City Of Merced Wastewater Collection System Master Plan

DRAFT ENVIRONMENTAL IMPACT REPORT

September 2020

SCH# 2018071019









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Executive Summary

ES.1 INTRODUCTION AND BACKGROUND

The City of Merced's (City's) Vision 2030 General Plan (2030 General Plan) discusses City growth that may occur by the year 2030. As a part of the infrastructure planning associated with accommodating this growth, the City prepared the 2017 Wastewater Collection System Master Plan (2017 WCSMP) that set forth a strategy to meet the long-term sewer system needs of the 2030 General Plan (City of Merced 2017). Key infrastructure needs relevant to the 2017 WCSMP include the wastewater collection system itself; wastewater treatment, disposal, and reuse facilities; and various potable and non-potable water needs for growing areas of the City. The City, as the lead agency pursuant to the California Environmental Quality Act (CEQA), is proposing to implement the 2017 WCSMP, which outlines a general roadmap or a programmatic plan (i.e., referred to as the 'Program' in this Environmental Impact Report [EIR]) as well as specific projects (capital improvement plan) for developing the City's wastewater collection system in the City (Figure ES-1) to reach reasonable buildout as identified in the 2030 General Plan (City of Merced 2012).

The Program, identified as Alternative Plan A in the 2017 WCSMP, describes the City's preferred approach for how the wastewater collection system infrastructure would be built to meet the future growth and sewer demands of the City's planning area, which is comprised of the 2030 General Plan Specific Urban Development Plan (SUDP)/Sphere of Influence (SOI) areas. The Program was selected for its ability to best meet the long-range sewer system conveyance needs of the City. These needs were determined by the Program's use of gravity sewers, which are more reliable, require no energy to operate, and no moving parts (i.e. pump stations) to maintain, where feasible. Thus limiting the life-cycle and energy costs associated with operation of the system.

The Program proposes the City's collection system take all municipal wastewater to the City's existing 12 million gallons per day (Mgal/d) capacity Wastewater Treatment and Reclamation Facility (WWTRF). The existing WWTRF would be expanded, as needed in 4 to 5 Mgal/d increments, to handle 2030 General Plan flows, referred to as WWTRF Expansion Projects in this EIR. The effluent disposal and reuse facilities at the WWTRF are believed to have sufficient land and disposal potential to serve reasonable build-out design flow estimates of 34 to 35 Mgal/d, if and when buildout is needed.

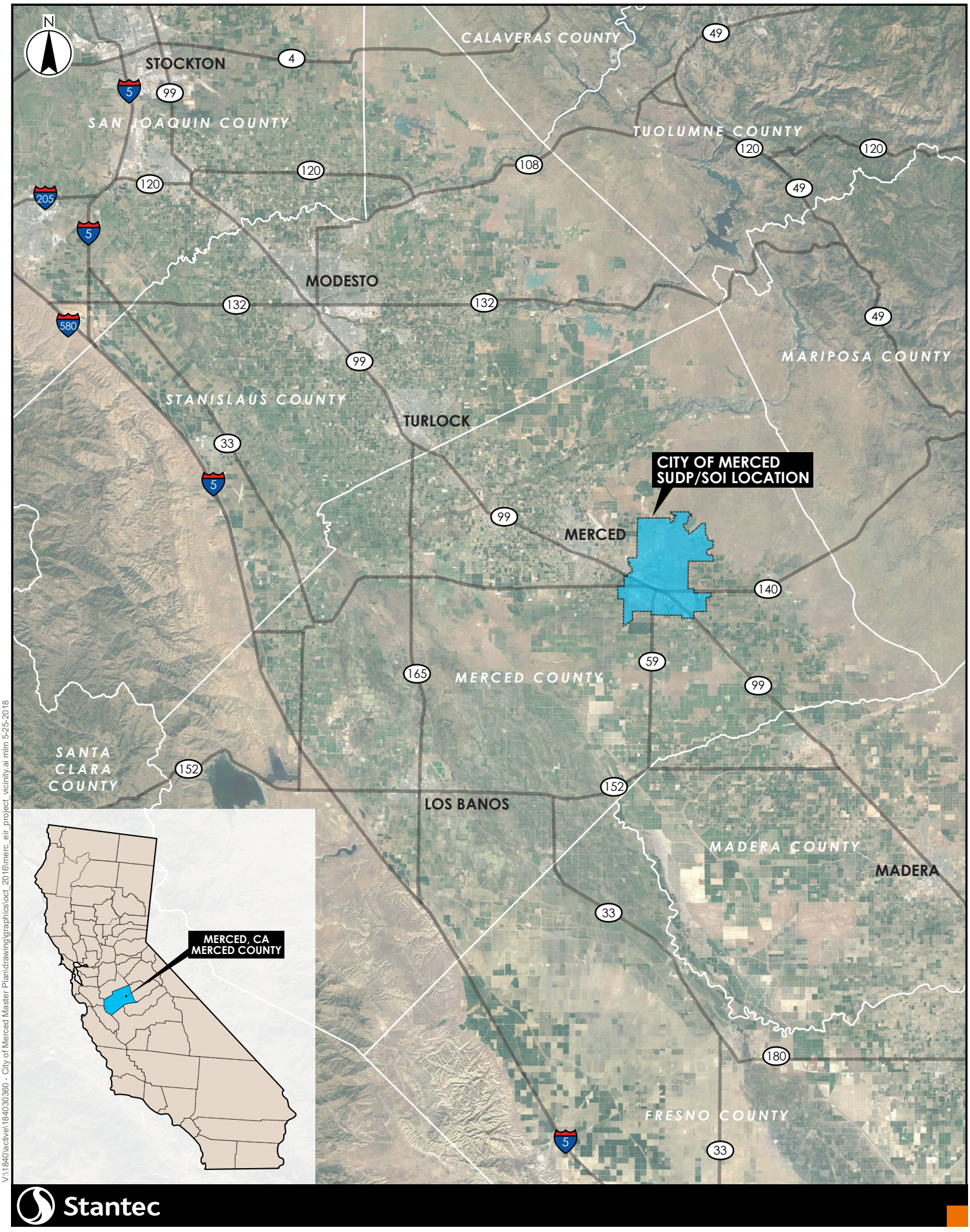
The Program proposes main trunk sewer locations within existing City road rights-of-way consistent with the 2030 General Plan Circulation Element to serve anticipated growth in North and South Merced. These sewers would maintain gravity flows where feasible. Where infeasible, forcemain sewers and pump/lift stations would be used. Specifically, two trunk sewer projects—the Northern Trunk Sewer Project and the Southern Trunk Sewer Project—have been identified as the first steps to supporting the construction of the 2017 WCSMP. These projects would be sized to accommodate the reasonable build-out of the SUDP/SOI and would be required prior to further development within North Merced or South Merced, respectively. These trunk sewers would serve as the key routes for wastewater to be delivered to the WWTRF and as interceptors for the new smaller collector sewers. Collectively, the Northern Trunk Sewer Project, Southern Trunk Sewer Project, and WWTRF Expansion Projects are referred to collectively as the 'proposed Projects' within this EIR. Please see Chapter 2.0 for a detailed Project Description.

This Draft EIR has been prepared in compliance with the CEQA of 1970 (as amended), codified at California Public Resources Code (PRC) Sections 21000 et seq., and the state CEQA Guidelines in the Code of Regulations, Title 14, Division 6, Chapter 3. The Program and proposed Projects are described further in Chapter 2.0 of this document.

This Draft EIR also incorporates by reference the analysis and other information contained in the City's 2017 WCSMP, December 15, 2017 (City of Merced 2017), as well as the planning documents that helped define the Program Study Area, the 2017 WCSMP growth projections, program capacity estimates, and overlapping environmental analysis including the following:

The 2017 WCSMP, December 15, 2017 (City of Merced 2017)
https://www.cityofmerced.org/depts/engineering_division/sewer_master_plan.asp
The 2030 General Plan (City of Merced 2012),
https://www.cityofmerced.org/departments/development-services/planning-division/merced-vision-2030-general-plan#:~:text=The%20Merced%20Vision%202030%20General%20Plan%20was%20adopted%20on%20January,which%20can%20be%20downloaded%20below
The 2030 General Plan Draft and Final EIRs (State Clearinghouse Number [SCH] No. 2008071069) (City of Merced 2010)
https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183
The 2009 University of California (UC) Merced 2020 Project Addendum Long-Range Development EIS/EIR (SCH Number 200841009) (UC California 2008)
https://merced2020.ucmerced.edu/sites/merced2020.ucmerced.edu/files/documents/2020_adeir102708web.pdf
City of Merced, North Merced Sewer Master Plan (City of Merced 2002, Draft)
Available upon request at the City
The City's Draft and Final Wastewater Treatment Plan Expansion Project EIR (SCH Number 2005101135) August 2006 (City of Merced 2006)
https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?blobid=4782
The 2015 Bellevue Community Plan (City of Merced 2015)
https://www.cityofmerced.org/Home/ShowDocument?id=8608
The 2004 University Community Plan (Merced County 2004)
http://web2.co.merced.ca.us/pdfs/planning/cplan/completed/university/final_university_community_plan.pdf

As described in the 2017 WCSMP service demands based on varying growth projections identified by the 2030 General Plan, and as further refined in the localized community planning, were used as a basis for this Draft EIR. Communities such as Celeste, UC Campus, and University community area were considered as well as service to the Bellevue, University, and other community plan areas within the Program Study Area.



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Figure ES-1
Wastewater Collection System Master Plan Program Vicinity
City of Merced - Draft Environmental Impact Report

ES.2 PURPOSE AND OBJECTIVES

The purpose of the 2017 WCSMP was to strategically and comprehensively plan development of the wastewater infrastructure necessary to support reasonable build-out of the SUDP/SOI and meet these long-term projected needs. The primary objectives of the Program are to achieve the following:

1. Construct and maintain safe and reliable facilities.
2. Meet long-term sewer service collection system needs by constructing the components of the collection system in stages, as needed.
3. Achieve lower overall life-cycle cost and maintain relatively low costs for sewer service considering upfront costs and anticipated operation and maintenance costs over the coming decades.
4. Maintain high water quality and wastewater treatment standards.
5. Reduce or maintain relatively low operational costs and energy demand by selecting gravity systems where feasible.
6. Maintain consistency with the Merced Vision 2030 General Plan.
7. Plan collection system infrastructure that meets reasonable build-out conditions of 35 Mgal/d.
8. Minimize land use and environmental impacts.
9. Adhere to federal and state policies and regulations in support of regionalization, reclamation, recycling, and conservation for wastewater treatment plants (such as Central Valley Regional Water Quality Control Board [CVRWQCB] Resolution Number R5-2009-0028) (CVRWQCB 2009).
10. Use the existing publicly owned property, roadways, and rights-of-way (ROWs) to the extent feasible.

ES.3 PROJECT ALTERNATIVES

An EIR must describe a range of reasonable alternatives to the project or alternative project locations that could feasibly attain most of the basic project objectives and would avoid or substantially lessen any of the significant environmental impacts of the proposed project. The alternative analysis must include the “No Project Alternative” as a point of comparison. The No Project Alternative includes existing conditions and reasonably foreseeable future conditions that would exist if the proposed project were not approved (CEQA Guidelines Section 15126.6). The following alternatives are discussed further in Chapter 4.0, Alternatives, of this document.

No Project Alternative

The No Project Alternative assumes that if selected, the Program would not be implemented, and the wastewater collection system within the City of Merced would remain operating under existing conditions. Aging infrastructure and facilities required to meet the capacity needs of the City, or address system deficiencies would be constructed or modified individually, which would hinder the City’s ability to holistically address existing system deficiencies, replace

aging infrastructure, or provide the facilities necessary to meet future growth. Addressing these needs individually as opposed to holistically would impede the expediency at which these needs are met, potentially interfering with the City's ability to provide wastewater infrastructure to its customers given anticipated future population growth. Under the No Project Alternative, wastewater would continue to be conveyed through existing City infrastructure, and the identified impacts associated with construction and operating the Program Study Area would be avoided for all resource areas. However, the No Project Alternative would not meet most of the City's identified Program objectives.

