master Plan
2	New South Fontana Community Center	$ 25,000,000	$ -	$ 25,000,000	11.68%	$2,919,642	Parks Master Plan
3	Park Improvements	$ 30,000,000	$ -	$ 30,000,000	11.68%	$3,503,571	Parks Master Plan
4	Recreational Trails	$ 19,000,000	$ -	$ 19,000,000	11.68%	$2,218,928	Parks Master Plan
5	New Park in North Fontana (20 acres)	$ 20,000,000	$ -	$ 20,000,000	70.00%	$14,000,000	CIP
6	210 Sports Park	$ 30,000,000	$ -	$ 30,000,000	70.00%	$21,000,000	CIP
7	Downtown Lineal Park on PE Trail	$ 3,000,000	$ -	$ 3,000,000	11.68%	$350,357	CIP
8	New Community Center in Core of City	$ 25,000,000	$ -	$ 25,000,000	11.68%	$2,919,642	CIP
	Existing / Offsetting Revenues		**$ 2,204,022**				
	Total Parks and Recreation Facilities	**$ 186,000,000**	**$ 2,204,022**	**$ 183,795,978**		**$50,882,855**	

C. Public Facilities

1	Corporate Yard Expansion (Three phases of expansion)	$ 37,200,000	$ -	$ 37,200,000	14.00%	$5,206,405	Maintain/improve the City's Public
4	Proposed Parking Structure 130 spaces (Downtown)	$ 4,900,000	$ -	$ 4,900,000	14.00%	$685,790	Maintain/improve the City's Public
	Existing / Offsetting Revenues		**$ 8,424,378**				
	Total Public Facilities	**$ 42,100,000**	**$ 8,424,378**	**$ 33,675,623**		**$ 5,892,195.13**	

D. Fire Facilties

1	Station 80 with BC dorm and apparatus bay (Cherry-South Highland)	$ 6,500,000	$ -	$ 6,500,000	14.00%	$909,721	Per the Fontana City Fire Departme
2	Station 80 Training Tower/Facility	$ 5,000,000	$ -	$ 5,000,000	14.00%	$699,786	Per the Fontana City Fire Departme
3	Station 81 with 80' deep apparatus bay	$ 6,500,000	$ -	$ 6,500,000	14.00%	$909,721	Per the Fontana City Fire Departme
4	Station 77 Re-location	$ 6,500,000	$ -	$ 6,500,000	14.00%	$909,721	Per the Fontana City Fire Departme
5	Medic Engine 80	$ 1,000,000	$ -	$ 1,000,000	14.00%	$139,957	Per the Fontana City Fire Departme
6	Medic Truck 80	$ 1,700,000	$ -	$ 1,700,000	14.00%	$237,927	Per the Fontana City Fire Departme
7	Medic Engine 81	$ 1,000,000	$ -	$ 1,000,000	14.00%	$139,957	Per the Fontana City Fire Departme
8	Medic Squad 81	$ 250,000	$ -	$ 250,000	14.00%	$34,989	Per the Fontana City Fire Departme
9	Utility Truck 80	$ 75,000	$ -	$ 75,000	14.00%	$10,497	Per the Fontana City Fire Departme
10	Utility Truck 81 (Casa Grande)	$ 75,000	$ -	$ 75,000	14.00%	$10,497	Per the Fontana City Fire Departme
	Existing / Offsetting Revenues		**$ 702,280**				
	Total Fire	**$ 28,600,000**	**$ 702,280**	**$ 27,897,720**		**$ 4,002,774**	