North Merced Satellite Treatment Alternative

This alternative was derived as a part of the 2017 WCSMP development. The alternative would consist of building a second wastewater treatment facility in north Merced to accommodate new wastewater associated with development as the area grows to reasonable build-out of the SUDP/SOI. The new facility would require the City to purchase the industrial zoned property located west of the intersection of West Yosemite Avenue and State Route (SR) 59. The facility would initially accommodate 4 to 5 Mgal/d wastewater flows with plans to expand to a maximum capacity of 14 to 15 Mgal/day at reasonable build-out, while the existing WWTRF would accommodate wastewater flows from the rest of the SUDP/SOI with an initial expansion to 16 Mgal/day and subsequent expansion as reasonable build-out is neared to reach a maximum capacity of 20 Mgal/day. Between the two treatment facilities the alternative would achieve the total 34 to 35 Mgal/day treatment capacity required to meet reasonable build-out conditions under the 2030 General Plan. Additionally, this alternative would require new effluent disposal and or reuse facilities and discharge permits to serve the new treatment facility. Additional land for effluent disposal could total approximately 4,550 acres. Key wastewater collection system trunk lines for this alternative would be similar to the proposed Projects, however, would exclude areas crossing from north to south Merced.

Decentralized Treatment Facilities Alternative

This alternative would consist of a decentralized system with multiple treatment facilities developed in phases to accommodate anticipated growth within the City. These new WWTRFs would be built in new development areas and would treat the wastewater associated with each new development as they occur. This alternative would require the placement of trunk and collector pipelines, using gravity fed systems to the maximum extent feasible to convey wastewater flows to the new decentralized facilities as well as to the existing WWTRF throughout the City's SUDP/SOI. This alternative would require the individual treatment and permitted disposal of effluent at each new site as well as operations and maintenance associated with each new facility added. Each facility would require a treatment train sufficient to treat the wastewater generated within a particular development area and would be required to meet waste discharge permitting requirements and maintain an individual National Pollutant Discharge Elimination Service (NPDES) permit, or provide reclamation lands on which to reuse treated effluent, as well appropriate discharge permits issued by the CVRWQCB.

Campus Parkway Alternative

The Campus Parkway Alternative is a variation on the Eastern Trunk Servicing Concept that was explored during the WCSMP development process (which is described in Appendix E) and was based on public input. The alternative would require an additional trunk sewer to be placed outside of the City's SUDP/SOI from the University of California, Merced (UC Merced) Campus to Campus Parkway where it would connect with the existing sewer collection system. This alternative would involve two phases to reach the reasonable build-out capacity needed and analyzed in the

2030 General Plan. Phase 1 of the Campus Parkway Alternative would involve conveyance of wastewater within the Campus Community area, and possibly from additional portions of the service area to flow down through this system and eventually reach the City's existing WWTRF near the southwest portion of the City's SUDP/SOI. Trunk sewers in the north would be reduced in size as flow from the northwestern portion of the service area would be conveyed via this expansion of the existing WWTRF. Phase 2 of this alternative would require additional wastewater infrastructure for the new development in the far north and northwestern portions of the City (partially outside of the City's SUDP/SOI).

Recycled Water Reclamation Alternative

This alternative would implement that concept to recharge groundwater use in north Merced by returning effluent from the WWTRF to North Merced through a network of reclaimed water pipes. Based on the evaluation for pipeline placement of the proposed Projects for implementation of the Program, it is assumed that recycled pipelines would follow the same alignments as the proposed Projects and future program collector infrastructure. These recycled water pipelines would likely be required to have appropriate health and safety setbacks from the Program pipelines (typically a minimum distance of 50 feet or other form of sewer containment such as double walled pipes). Recycled water uses and connections within the City would be required under this alternative for areas such as City parks or landscaped areas. Where the Program pipelines gravity flow to the WWTRF, pumping the recycled water back up the system would be required. Pumping would require placement of one or more pumps or lift stations.

Reduced Build-Out Sewer Capacity Alternative

The 2017 WCSMP and the former administrative drafts as described in Appendix E, evaluated different scenarios in which interim conditions with or without participation of certain neighborhoods within the City would occur. These evaluations are extrapolated out to develop this reduced build-out alternative that would serve 20 Mgal/d capacity. This alternative would have the same footprint and construction and operations activities as the Program and proposed Projects; however, it would be downsized, and development would only need to accommodate 20 Mgal/d capacity. The 20 Mgal/d capacity would likely not be able to serve the development of the City's entire SUDP/SOI at the densities illustrated in the 2030 General Plan. Trunk sewer pipelines would be downsized from the proposed Projects and the pump station would have a smaller footprint; no expansion beyond what was previously planned in the 2006 WWTRF EIR would be required.

Parallel or Upsized Existing System Alternative

The 2017 WCSMP also explored installing parallel sewers adjacent to the main existing trunk lines within the City limits to accommodate interim wastewater flows and to allow for additional sewer connections within north and eastern Merced. This alternative expands on that concept by considering the parallel or upsized trunk lines within the City adjacent to trunk sewers. This alternative would target critically impacted sewers, installing a parallel or upsized trunk sewer within the ROW associated with West Avenue and Olive Avenue and adjacent to or within the ROW of existing sewers at or near capacity. This alternative would require construction throughout many of the developed areas within the City, would require utility relocations, and would require resolution of conflicts with other utilities and infrastructure. This alternative would be designed to meet reasonable build-out flows identified within the 2030 General Plan and would require parallel pipes or upsized replacement pipes throughout much of the existing system.

ES.4 RESPONSIBLE AND TRUSTEE AGENCIES

In accordance with CEQA, a responsible agency is a public agency, other than the Lead Agency, that has responsibility to carry out or approve a project (PRC Section 21069). A trustee agency is a state agency that has jurisdiction by law over natural resources that are held in trust for the people of the State of California (PRC Section 21070).

The following public or State agencies may serve as responsible and/or trustee agencies for the Program:

California Air Resources Board
San Joaquin Valley Air Pollution Control District
CVRWQCB
California Department of Fish and Wildlife
Office of Historic Preservation

ES.5 AREAS OF CONTROVERSY/ISSUES TO BE RESOLVED

During the Notice of Preparation (NOP) public review period, concerns were raised regarding the potential adverse impacts to the following: air quality and greenhouse gases, agricultural resources, hydrology and groundwater resources, hazards and hazardous materials, noise, odor, aesthetics, biological resources, and traffic and transportation. Additionally, concerns regarding alternatives, cumulative impacts, and general plan consistency were also raised. These concerns have been addressed in Chapter 3.0, Environmental Impact Assessment. Additionally, concerns of urban blight, environmental justice, impacts to minority communities, and economic impacts were also raised during the NOP process. Generally, and as raised by comments, these topics would not result in an environmental impact as a result of the project and are not topics that are required for consideration under the CEQA Guidelines. Where these topics overlap discussions of potential environmental impacts, potential impacts from these topics were also discussed within a specific environmental resource area as applicable. The NOP and comments received on the NOP are included in Appendix A of this Draft EIR and a summary of issues raised in these comments is included in Section 1.1.2.1, Notice of Preparation.

ES.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table ES-1 summarizes the potential environmental effects of the Program, the recommended mitigation measures, if applicable, and the level of significance after mitigation. Pursuant to CEQA Guidelines Section 15093, if the Program is approved as proposed, any impact noted in the summary as “significant” after mitigation would require the adoption of overriding considerations. As shown in Table ES-1, development of the Program with mitigation measures would not result in any significant and unavoidable impacts. Therefore, a statement of overriding considerations would not be required.

Additionally, CEQA requires public agencies to establish a monitoring and reporting program for the purpose of ensuring compliance with those mitigation measures adopted as conditions of approval in order to mitigate or avoid significant environmental impacts identified in an EIR. A Mitigation Monitoring and Reporting Program (MMRP), incorporating the mitigation measures set forth in this document, would be adopted at the time of certification of the Final EIR.

Table ES-1 Executive Summary of Impacts and Mitigation Measures

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
3.1 Aesthetics and Visual Resources				
AES-1: Potential to have a substantial adverse effect on a scenic vista.	LTS	LTS	NI	**None Required**
AES-2: Potential to damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway.	NI	NI	NI	**None Required**
AES-3: In non-urbanized areas, potential to 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, the potential of the project to conflict with applicable zoning and other regulations governing quality.	LTS/M	LTS/M	LTS	**MM AES-1:** Restoration of Disturbed Areas **MM AES-2:** Guidance for Design and Maintenance of Above Ground Facilities
AES-4: Potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	LTS/M	LTS/M	LTS/M	**MM AES-3:** Use of Best Management Practices to Minimize Lighting Impacts from Construction and Operation
3.2 Agricultural and Forestry Resources				
AG-1: Potential to result in the loss of forest land or conversion of forest land to non-forest use.	LTS	LTS	NI	**None Required**
AG-2: Potential to covert 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.	NI	NI	NI	**None Required**
AG-3: Potential to conflict with existing zoning for agricultural use, or Williamson Act contract.	NI	NI	NI	**None Required**
AG-4: Potential to conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as	NI	NI	NI	**None Required**

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).				
AG-5: Potential to 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.	NI	NI	NI	**None Required**
3.3 Air Quality				
AIR-1: Potential to conflict with or obstruct implementation of the applicable air quality plan.	LTS	LTS	LTS	**None Required**
AIR-2: Potential to result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard.	LTS	LTS	LTS	**None Required**
AIR-3: Potential to expose sensitive receptors to substantial pollutant concentrations.	LTS/M	LTS/M	LTS/M	**MM AIR-1:** Pre-Construction Worker Environmental Awareness Program (Air Quality) **MM AIR-2:** Implement Hazardous Materials Measures **MM AIR-3:** Minimize Construction Emissions **MM AIR-4:** Design Considerations for Future WWTRF Improvements
AIR-4: Potential to result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	LTS	LTS	LTS	**None Required**
3.4 Biological Resources				
BIO-1: Potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.	LTS/M	LTS/M	LTS/M	**MM BIO-1:** Pre-Construction Botanical Surveys **MM BIO-2:** Pre-Construction Worker Environmental Awareness Program Training (Biological Resources) **MM BIO-3**: Reduce the Spread and Introduction of Invasive Noxious Weeds

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
				MM BIO-4: Avoid Disturbance to Breeding Burrowing Owl **MM BIO-5:** Avoid Disturbance to Nesting Swainson's Hawk **MM BIO-6:** Avoid Disturbance to Breeding Colonies of Tricolored Blackbird **MM BIO-7:** Avoid Disturbance to Nesting Raptors and Other Migratory Birds **MM BIO-8**: Avoid Disturbance to Roosting Bat Species **MM BIO-9:** Avoid Disturbance to Breeding San Joaquin Fox **MM BIO-10**: Install Exclusion Fencing for Environmentally Sensitive Areas
BIO-2: Potential to 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 Wildlife or U.S. Fish and Wildlife Service.	LTS/M	LTS/M	LTS	**MM BIO-2:** Pre-Construction Worker Environmental Awareness Program Training (Biological Resources) **MM BIO-10**: Install Exclusion Fencing for Environmentally Sensitive Areas **MM BIO-11:** Avoid and Reduce Disturbance and Impacts to Riparian Habitat and/or Sensitive Natural Communities **MM GEO-1:** Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan
BIO-3: Potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance or potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	LTS/M	LTS/M	NI	**MM BIO-1:** Pre-Construction Botanical Surveys **MM BIO-2:** Pre-Construction Worker Environmental Awareness Program Training (Biological Resources) **MM BIO-3**: Reduce the Spread and Introduction of Invasive Noxious Weeds **MM BIO-4:** Avoid Disturbance to Breeding Burrowing Owl **MM BIO-5:** Avoid Disturbance to Nesting Swainson's Hawk

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
				MM BIO-6: Avoid Disturbance to Breeding Colonies of Tricolored Blackbird **MM BIO-7:** Avoid Disturbance to Nesting Raptors and Other Migratory Birds **MM BIO-8**: Avoid Disturbance to Roosting Bat Species **MM BIO-9:** Avoid Disturbance to Breeding San Joaquin Fox **MM BIO-10**: Install Exclusion Fencing for Environmentally Sensitive Areas
BIO-4: Potential to 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.	LTS/M	LTS/M	NI	**MM BIO-2:** Pre-Construction Worker Environmental Awareness Program Training (Biological Resources) **MM BIO-10**: Install Exclusion Fencing for Environmentally Sensitive Areas **MM BIO-12:** Avoid and Reduce Disturbance to WOTUS, Other WOTUS, and/or Wots **MM GEO-1:** Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan
BIO-5: Potential to 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.	LTS	LTS	NI	**None Required**
3.5 Cultural and Tribal Resources				
CUL-1: Potential to cause a substantial adverse change in the significance of a historical resource as defined in §15064.5.	LTS/M	LTS/M	LTS/M	**MM CUL-1:** California Environmental Quality Act-Level Cultural Resource Study for Proposed Projects **MM CUL-2**: Evaluation of Cultural Resources and Treatment of Cultural Resources if Found Eligible for the California Register of Historical Resources

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
				MM CUL-3: Proper Handling of Inadvertent Discovery of Cultural and Tribal Cultural Resources **MM CUL-5:** Worker Environmental Awareness Program (Cultural Resources)
CUL-2: Potential to cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5.	LTS/M	LTS/M	LTS/M	**MM CUL-1:** California Environmental Quality Act-Level Cultural Resource Study for Proposed Projects **MM CUL-2**: Evaluation of Cultural Resources and Treatment of Cultural Resources if Found Eligible for the California Register of Historical Resources **MM CUL-3:** Proper Handling of Inadvertent Discovery of Cultural and Tribal Cultural Resources **MM CUL-5:** Worker Environmental Awareness Program (Cultural Resources)
CUL-3: Potential to disturb human remains, including those interred outside of formal cemeteries.	LTS/M	LTS/M	LTS/M	**MM CUL-4:** Proper Handling of Inadvertent Discovery of Human Remains
CUL-4: Potential to 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 1) 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 2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.	LTS/M	LTS/M	LTS/M	**MM CUL-1:** California Environmental Quality Act-Level Cultural Resource Study for Proposed Projects **MM CUL-3:** Proper Handling of Inadvertent Discovery of Cultural and Tribal Cultural Resources **MM CUL-5:** Worker Environmental Awareness Program (Cultural Resources)

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
3.6 Geology, Soils, and Minerals				
GEO-1: Potential to directly or indirectly expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: 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 as defined by the Division of Mines and Geology Special Publication 42 or strong seismic ground shaking; Seismic-related ground failure, including liquefaction; or Landslides.	LTS	LTS	LTS	**None Required**
GEO-2: Potential to result in substantial soil erosion or the loss of topsoil.	LTS/M	LTS/M	LTS/M	**MM GEO-1:** Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan
GEO-3: Potential to 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.	LTS	LTS	LTS	**None Required**
GEO-4: Potential to be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.	LTS	LTS	LTS	**None Required**
GEO-5: Potential to 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.	NI	NI	NI	**None Required**
GEO-6: Potential to directly or indirectly destroy a unique paleontological resources or site or unique geologic feature.	LTS/M	LTS/M	LTS/M	**MM GEO-2:** Pre-Construction Worker Environmental Awareness Training (Paleontological Resources)

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
				MM GEO-3: Proper Handling of the Unanticipated Discovery of Paleontological Resources or Unique Geologic Features
GEO-7: Potential to 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.	NI	NI	NI	**None Required**
GEO-8: Potential to result in the loss of availability of a local-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.	NI	NI	NI	**None Required**
3.7 Greenhouse Gases and Energy Resources				
GHG-1: Generate greenhouse gas emissions, either directly, or indirectly, that may have a significant impact on the environment.	LTS	LTS	LTS	**None Required**
GHG-2: Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.	LTS	LTS	LTS	**None Required**
GHG-3: Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.	LTS	LTS	LTS	**None Required**
GHG-4: Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.	LTS	LTS	LTS	**None Required**
3.8 Hazards, Hazardous Materials, and Wildfires				
HAZ-1: Potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	LTS	LTS	LTS	**None Required**
HAZ-2: Potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	LTS/M	LTS/M	LTS/M	**MM AIR-2:** Implement Hazardous Materials Measures **MM HYD-1:** Avoid/Minimize Potential Impacts from Construction Material Release

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
				MM HAZ-1: Prepare and Implement a Hazardous Materials Release Prevention Plan **MM HAZ-2**: Worker Environmental Awareness Program (Hazards)
HAZ-3: Potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.	LTS/M	NI	NI	**MM AIR-2:** Implement Hazardous Materials Measures **MM AIR-3**: Minimize Construction Emissions
HAZ-4: Potential to 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.	LTS/M	LTS/M	NI	**MM HAZ-3:** Updated Active Cortese List Site Identification and Hazardous Site Remediation
HAZ-5: Potential to be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public or private 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.	LTS/M	LTS/M	LTS	**MM HAZ-4:** Coordination with Airports
HAZ-6: Potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	LTS/M	LTS/M	LTS	**MM TRA-1:** Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan
HAZ-7: Potential to expose people or structures either directly or indirectly, to a significant loss, injury or death involving wildland fires.	LTS	LTS	LTS	**None Required**
HAZ-8: If located in or near a state responsibility area or lands classified as very high fire hazard severity zones: Impair an adopted emergency response plan or emergency evacuation plan; 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	LTS	LTS	LTS	**None Required**

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or Expose people or structures to significant risks, including downslope downstream flooding or landslides, as a result of, runoff, post-fire slope stability, or drainage change.				
3.9 Hydrology and Water Quality				
HYD-1: Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.	LTS/M	LTS/M	LTS/M	**MM HYD-1:** Avoid/Minimize Potential Impacts from Construction Material Release **MM HYD-2:** Construction Dewatering Management Plan **MM GEO-1:** Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan
HYD-2: Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.	LTS/M	LTS/M	LTS/M	**MM HYD-2:** Construction Dewatering Management Plan
HYD-3: Potential to 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: Result in substantial erosion or siltation on- or off-site; Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; 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	LTS/M	LTS/M	LTS/M	**MM HYD-1:** Avoid/Minimize Potential Impacts from Construction Material Release **MM GEO-1:** Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
Impede or redirect flood flows.				
HYD-4: In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.	LTS	LTS	LTS	**None Required**
HYD-5: Potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.	LTS	LTS	LTS	**None Required**
3.10 Land Use and Planning				
LAND-1: Potential to physically divide an established community.	NI	NI	NI	**None Required**
LAND-2: Potential to 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.	NI	NI	NI	**None Required**
3.11 Noise and Vibrations				
NOS-1: Potential to generate 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 or other agencies.	LTS/M	LTS/M	LTS/M	**MM NOS-1:** Noise and Vibration Reduction Measures **MM NOS-2:** Notification and Coordination with Noise Sensitive Receptors **MM NOS-3:** Implement Standards for Noise Reduction of Pump Stations
NOS-2: Potential to generate excessive groundborne vibration or groundborne noise levels.	LTS/M	LTS/M	LTS	**MM NOS-1:** Noise and Vibration Reduction Measures **MM NOS-2:** Notification and Coordination with Noise Sensitive Receptors
3.12 Population and Housing				
POP-1: Potential to 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).	LTS	LTS	LTS	**None Required**

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
POP-2: Potential to displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.	NI	NI	NI	**None Required**
3.13 Public Services and Utilities				
PUB-1: Potential to 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; Police protection; Schools; Parks; or Other public facilities	NI	NI	NI	**None Required**
PUB-2: Potential to require or result in the relocation or construction of new or expanded water, wastewater, or stormwater drainage, electrical power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction or relocation of which could cause significant environmental effects.	LTS	LTS	LTS	**None Required**
PUB-3: Potential to have sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.	LTS	LTS	LTS	**None Required**
PUB-4: Potential to 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.	LTS	LTS	LTS	**None Required**
PUB-5: Potential to generate waste in excess of State or local standards, or in excess of the capacity of local	LTS	LTS	LTS	**None Required**

Environmental Impact	Finding			Mitigation Measure
	Overall Program	New Trunk Sewer Infrastructure Projects	WWTRF Expansion Projects	
infrastructure, or otherwise impair the attainment of solid waste reduction goals.				
PUB-6: Potential to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.	LTS	LTS	LTS	**None Required**
3.14 Recreation				
REC-1: Potential to 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; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	NI	NI	NI	**None Required**
3.15: Transportation and Traffic				
TRA-1: Potential to conflict with a program plan, ordinance, or policy, addressing the circulation systems, including transit, roadway, bicycle and pedestrian facilities.	LTS/M	LTS/M	LTS	**MM TRA-1**: Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan **MM TRA-2:** Inform Public and Emergency Service Agencies of Lane Closures and Detours
TRA-2: Potential to conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).	LTS	LTS	LTS	**None Required**
TRA-3: Potential to substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersection(s) or incompatible uses (e.g. farm equipment)).	LTS/M	LTS/M	LTS/M	**MM TRA-1**: Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan
TRA-4: Potential to result in inadequate emergency access.	LTS/M	LTS/M	LTS/M	**MM TRA-1**: Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan **MM TRA-2:** Inform Public and Emergency Service Agencies of Lane Closures and Detours

Notes:

NI = No Impact
LTS = Less than Significant
LTS/M = Less than Significant with Mitigation
MM = Mitigation Measure

1.0 INTRODUCTION

1.1 ENVIRONMENTAL REVIEW PROCESS

The California Environmental Quality Act (CEQA) (codified in Title 14 California Code of Regulations [CCR] Chapter 3 Section 15000 et seq. [the CEQA Guidelines] and California Public Resources Code [PRC] 21000 et seq.) requires public agencies to identify, disclose, and consider the potential environmental impacts of proposed discretionary actions that the agencies are considering for approval. When a project may have significant environmental impacts, the Lead Agency must prepare an Environmental Impact Report (EIR) and certify its adequacy before it considers whether to approve the project. A project that may have a significant impact on the environment cannot be approved unless the Lead Agency adopts mitigation measures that would reduce that impact to a less-than-significant level if feasible. If the impact would remain significant after mitigation (significant and unavoidable), the Lead Agency is still required to mitigate the impact to the extent feasible. An EIR is an informational document used for this purpose in state, regional, and local planning and decision-making processes to disclose potential environmental effects.

The City of Merced (City), as the CEQA Lead Agency, has prepared this Draft EIR for public review and comment pursuant to the requirements of Title 14 CCR Sections 15080 to 15097. The Draft EIR will be available for review and comment by public agencies and the public for a period of 45 days (14 CCR Section 15105). Pursuant to 14 CCR Section 15088, the City will evaluate comments on environmental issues received from persons who reviewed the Draft EIR and will provide written response to comments raising significant environmental issues in the Final EIR. The City will prepare the Final EIR, which will include any necessary revisions to the Draft EIR, the comments received on the Draft EIR, a list of persons, organizations, and public agencies who commented, and written responses to those comments raising significant environmental points pursuant to Title 14 CCR Sections 15088-15089 and 15132. As required under Section 15090 of the CEQA Guidelines, prior to approval, the City shall certify that the: the Final EIR complies with CEQA; it has reviewed and considered the information contained in the Final EIR before making their decision; and document that the Final EIR reflects the City's independent judgment and analysis.

1.1.1 Lead Agency Determination

The City is designated as the Lead Agency for preparing this EIR. CEQA Guidelines Section 15367 defines the Lead Agency as, "... the public agency, which has the principal responsibility for carrying out or approving a project." Other public agencies may use this document in their decision making or permit processes related to the undertaking proposed by the City. These agencies are considered Responsible Agencies under CEQA.

This Draft EIR was prepared for the City by Stantec Consulting Services Inc. (Stantec), an independent environmental consultant. Prior to public review, this Draft EIR was extensively reviewed and evaluated by City staff and, as such, this Draft EIR reflects the independent judgment and analysis of City staff. A list of report preparation personnel is provided in Section 6.0.