E. Library Service							
1	Roof Replacement	$630,000	$ -	$630,000.00	14.00%	$88,173	Maintain/improve the City's Library
2	Remodeling Projects	$500,000	$ -	$500,000.00	14.00%	$69,979	Maintain/improve the City's Library
3	Books	$750,000	$ -	$750,000.00	14.00%	$104,968	Maintain/improve the City's Library
4	Furniture Replacement	$450,000	$ -	$450,000.00	14.00%	$62,981	Maintain/improve the City's Library
5	Computer/Hardware Replacement	$230,000	$ -	$230,000.00	14.00%	$32,190	Maintain/improve the City's Library
6	Carpet Replacement	$260,000	$ -	$260,000	14.00%	$36,389	Maintain/improve the City's Library
7	Parking Lot Repairs	$64,750	$ -	$64,750	14.00%	$9,062	Maintain/improve the City's Library
8	HVAC Replacement	$4,500,000	$ -	$4,500,000	14.00%	$629,807	Maintain/improve the City's Library
9	Elevator Replacement	$195,000	$ -	$195,000	14.00%	$27,292	Maintain/improve the City's Library
	Existing / Offsetting Revenues		**$ 125,291**				
	Total Library	**$7,579,750**	**$ 125,291**	**$7,454,459**		**$1,060,840**	

F. Police Facilities							
1	Two (2) story 40,000 sf structure @ 627/sq. ft. x 40,000	$ 25,080,000	$ -	$ 25,080,000	14.00%	$3,510,125	Per the Fontana Police Departmen
2	Vehicles & Equipment - Patrol Units Black & White (33)	$ 2,459,160	$ -	$ 2,459,160	14.00%	$344,177	Per the Fontana Police Departmen
3	Vehicles & Equipment - Command Staff (1)	$ 50,020	$ -	$ 50,020	14.00%	$7,001	Per the Fontana Police Departmen
4	Vehicles & Equipment - MOU/Special Assignment (11)	$ 457,160	$ -	$ 457,160	14.00%	$63,983	Per the Fontana Police Departmen
5	Vehicles & Equipment - Animal Service Truck (2)	$ 175,200	$ -	$ 175,200	14.00%	$24,520	Per the Fontana Police Departmen
6	Vehicles & Equipment - Community Service Truck (2)	$ 111,340	$ -	$ 111,340	14.00%	$15,583	Per the Fontana Police Departmen
7	Vehicles & Equipment - Code Inspector Truck (3)	$ 140,100	$ -	$ 140,100	14.00%	$19,608	Per the Fontana Police Departmen
8	Vehicles & Equipment - Field Evidence Technician Truck (1)	$ 64,000	$ -	$ 64,000	14.00%	$8,957	Per the Fontana Police Departmen
9	Vehicles & Equipment - Administration (1)	$ 41,560	$ -	$ 41,560	14.00%	$5,817	Per the Fontana Police Departmen
10	Total Vehicle Annual Recurring O & M Costs & Capital Recovery	$ 1,467,531	$ -	$ 1,467,531	14.00%	$205,391	Per the Fontana Police Departmen
11	Land - Parking lot with 200 Marked Stalls [1] (Construction Costs only)	$ 1,000,000	$ -	$ 1,000,000	14.00%	$139,957	Per the Fontana Police Departmen
12	General Office Equipment (Workstation, Computers, etc.)	$ 594,200	$ -	$ 594,200	14.00%	$83,163	Per the Fontana Police Departmen
13	Staff Equipment start-up (gun, camera, safety equipment)	$ 698,400	$ -	$ 698,400	14.00%	$97,746	Per the Fontana Police Departmen
14	Property acquisition to expand (existing homes) Land Cost only	$ 3,500,000	$ -	$ 3,500,000			
15	Establishment of a 1,200 sq. ft. Sub-station / building lease costs	$ 1,275,759	$ -	$ 1,275,759			
	Existing / Offsetting Revenues		**$ 1,401,386**	$ -			
	Total Police Facilities Total	**$ 37,114,430**	**$ 1,401,386**	**$ 35,713,044**		**$4,526,028**	
	Grand Total	**$ 431,035,971**	**$ 17,553,612**	**$ 413,482,359**		**$ 83,852,615**	

APPENDIX J
AB 52 & SB 18

CONFIDENTIAL DOCUMENT