1.1.2 Scope of the EIR

1.1.2.1 Notice of Preparation

In accordance with the CEQA Guidelines, the City distributed a Notice of Preparation (NOP) of a Draft EIR on September 9, 2018, and gave the public an opportunity to provide comments on the scope of the analysis that should be included in this Draft EIR. A public scoping meeting was held at the Merced Civic Center on July 24, 2018, and the public scoping comment period closed on August 7, 2018. The comments received by the City on the NOP were considered in the preparation of this Draft EIR. The scope of this Draft EIR includes the potential environmental impacts identified in the NOP, as well as any issues raised by agencies and the public in response to the NOP. Copies of the NOP and comments received during the NOP comment period are provided in Appendix A.

Twelve comment letters were received in response to the NOP. They are listed in Table 1.1-1 and provided in Appendix A of this Draft EIR.

Table 1.1-1 NOP Comment Letter Summary

Date	Commenter	Affiliation	Summary	Relevant EIR Section Related to Concern(s)
12/18/2017 (included with August 6, 2018 letter received by Richard Harriman)	Richard Harriman	Property owner in the City of Merced and also represents the Merced Citizens for Responsible Planning and the San Joaquin Valley Environmental Defense Center regarding this matter.	Proposed not adopting the proposed resolution approving the amended 2015 Urban Water Management Plan in its form until the sewer master plan is approved.	Project Description; Utilities and Service Systems
7/24/2018	Arnaud Marjollet, Director of Permit Services	San Joaquin Valley Air Pollution Control District	Expressed concerns regarding the Program implementation, including emissions analysis, criteria pollutants, construction emissions, nuisance odors, health risk screening/ assessment, ambient air quality analysis, and district rules and regulations.	Air Quality and Greenhous Gases

Date	Commenter	Affiliation	Summary	Relevant EIR Section Related to Concern(s)
7/25/2018	Pete and Vicki Bandoni	Landowner	These landowners currently farm 240 acres (80 acres of almond trees and 160 acres of winter oats). They expressed concern about noticing of the EIR, access through their property, overflow into the drain on the south side of Cardella Road into the G Street Drain, and about drainage issues, topography, the Program's impact on the agricultural land, and road improvements.	Agricultural Resources; Introduction; Project Description; Traffic; Hydrology; Soils; Utilities and Service Systems
7/30/2018	Sharaya Souza cc: state clearinghouse	Native American Heritage Commission	Expressed concerns regarding tribal consultation and cultural resources as a result of implementation of the Program.	Cultural; Tribal Cultural Resources
8/2/2018	Sean Tobin	MVE Inc.	Expressed concerns regarding the Yosemite Lake Estates project in north Merced, alternatives, and land use changes as a result of implementation of the Program.	Project Description; Alternatives; Land Use
8/3/2018	William (Bill) Lyons CC: Marci D'Arpino Mark W. Purdon John B. Anderson	Mape's Ranch and Lyons' Investments	Expressed concerns with the Sewer Master Plan prepared in 2017 and if adequate time has been given to conclude impacts of the study. Expressed concerns over appropriate future industrial development of University Industrial Park and notices of any public works to interested parties.	Land Use; Project Description; Utilities and Service Systems
8/4/2018	Rick Telegan	Partner 3rd Millennium Investments	Expressed concerns regarding financial impact and economic burden on parcels within the North Merced Sewer District, consistency with the General Plan, limiting areas initially annexed, alternatives, effluent reuse, study for funding considering different uses for the recycled water from wastewater treatment plant, and how the 2017 Master Plan intends to meet the sustainability plan by 2020.	Land Use; Alternatives; Project Description
8/6/2018	Richard Harriman	Valley Voice / Environmental and Land Use Attorney	Expressed concern over the unnecessary financial burden on taxpayers who do not need the wastewater facilities, as well as, "the current paradigm of hugely expensive large-scale centralized wastewater treatment facilities." Requested discussion of small-scale de-centralized tertiary wastewater systems for new development.	Utilities and Service Systems; Alternatives

Date	Commenter	Affiliation	Summary	Relevant EIR Section Related to Concern(s)
8/6/2018	Richard Harriman	Property owner in the City of Merced and also represent the Merced Citizens for Responsible Planning and the San Joaquin Valley Environmental Defense Center, regarding this matter.	Expressed concerns over the project description inadequacy (particularly related to describing the whole of the project). Additional concerns over alternatives, which should expand on the use of de-centralized tertiary treated wastewater facilities. Expressed concerns regarding the 2017 Urban Water Management Plan, use of surface water supplied by the Merced Irrigation District, common law public trust doctrine's applicability to the City's proposed use of in-stream surface water in conjunction with the groundwater supply that has been relied upon, validity of the City's 2017 Urban Water Management Plan due to recent policies, the Groundwater Sustainability Agency's groundwater management plan, the City's proposed surface and groundwater supplies from Global Warning, environmental justice, General Plan consistency, and economic study.	Air Quality, Greenhouse Gases, Biological Resources, Hydrology and Water Quality, Alternatives, Project Description, Land Use; Cumulative
8/7/2018	Pete and Vicki Bandoni	Landowner	Expressed concern about the financial burden of not developing their property and the ability to continue agricultural operations; not wanting to convert from private septic systems	Agricultural Resources; Land Use
8/7/2018	Bill Nicholson, Executive Officer	LAFCO	Requested that the 2017 Master Plan and EIR consider the community of Celeste's sewer connections to the City's system within the study area/service boundaries. Suggested that two specific community plans (Bellevue Community Plan [City of Merced 2015] and University Community Plan [Merced County 2004]) be referenced within the Draft EIR. Also mentions Rural Residential Areas currently served by individual septic systems and wells and asks if these were considered within the sewer density developing the 2017 Master Plan.	Land Use; Project Description; 2017 Master Plan

Date	Commenter	Affiliation	Summary	Relevant EIR Section Related to Concern(s)
8/7/2018	Michael K. Claiborne	Leadership Counsel for Justice & Accountability	Expressed concerns over environmental justice, the expansion of sewer service to unserved residence in disadvantaged communities, historic disinvestment, air quality, vehicle miles traveled, greenhouse gases, water quality, agricultural resources, hazardous materials, housing, economic issues, land use, cumulative impacts, alternatives, and mitigation.	Land Use; Project Description; Air Quality; Vehicle Miles Traveled; Greenhouse Gases; Water Quality; Agricultural Resources; Hazardous Materials; Housing; Land Use; Cumulative; Alternatives; Mitigation

1.1.2.2 Scoping Meeting

Pursuant to CEQA Guidelines Section 15082(c)(1), the City held a public scoping meeting on Tuesday, July 24, 2018, in the Sam Pipes Meeting Room at Merced Civic Center. Commenters at the scoping meeting were requested to provide comments in writing (a summary of all NOP comments received shown in Table 1.1-1). Of the six attendees at the meeting three provided written comments, which are addressed in this Draft EIR.

1.1.2.3 Draft EIR

The analysis included in Chapter 3.0 focuses on the specific environmental resource topics that require further evaluation to determine if they would have a potential impact. As summarized in Table 1.1-1, comments received during the scoping process were taken into consideration in development of this Draft EIR and were used to focus and refine impact analyses. Potential impacts and thresholds of significance were established by the City based on comments received, a comparison with the CEQA Guidelines Appendix G checklist, and resource-specific policy guidance and available scientific information. Resource areas that were identified to have potential impact based on comments submitted during the scoping process and informed by scientific studies are summarized below:

- Aesthetics and Visual Resources (AES)
- Agricultural and Forest Resources (AG)
- Air Quality (AQ)
- Biological Resources (BIO)
- Cultural and Tribal Cultural Resources (CUL)
- Geology, Soils, and Minerals (GEO)
- Greenhouse Gases and Energy Resources (GHG)
- Hazards, Hazardous Materials, and Wildfires (HAZ)
- Hydrology and Water Quality (HYD)
- Land Use and Planning (LAND)
- Noise (NOS)
- Population and Housing (POP)
- Public Services and Utilities (PUB)
- Recreation (REC)
- Transportation (TRA)

1.1.3 Relationship to Other Documents

This Draft EIR incorporates by reference the analysis and other information contained in the City's Draft 2017 Wastewater Collection System Master Plan (2017 WCSMP), published on December 15, 2017 (City of Merced 2017). The full text of the City's 2017 WCSMP is available online at https://www.cityofmerced.org/departments/engineering/sewer-master-plan. The 2017 WCSMP used previous City sewer planning documents, including the City of Merced Sewer Master Plan (City of Merced 2007, Draft), which was prepared in the context of serving the City's Merced Vision 2015 General Plan growth projections, and the City of Merced, North Merced Sewer Master Plan (City of Merced 2002, Draft) which was prepared to identify the sewer needs in the North Merced area. These documents include a combination of analysis and possible future projects that were used during the preparation of the current Draft 2017 WCSMP (City of Merced 2017).

The 2017 WCSMP itself is a planning document that lays out the general long-range plan for how to develop the City's collection system infrastructure to meet growth and development needs associated with growth projections identified within the 2030 Merced Vision General Plan (2030 General Plan). As identified in the 2017 WCSMP and noted in the beginning of the Introduction (Section 1.1), some of these improvements can be defined into specific projects; however, other improvements are too uncertain or undeveloped but can generally describe the nature of the activities that may occur at some point in the future in a programmatic fashion.

Section 15150 of the CEQA Guidelines permits documents of lengthy technical detail to be incorporated by reference in an EIR. Specifically, Section 15150 states that an EIR may "incorporate by reference all or portions of another document which is a matter of public record or is generally available to the public…" Consistent with the CEQA Guidelines and as a way to avoid creating an overwhelming amount of paper for members of the public and decision-makers to sort through, this Draft EIR incorporates by reference planning documents that helped define the Program Study Area, 2017 WSCMP growth projections, Program capacity estimates, and overlapping environmental analysis. The following documents are incorporated into this 2017 WCSMP EIR by reference:

- The 2017 WCSMP, December 15, 2017 (City of Merced 2017)
  https://www.cityofmerced.org/depts/engineering_division/sewer_master_plan.asp
- The 2030 General Plan (City of Merced 2012),
  https://www.cityofmerced.org/departments/development-services/planning-division/merced-vision-2030-general-plan#:~:text=The%20Merced%20Vision%202030%20General%20Plan%20was%20adopted%20on%20January,which%20can%20be%20downloaded%20below
- The 2030 General Plan EIR (State Clearinghouse [SCH] No. 2008071069) (City of Merced 2010)
  https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183
- The 2009 University of California (UC) Merced 2020 Project Addendum Long-Range Development EIS/EIR (SCH Number 200841009) (University of California 2008)
  https://merced2020.ucmerced.edu/sites/merced2020.ucmerced.edu/files/documents/2020_adeir102708web.pdf
- City of Merced, North Merced Sewer Master Plan (City of Merced 2002, Draft)
  Available upon request
- The City's Draft and Final Wastewater Treatment Plan Expansion Project EIR (SCH Number 2005101135) August 2006 (City of Merced 2006)
  https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?blobid=4782
- The 2015 Bellevue Community Plan (City of Merced 2015)
  https://www.cityofmerced.org/Home/ShowDocument?id=8608
- The 2004 University Community Plan (Merced County 2004)
  http://web2.co.merced.ca.us/pdfs/planning/cplan/completed/university/final_university_community_plan.pdf

1.1.4 Review of the Draft EIR

Upon publication of this Draft EIR, the City will file a Notice of Completion (NOC) in accordance with 14 CCR Section 15085 along with a Notice of Availability (NOA), in accordance with 14 CCR Section 15087, to begin the public review period. Concurrent with the NOC, this Draft EIR will be distributed to responsible and trustee agencies, other affected agencies, and interested parties, including those requesting a copy of the Draft EIR in accordance with PRC Section 21092(b)(3). The NOA will be posted and published in accordance with noticing requirements of CEQA Guidelines Section 15087. During the public review period, the Draft EIR will be available for review at the City's Planning and Public Works Departments during regular business hours as well as the Merced County Library Main Branch in Merced.

The document will be posted on the City's website at:

https://www.cityofmerced.org/departments/engineering/sewer-master-plan

Agencies, organizations, and interested parties will have the opportunity to comment on this Draft EIR during the 45-day public review period. All comments concerning the Draft EIR must be in writing either by letter or email and should be directed to the City's Public Works Director at the following address by the close of the comment period. Please include the commenter's full name and address.

Ken Elwin, PE, City of Merced Public Works Director
1776 Grogan Avenue
Merced, CA 95341
E-mail: elwink@cityofmerced.org

The public comment period will be identified in the NOA, which will be available on the City's website identified above.

1.1.4.1 Effectively Commenting on the EIR

Readers are invited to review and comment on the adequacy and completeness of this Draft EIR, particularly in describing the potential impacts, the level of severity, the mitigation measures being proposed to reduce or avoid significant impacts, and the alternatives being considered.

In this regard, CEQA defines "significant effect on the environment" as a substantial or potentially substantial adverse change in any of the physical conditions within the area affected by the actions Program or proposed Projects, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance (CEQA Guidelines Section 15382).

"Mitigation" includes actions that would avoid the impact altogether; minimize the impact; rectify by repairing, rehabilitating, or restoring the impacted environment; reduce the impact over time; or compensate for the impact by replacing or providing substitute resources or environments (CEQA Guidelines Section 15370).

The most effective comments are those that focus on the adequacy and completeness of the environmental analysis and that are supported by factual evidence. Comments that focus on the City's decision to approve or deny an action are not comments on the adequacy of this Draft EIR.

1.1.5 Final EIR

Upon completion of the public review period, the City will review the comments received and will prepare written responses to environmental issues raised pursuant to CEQA Guidelines Section 15088, and if necessary, will make any related revisions to the Draft EIR. Comments received and the responses to comments will be included as part of the record for consideration by the City in its decision-making process. Responses will be incorporated into the Final EIR and provided to any commenting public agencies at least 10 days prior to certification of the EIR (CEQA Guidelines Section 15088(b)). The general process for the preparation and certification of an EIR is described under Section 15096 of the CEQA Guidelines.

Following certification of the Final EIR, the City may then consider approval of the action as described in Section 15092 of the CEQA Guidelines, which states that a public agency shall not decide to approve or carry out a project for which an EIR was prepared unless either: (1) the project as approved will not have a significant effect on the environment, or (2) the agency has eliminated or substantially lessened all significant effects where feasible and made a determination that any remaining significant effects found to be unavoidable are acceptable due to overriding considerations.

If approved by the City, Section 15091 of the CEQA Guidelines requires the City to adopt findings describing how each of the significant impacts identified in the EIR is being mitigated. The findings will describe the reasons why significant unavoidable impacts, if any, cannot be mitigated. The findings will also describe the City's findings with respect to the alternatives that were analyzed in the EIR.

If the City decides to approve the action, any alternative analyzed in the Final EIR despite a finding that it would have significant and unavoidable impacts, the City will also adopt a Statement of Overriding Considerations describing the benefits of the action that in the City's judgment outweigh its significant environmental impacts, pursuant to Section 15093 of the CEQA Guidelines. Finally, the City will adopt a Mitigation Monitoring and Reporting Plan (MMRP) as required under Section 15096 (g) and 15097 of the CEQA Guidelines, which describes how it will ensure that the mitigation measures being required will be carried out.

1.2 PERMITS REQUIRED

The following permits may be required prior to the start of construction activities associated with implementation of the proposed Program:

- Section 404 Clean Water Act Permit
- Section 401 Clean Water Act Water Quality Certification
- Section 1602 California Department of Fish and Wildlife Streambed Alteration Agreement
- State Water Resources Control Board Construction General Permit
- Regional Water Quality Control Board Discharge Permit
- San Joaquin Valley Air Pollution Control District Indirect Source Review
- California Department of Transportation Encroachment Permit
- Union Pacific Railroad/Burlington Northern Santa Fe Pipeline or Wire Line Encroachment Permit
- City Encroachment Permit
- Merced County Encroachment Permit

1.3 ABBREVIATIONS

CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental Impact Report
MMRP	Mitigation Monitoring and Reporting Program
NOA	Notice of Availability
NOC	Notice of Completion
NOP	Notice of Preparation
PRC	Public Resources Code
SCH	State Clearinghouse
Stantec	Stantec Consulting Services Inc.
UC	University of California
2017 WCSMP	2017 Wastewater Collection System Master Plan
2030 General Plan	City of Merced 2030 General Plan

1.4 REFERENCES

City of Merced. 2002. City of Merced North Merced Sewer Master Plan. Prepared by ECO:LOGIC Engineering. Accessed November 2018.

_____. 2006. City of Merced Wastewater Treatment Plant Expansion Project Draft Environmental Impact Report. https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?blobid=4782. Accessed November 2018.

_____. 2007. City of Merced Sewer Master Plan Draft. Prepared by ECO:LOGIC Engineering. Accessed November 2018.

_____. 2010. Merced Vision 2030 General Plan Draft Environmental Impact Report. https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183. Accessed October 2019.

_____. 2012. Merced Vision 2030 General Plan. https://www.cityofmerced.org/departments/development-services/planning-division/merced-vision-2030-general-plan#:~:text=The%20Merced%20Vision%202030%20General%20Plan%20was%20adopted%20on%20January,which%20can%20be%20downloaded%20below. Accessed June 2018.

_____. 2015. Bellevue Community Plan. Adopted April 6, 2015. Website: https://www.cityofmerced.org/Home/ShowDocument?id=8608. Accessed July 2020.

_____. 2017 Wastewater Collection System Master Plan (WCSMP). 2017. https://www.cityofmerced.org/depts/engineering_division/sewer_master_plan.asp. Accessed April 2019.

Merced County. 2004. University Community Plan. Adopted December 21, 2004, Resolution No. 2004 2004-239. Website:

http://web2.co.merced.ca.us/pdfs/planning/cplan/completed/university/final_university_community_plan.pdf. Accessed July 2020.

University of California. 2008. UC Merced and University Community Project Draft Environmental Impact Statement/ Environmental Impact Report. (SCH# 2008041009). Prepared for the United States Army Corps of Engineers, Sacramento District. https://merced2020.ucmerced.edu/sites/merced2020.ucmerced.edu/files/documents/2020_adeir102708web.pdf. Accessed December 2019.

2.0 PROJECT DESCRIPTION

The City of Merced (City) is located within California's Central Valley (Figure 2.1-1). The City's wastewater collection (sewer) and treatment system, which serves a population of approximately 87,600 people, includes more than 400 miles of gravity sewers, forcemains (pressurized sewer lines), and pump/lift stations (used in association with the pressurized system) that collect and transport wastewater generated by residential, commercial, and industrial uses throughout the City limits to the City's Wastewater Treatment and Reclamation Facility (WWTRF) in the southwest corner of the City (at 1961 Gove Road, Merced, California 95341). The City's existing sewer trunk system can be categorized into two major geographical service areas, North Merced and Central/South Merced, which are separated largely by Bear Creek, which runs east to west through the City (Figure 2.1-2).

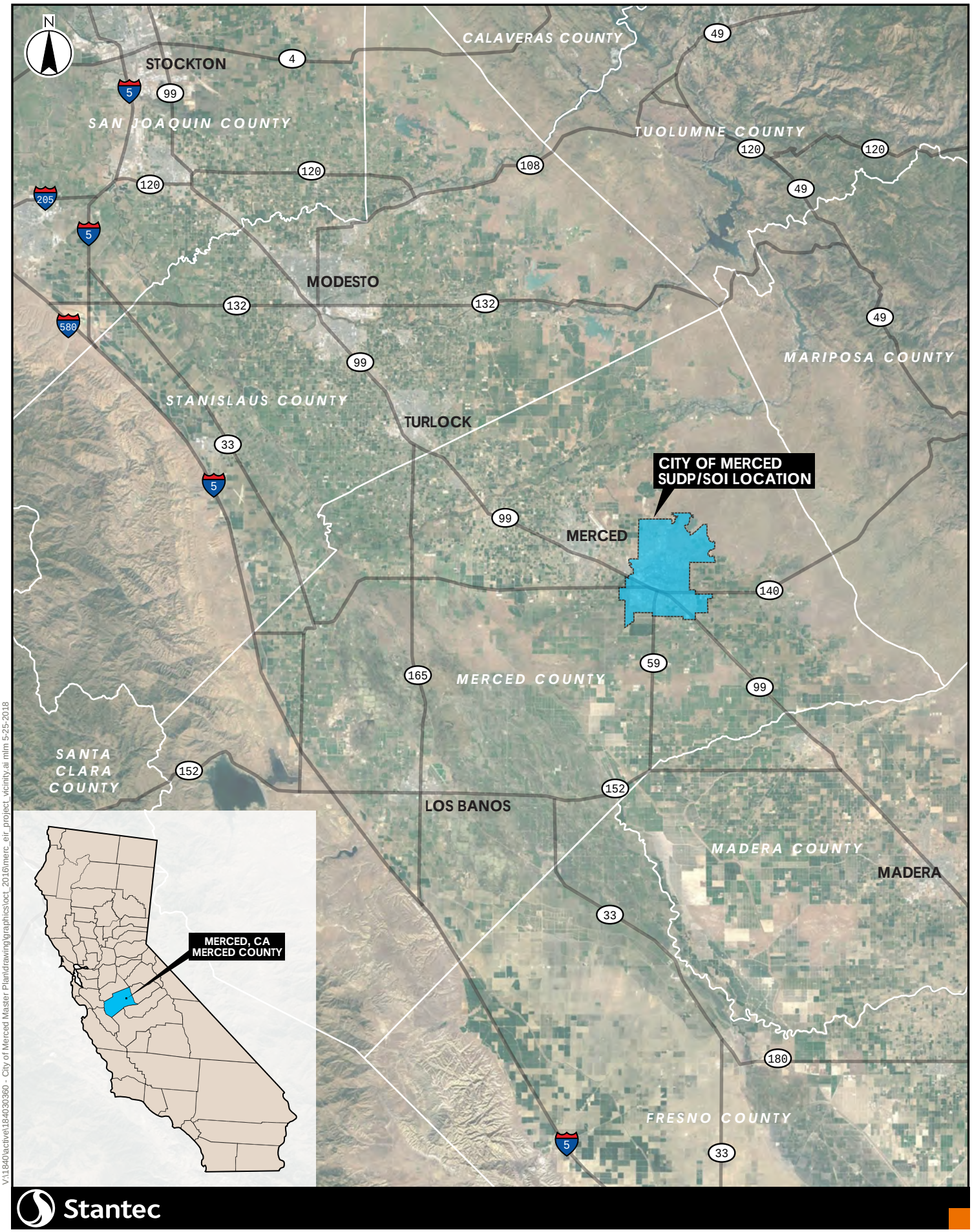
2.1 2017 WCSMP PLANNING PROCESS

2.1.1 Overview

The City's Vision 2030 General Plan (2030 General Plan) discusses City growth that may occur by the year 2030. Much of that growth requires construction of new infrastructure that is to be funded by the private development projects that would need public services provided by the City. As a part of the infrastructure planning associated with accommodating this growth, the City prepared a Wastewater Collection System Master Plan (2017 WCSMP) that set forth a strategy to meet the long-term sewer system needs of the 2030 General Plan (City of Merced 2017). Key infrastructure needs relevant to the 2017 WCSMP included the wastewater collection system itself; wastewater treatment, disposal, and reuse facilities; and various potable and non-potable water needs for the growing areas of the City. The 2017 WCSMP focused on the wastewater collection system needs and planning. However, wastewater collection system planning is driven by the following: 1) where the wastewater is generated (i.e., collected from), 2) where it is conveyed to receive treatment, and 3) subsequent disposal or reuse of the treated wastewater, which is termed "effluent" (City of Merced 2017).

Reasonable build-out considers not just the growth envisioned by the City in the 2030 General Plan, but the long-term growth and wastewater flow estimates based on development density within the SUDP/SOI.

Because wastewater collection systems are designed to have an effective service life of more than 50 years and can be expected to be in service up to 75 or 100 years, such systems are designed and constructed based on best professional judgement of wastewater collection system needs under reasonable build-out conditions, not just City growth envisioned in the 2030 General Plan (which has a 20-year planning horizon). The City's wastewater collection system is to be designed and constructed to serve reasonable build-out of the 2030 General Plan Specific Urban Development Plan/Sphere of Influence (SUDP/SOI). The SUDP/SOI and 2017 WCSMP Service Areas are depicted on Figure 2.1-2.



V:\1840\active\184030360 - City of Merced Master Plan\drawing\graphics\oct_2016\merc_eir_project_vicinity.ai mlm 5-25-2018

Stantec

Figure 2.1-1
Wastewater Collection System Master Plan Program Vicinity
City of Merced - Draft Environmental Impact Report

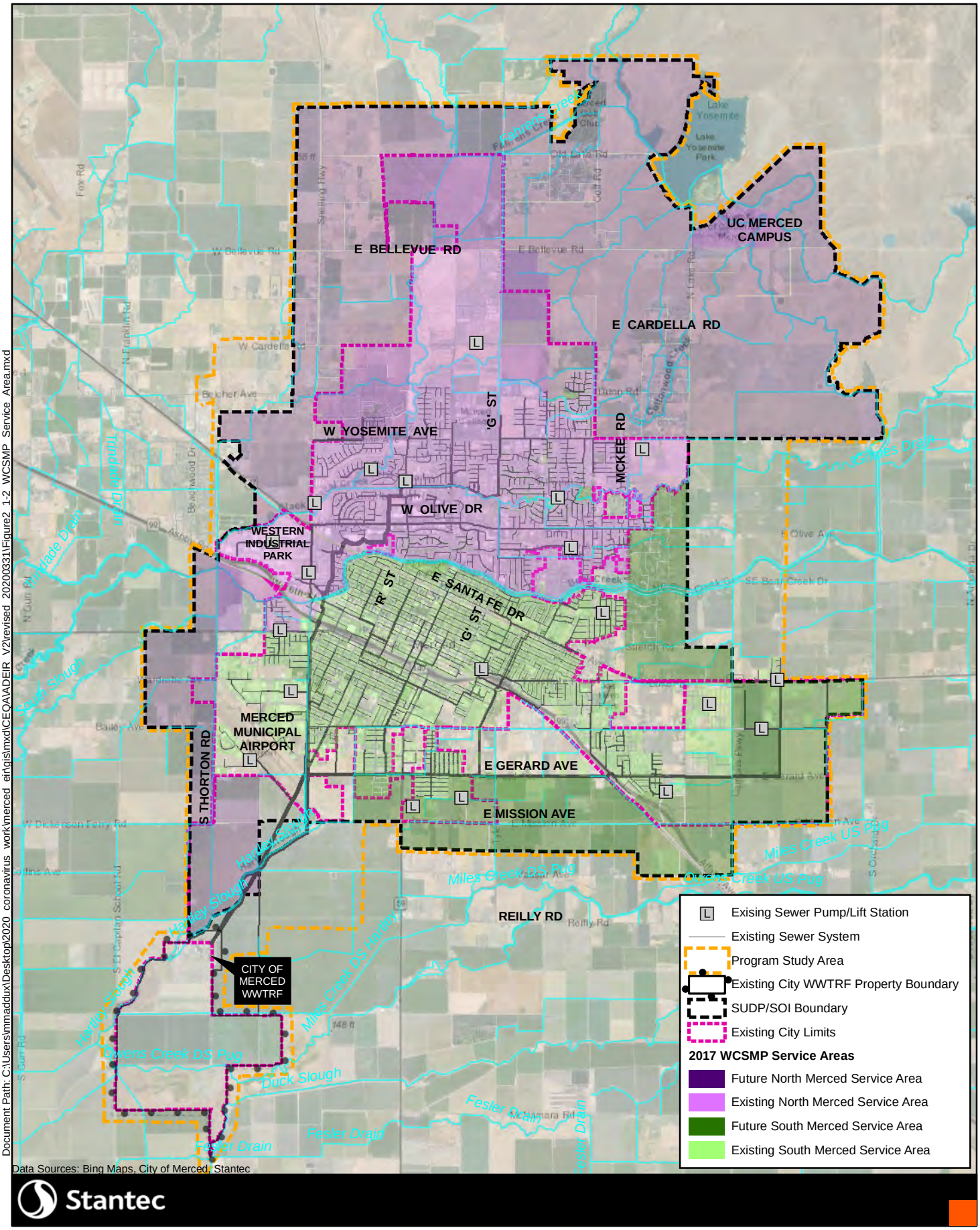


Figure 2.1-2
2017 WCSMP Service Area
City of Merced - Draft Environmental Impact Report

Document Path: C:\Users\mmaddux\Desktop\2020_coronavirus_work\merced_eir\gis\mxd\CEQA\ADEIR_V2\revised_20200331\Figure2_1-2_WCSMP_Service_Area.mxd

The SUDP/SOI was established in the 2030 General Plan and encompasses the unincorporated areas surrounding the current City limits in which the City anticipates growth to occur (City of Merced 2012). Reasonable build-out conditions are City growth and wastewater flow estimates based on development density assumptions outlined in Section 5.0 of the 2017 WCSMP (which can be found on the City's webpage at https://www.cityofmerced.org/Home/ShowDocument?id=8632). Application of maximum densities on all properties within the 2030 General Plan SUDP/SOI could result in higher flow estimates than those estimated in the 2017 WCSMP. Also, planning for maximum densities is unrealistic for a city like Merced (versus "land-locked" cities like San Francisco where new development is forced to be more compact and vertical due to lack of vacant land). Consequently, the 2017 WCSMP based reasonable build-out estimates of the City using current development trends and professional engineering standards.

Since collection system sewer lines, particularly large trunk sewers, are often located within roadways, the 2017 WCSMP identified locations for trunk sewers to be consistent with the 2030 General Plan Circulation Plan. Trunk sewers require deep excavations and are most cost-effectively installed prior to or concurrent with construction of major roadway and other surface improvements. Replacing sewers or putting in parallel sewers after the fact is disruptive to the public and very expensive. Thus, the 2017 WCSMP proposes to size the trunk sewers for reasonable build-out conditions rather than phased expansions based on more near-term demand.

Because wastewater collection systems require gravity flow and/or pump stations to transport effluent to wastewater treatment plant sites and related effluent disposal/reuse facilities, these plant sites and effluent facilities were evaluated conceptually within the 2017 WCSMP for function/viability under reasonable build-out flow conditions. Like collection systems, wastewater treatment plants are master-planned to serve reasonable build-out, but construction of these facilities can be more cost effective if phased in over time. When properly sited, treatment plants have generous buffers to limit exposure of commercial and residential land uses to objectionable odors, noise, and visual impacts associated with their operation. Additionally, construction activities occurring on treatment plant sites do not typically involve significant traffic disruptions like those associated with construction of trunk sewers and typically result in less exposure of the general public to noise and other potential impacts. So, treatment plants must be planned to allow for generous buffers and to allow for construction of capacity expansions at these plants to be phased to keep pace with population growth and take advantage of advances in treatment process technology and consideration of regulatory requirements. Therefore, the 2017 WCSMP considered expansions of the WWTRF to occur over time as the need develops.

2.1.2 Existing Collection System Assessment

To develop the recommended plan under "reasonable build-out," the City modeled different scenarios within their existing wastewater collection system to identify system deficiencies and develop a recommended plan. The City developed three scenarios for evaluation (described in more detail in Sections 6.0 and 7.0 of the 2017 WCSMP) to identify areas where the existing wastewater collection system had remaining capacity or was at capacity or over capacity. These are as follows:

- **Existing system conditions** – This scenario simulated the capacity within the existing trunk sewer system using only existing connections producing wastewater flow. The existing

wastewater collection system and service area sewer service needs were presented in Figure 6-1 and Section 5.0, respectively, of the 2017 WCSMP. Results of this simulation are shown on Figure 2.1-3.

- **Interim system conditions** – This scenario incorporated the existing conditions simulation but was expanded to include previously approved (i.e., 'entitled') users that are not yet connected to the system but are anticipated to be connected at some date in the future as defined by City staff (i.e., tentative subdivision maps and other entitlements that have been approved and are still active, etc.). This simulation excluded any new trunk sewers. This interim condition scenario was modelled to identify deficiencies in and any remaining capacity in the existing trunk sewer system if all areas identified in Figure 6-2 of the 2017 WCSMP were to be developed. Results of this simulation are presented in Section 7.2.3 of the 2017 WCSMP report.

- **SUDP/SOI "build-out" conditions** – This scenario modeled conditions under reasonable build-out of the 2030 General Plan conditions, including build-out of the University of California (UC) Merced campus, the adjacent Campus Community, and areas within the SUDP/SOI currently on septic sanitary systems. New pipes (including their sizes and slopes) for future trunk sewers and pump stations were identified to serve the entire SUDP/SOI. **Figure 6-3** of the 2017 WCSMP illustrates the extent of the build-out service area used for this simulation.

Based on the results of the modeling for the existing collection system illustrated on Figure 2.1-3, the 2017 WCSMP identified the most significant deficiencies in the major trunk sewers were those along Canal Street and R Street for South Merced (Section 7.2.1 of the 2017 WCSMP) and those along W Olive Avenue and Highway 59 trunk sewers in North Merced (Section 7.2.2 of the 2017 WCSMP). Section 7.3.1 of the 2017 WCSMP, recommended that these deficiencies be addressed to maintain the functionality of the existing system. These deficiencies have subsequently been addressed under previous environmental approvals and are not considered within this Environmental Impact Report (EIR).

Despite improvements to the existing system of trunk sewers at key locations, modeling results for interim and build-out conditions identified system deficiencies that would be too costly and/or too disruptive to City traffic circulation to upsize or construct parallel sewer interceptors (Sections 6.5.3 and 7.3.2 of the 2017 WCSMP). As a result, the 2017 WCSMP recommended new trunk sewers to accommodate and effectively serve reasonable build-out of the SUPD/SOI.

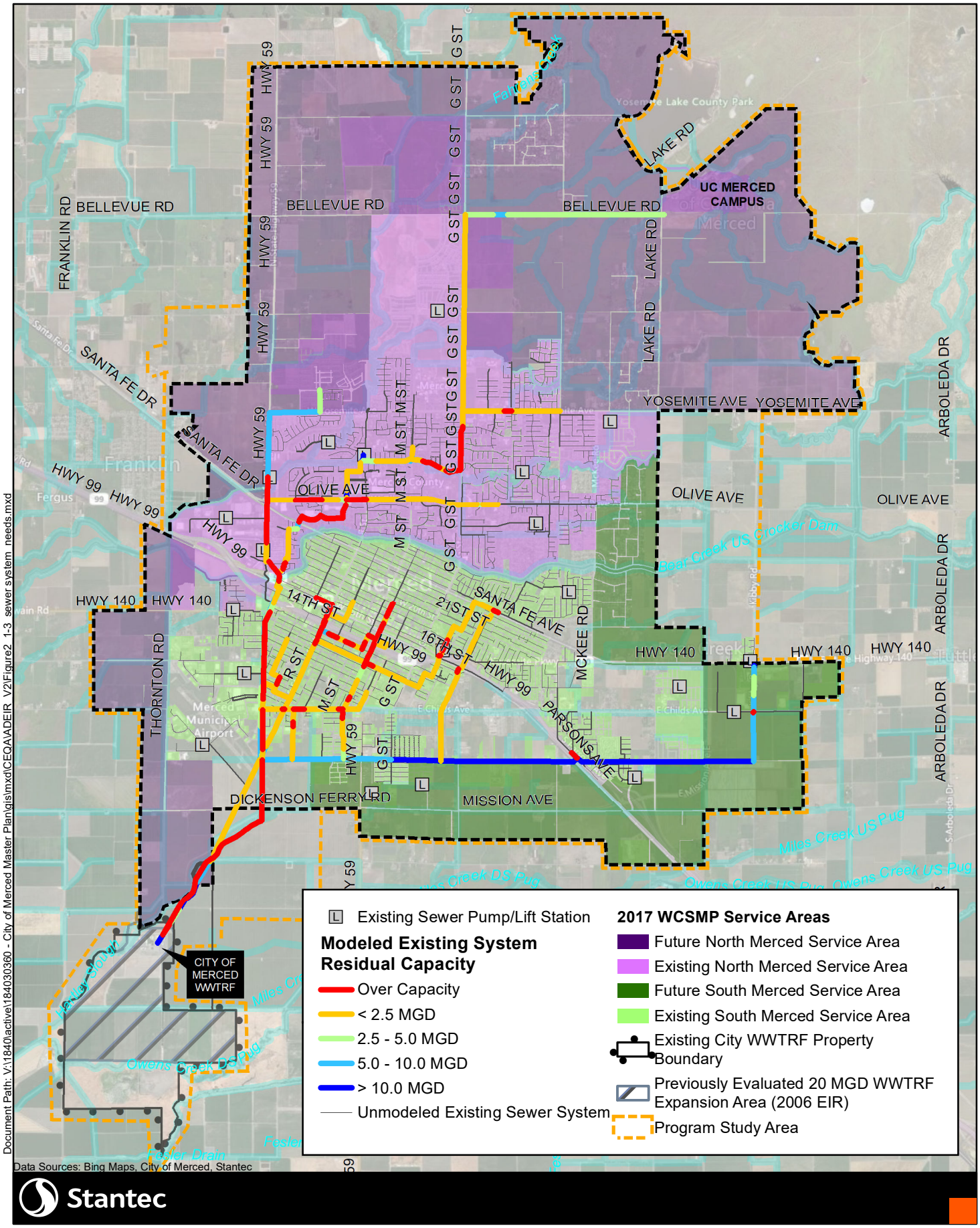


Figure 2.1-3
2017 WCSMP Sewer System Needs
City of Merced - Draft Environmental Impact Report

2.2 PURPOSE AND OBJECTIVES

The purpose of the 2017 WCSMP was to strategically and comprehensively plan development of the wastewater infrastructure necessary to support reasonable build-out of the SUDP/SOI and meet these long-term projected needs. Specific objectives to meet the purpose of the 2017 WCSMP include the following:

1. Construct and maintain safe and reliable facilities.
2. Meet long-term sewer service collection system needs by constructing the components of the collection system in stages, as needed.
3. Achieve lower overall life-cycle cost and maintain relatively low costs for sewer service considering upfront costs and anticipated operation and maintenance costs over the coming decades.
4. Maintain high water quality and wastewater treatment standards.
5. Reduce or maintain relatively low operational costs and energy demand by selecting gravity systems where feasible.
6. Maintain consistency with the Merced Vision 2030 General Plan.
7. Plan collection system infrastructure that meets reasonable build-out conditions of 35 million gallons per day (Mgal/d).
8. Minimize land use and environmental impacts.
9. Adhere to federal and state policies and regulations in support of regionalization, reclamation, recycling, and conservation for wastewater treatment plants (such as Central Valley Regional Water Quality Control Board [CVRWQCB] Resolution Number R5-2009-0028) (CVRWQCB 2009).
10. Use the existing publicly owned property, roadways, and rights-of-way (ROWs) to the extent feasible.

2.3 PROPOSED PROGRAM

2.3.1 Program Overview

The 2017 WCSMP set forth a 'roadmap' for wastewater collection services, referred to in this EIR as the 'Program'. The proposed Program, identified as Alternative Plan A in the 2017 WCSMP, describes the City's preferred approach for building the wastewater collection system infrastructure needed to serve 2030 General Plan growth projections and City forecasts of reasonable build-out conditions. The proposed Program was selected for its ability to best meet the long-range sewer system conveyance needs of the City. These needs were determined by the Program's use of the more reliable gravity sewers where feasible, which require no energy to operate and no moving parts (i.e., pump stations) thus limiting the life-cycle and energy costs associated with operation of the system.

The '**Program**' considers implementation of 'Plan A' of the 2017 WCSMP. It includes implementation of the plan as well as development of Projects identified within the 2017 WCSMP and the EIR Project Description.

The Program proposes the City's collection system take all municipal wastewater to the City's existing 12 Mgal/d capacity WWTRF. The existing WWTRF would be expanded, as needed in 4 to 5 Mgal/d

increments, to handle 2030 General Plan flows, referred to as WWTRF Expansion Projects in this EIR. The effluent disposal and reuse facilities at the WWTRF are believed to have sufficient land and disposal potential to serve reasonable build-out design flow estimates of 34 to 35 Mgal/d, if and when needed.

The Program proposes main trunk sewer locations consistent with the 2030 General Plan Circulation Element to serve anticipated growth in North and South Merced. These sewers would maintain gravity flows where feasible. Where infeasible, forcemain sewers and pump/lift stations would be used. Specifically, two trunk sewer projects—the Northern Trunk Sewer Project and the Southern Trunk Sewer Project—have been identified as the first steps to supporting the construction of the 2017 WCSMP. These projects are sized to accommodate the reasonable build-out of the SUDP/SOI and would be required prior to further development within North Merced or South Merced, respectively. These trunk sewers would serve as the key routes for wastewater to be delivered to the WWTRF and as interceptors for the new smaller collector sewers. Collectively, the Northern Trunk Sewer Project, Southern Trunk Sewer Project, and WWTRF Expansion Projects are referred to collectively as the 'proposed Projects' within this EIR. The proposed Program and specific Projects are illustrated on Figure 2.3-1. Construction characteristics for the Program and proposed Projects are described in more detail in Section 2.4.

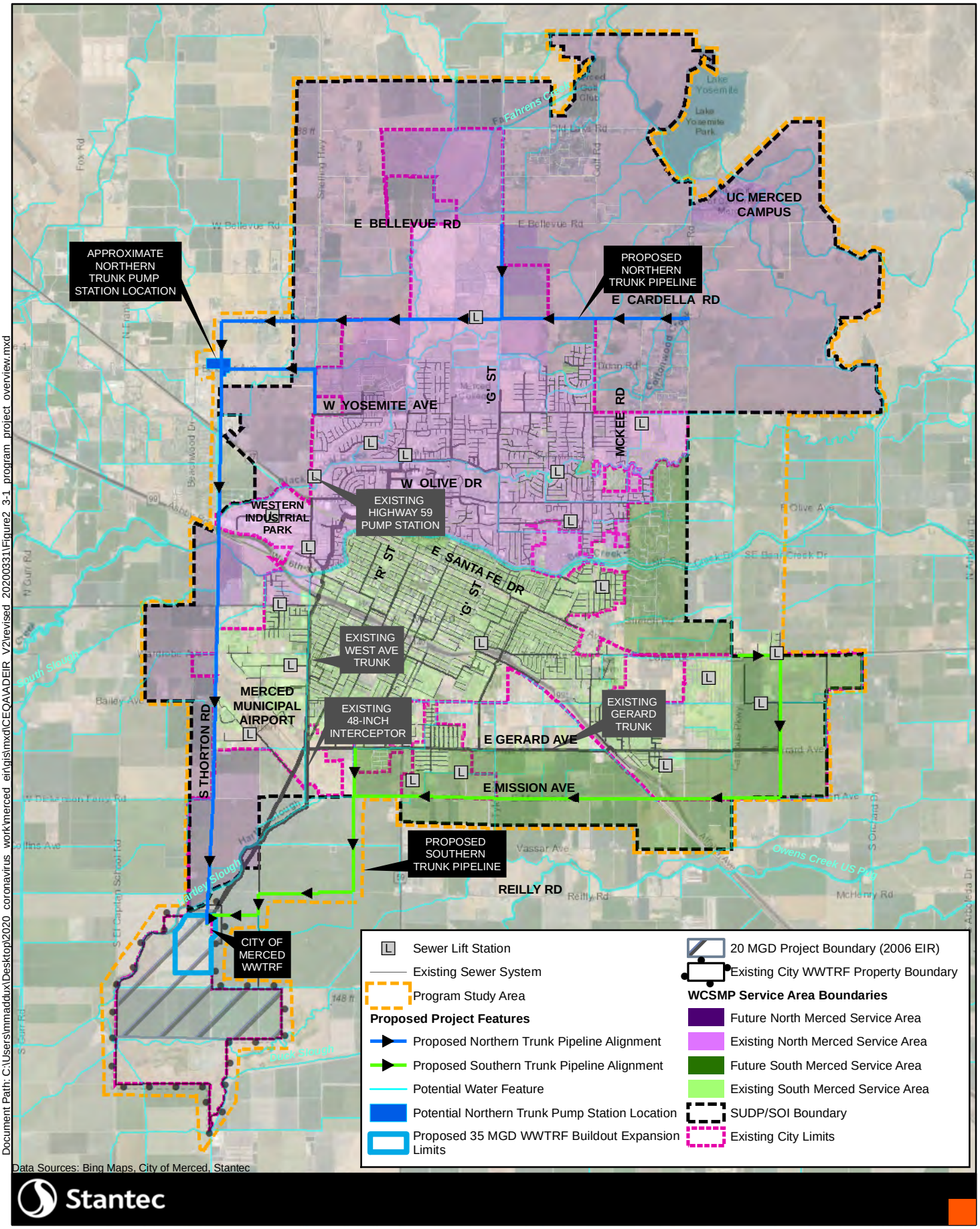
2.3.2 Program Components

The Program can generally be categorized into the following types of activities: existing collection system upgrades, new trunk sewer infrastructure, new localized collector infrastructure, existing WWTRF expansion, increased WWTRF effluent disposal, and operations and maintenance (O&M). Each type of activity includes a characterization of the projects identified within that category required to reach reasonable build-out. Known project-level descriptions were provided, where possible, as indicated in Table 2.3-1.

Table 2.3-1: Program Components

WCSMP Program Category	Identified Projects[1]	Future Activities[2]
New Trunk Sewer Infrastructure	✓	✓
Northern Trunk Sewer	✓	
Southern Trunk Sewer	✓	
Program-Level Trunk Sewer Projects		✓
New Localized Collector Infrastructure		✓
WWTRF Expansion	✓	✓
Existing WWTRF Expansion	✓	✓
Increased WWTRF Effluent Disposal	✓	✓
Operations and Maintenance		✓

Notes:
[1] Projects to be analyzed at a specific project footprint level.
[2] Projects categories and types analyzed programmatically.



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Data Sources: Bing Maps, City of Merced, Stantec

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Figure 2.3-1
Program and Proposed Projects Overview
City of Merced - Draft Environmental Impact Report

The following sections provide descriptions of the categories listed in Table 2.3-1.

2.3.2.1 New Trunk Sewer Infrastructure

A **trunk sewer** is a pipeline that receives wastewater from many tributary branches and sewer lines and serves as an outlet for a large territory or is used to feed an intercepting sewer.

Key new trunk sewers that would serve as the "backbone" of the City's collection system are needed to meet the future wastewater collection services demands estimated within the SUDP/SOI As shown on Figure 2.3-2, up to 18 miles of new trunk sewer pipeline would be placed within existing or planned roadways, consistent with the 2030 General Plan's Circulation Element. The backbone trunk sewers would be designed to be co-located in existing or planned roads or ROWs. This backbone infrastructure can be categorized into two sections, a trunk system to serve development in the North Merced Service Area and a trunk system to serve development in South Merced Service Area.

The 2017 WCSMP breaks down the required new sewer improvements as shown in Table 2.3-2. This table identifies the name, location, size, length and the type of activities associated with each trunk feature. These new sewer pipelines can be classified into two proposed Projects, the Northern Trunk Sewer Project and Southern Trunk Sewer Project, and are proposed to serve each service area, respectively. Specific alignments are shown on Figure 2.3-1 above and Figure 2.3-2 below.

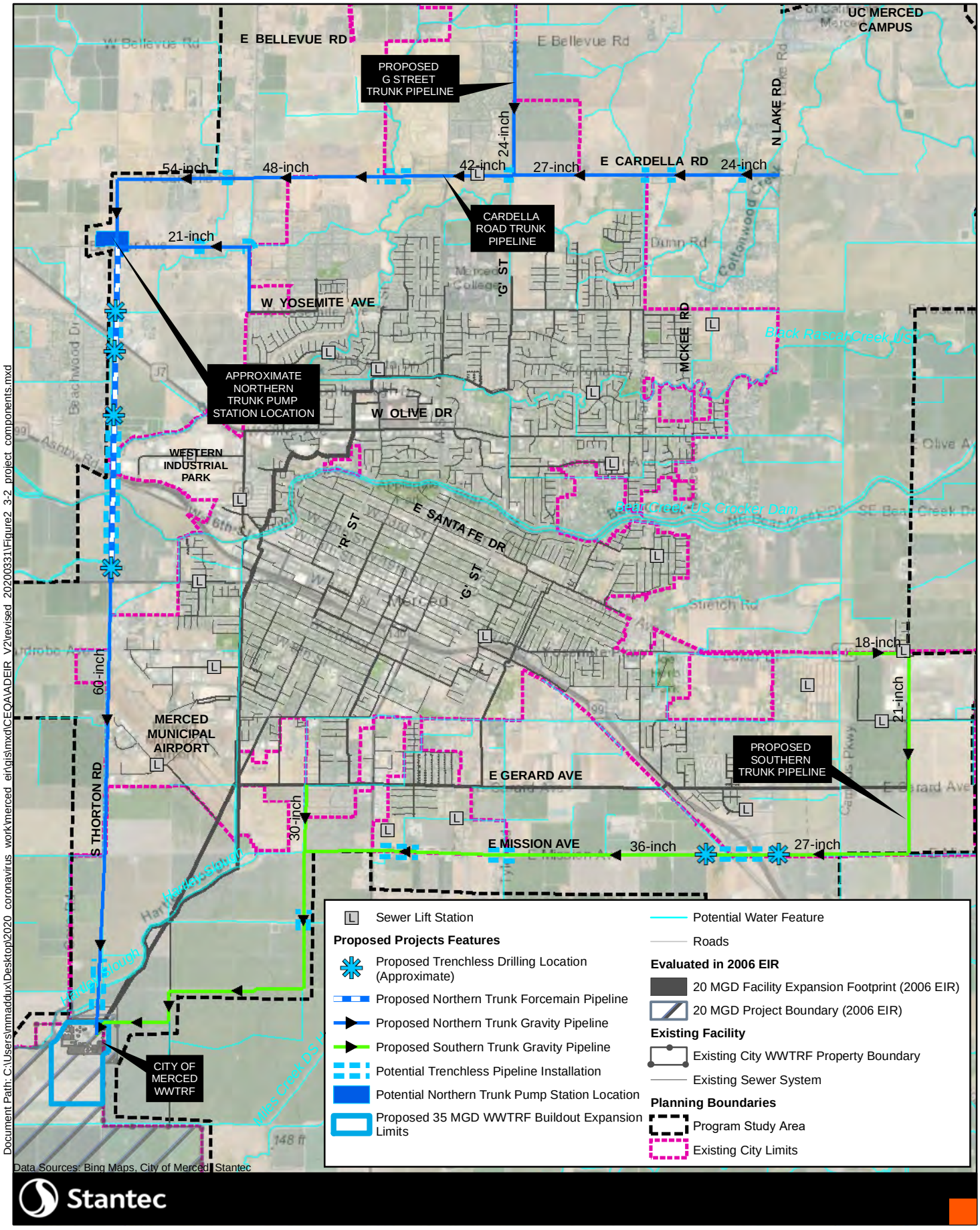


Figure 2.3-2
Proposed New Trunk Sewer Infrastructure Project Components
City of Merced - Draft Environmental Impact Report

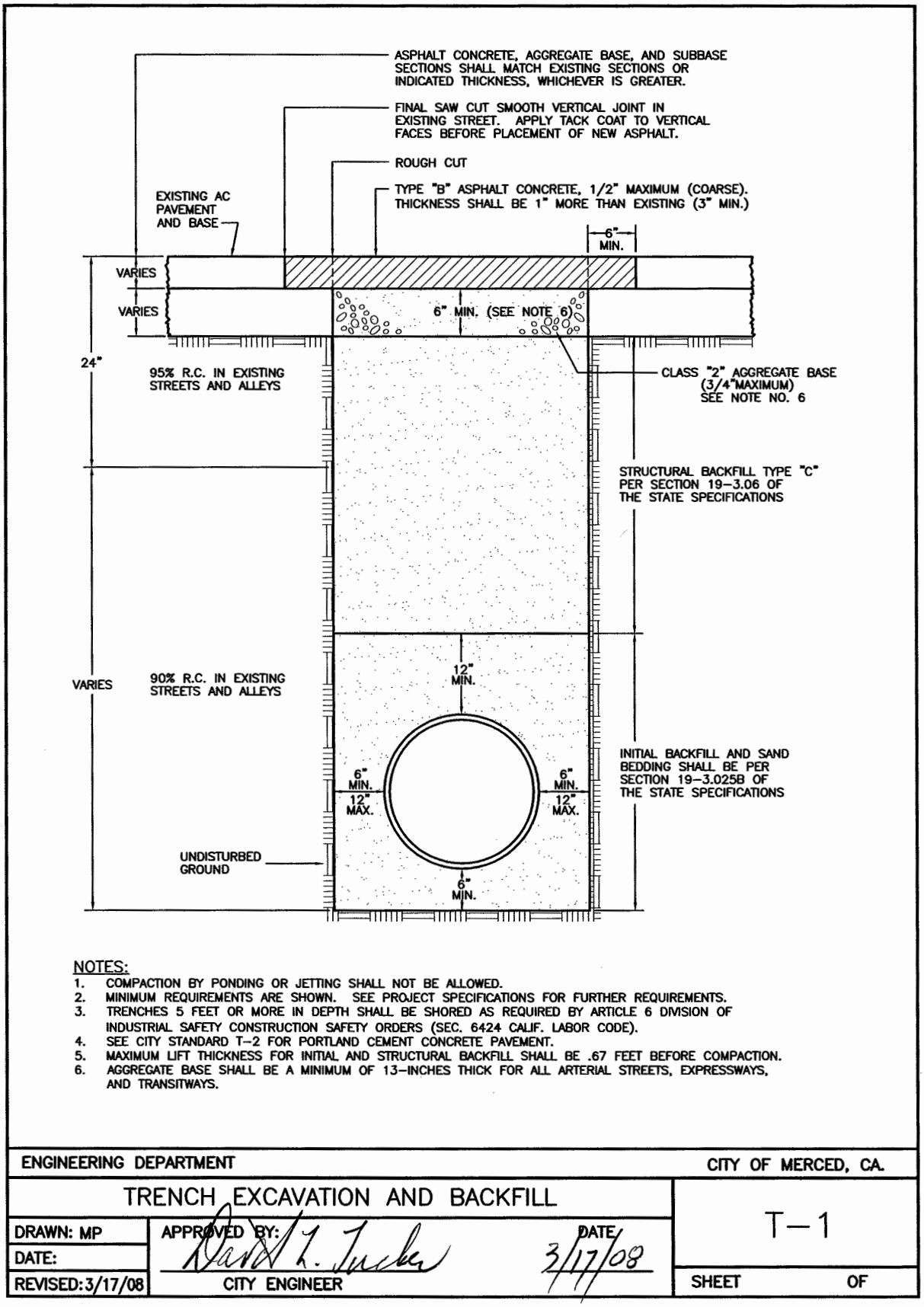
Table 2.3-2: Proposed New Trunk Sewer Pipelines

Trunk Feature Name	Location	Pipe Diameter	Approximate Length	Pipeline Type	Common Activities Associated with Component
Northern Trunk Sewer Project					
Cardella Road Trunk	Cardella Road from Lake Road to Gardner Avenue	24-inch	1 mile	Gravity	• Pipeline placement (site preparation, trenching, and dewatering) • Grading and compaction • Odor control facilities • Air blow-off and air release valves • Pump station • Creek/Canal trenchless under crossing(s) • Rail undercrossing(s) • Sewer connections • Testing/start-up
	Cardella Road from Gardner Avenue to G Street	27-inch	1 mile	Gravity	
	Cardella Road from G Street to Kansas Street	42-inch	1.4 mile	Gravity	
	Cardella Road from Kansas Street to Highway 59	48-inch	0.5 mile	Gravity	
Belcher Avenue Trunk	Flow Diversion from Highway 59 Pump Station to Proposed Pump Station (S. Belcher Avenue)	21-inch	1.3 miles	Gravity	
Bellevue Road Trunk	Bellevue Road from Fahrens Creek west to new 27-inch sewer	24-inch	0.7 mile	Gravity	
	Bellevue Road to Cardella Road	27-inch	1 mile	Gravity	
Thornton Road Trunk	Thornton Road from Cardella Road to proposed Pump Station	54-inch	1.2 mile	Gravity	
	Cross-country from Proposed Pump Station to Thornton Road at McSwain Road (SR 140)	Parallel 24-inch and 36-inch	2.3 mile	Forcemain	
	Thornton Road from McSwain Road (SR 140) to WWTRF	60-inch	3.3 mile	Gravity	
G Street Trunk	G Street from Bellevue Road to Cardella Road	24-inch	1 mile	Gravity	
Southern Trunk Sewer Project					
Kibby Road Trunk	End of Baker Drive to Kibby Road	18-inch	0.4 mile	Gravity	• Pipeline placement (site preparation, trenching, and • Grading and compaction dewatering) • Odor control facilities • Air blow-off and air release valves
	Kibby Road to SR 140 to Mission Avenue	21-inch	1.5 mile	Gravity	
Mission Avenue Trunk	Mission Avenue from Kibby Road to Miles Road	27-inch	1.4 mile	Gravity	
Mission Avenue Trunk	Mission Avenue from Miles Road to approximately 0.5 mile west of Highway 59	36-inch	3.2 mile	Gravity	

Trunk Feature Name	Location	Pipe Diameter	Approximate Length	Pipeline Type	Common Activities Associated with Component
Dickenson Ferry Road Trunk	Dickenson Ferry Road to WWTRF	36-inch	2.8 mile	Gravity	Continued from previous page:. • Creek/Canal undercrossing(s) • Rail undercrossing(s) • Sewer connections • Testing/start-up
		Total	22.9 miles		

Notes:
SR = State Route
WWTRF = Wastewater Treatment and Reclamation Facility

Much of the City's existing sewer system uses gravity flow sewers, and the proposed Program was thereby designed with the intent to continue the use of such a system. Where gravity sewers are infeasible, pressure flow sewers (also known as forcemains) and lift stations would be used to transport pressurized sewage from low points back into a gravity-fed system. Where the trunk sewers require crossing non-City-owned properties' ROWs, negotiations would be required; however, the Projects would be sited to be on the edge of existing properties. These trunk sewers would be below ground ranging with maximum depths of approximately 30 feet, and the associated pump station would be anticipated to have an approximate maximum depth of 40 feet. A standard cross section of the City's typical pipeline design is shown on Figure 2.3-3. For the purposes of this analysis throughout this EIR, a 100-foot wide construction disturbance corridor was assumed around all proposed pipeline alignments to accommodate uncertainties or realignment of design; however, a more realistic footprint of approximately 10- to 20-foot width is anticipated.



NOTES:

1. COMPACTION BY PONDING OR JETTING SHALL NOT BE ALLOWED.
2. MINIMUM REQUIREMENTS ARE SHOWN. SEE PROJECT SPECIFICATIONS FOR FURTHER REQUIREMENTS.
3. TRENCHES 5 FEET OR MORE IN DEPTH SHALL BE SHORED AS REQUIRED BY ARTICLE 6 DIVISION OF INDUSTRIAL SAFETY CONSTRUCTION SAFETY ORDERS (SEC. 6424 CALIF. LABOR CODE).
4. SEE CITY STANDARD T-2 FOR PORTLAND CEMENT CONCRETE PAVEMENT.
5. MAXIMUM LIFT THICKNESS FOR INITIAL AND STRUCTURAL BACKFILL SHALL BE .67 FEET BEFORE COMPACTION.
6. AGGREGATE BASE SHALL BE A MINIMUM OF 13-INCHES THICK FOR ALL ARTERIAL STREETS, EXPRESSWAYS, AND TRANSITWAYS.

ENGINEERING DEPARTMENT		CITY OF MERCED, CA.
TRENCH EXCAVATION AND BACKFILL		T-1
DRAWN: MP	APPROVED BY: David L. Tucker	DATE 3/17/08
DATE:	CITY ENGINEER	SHEET OF
REVISED: 3/17/08		

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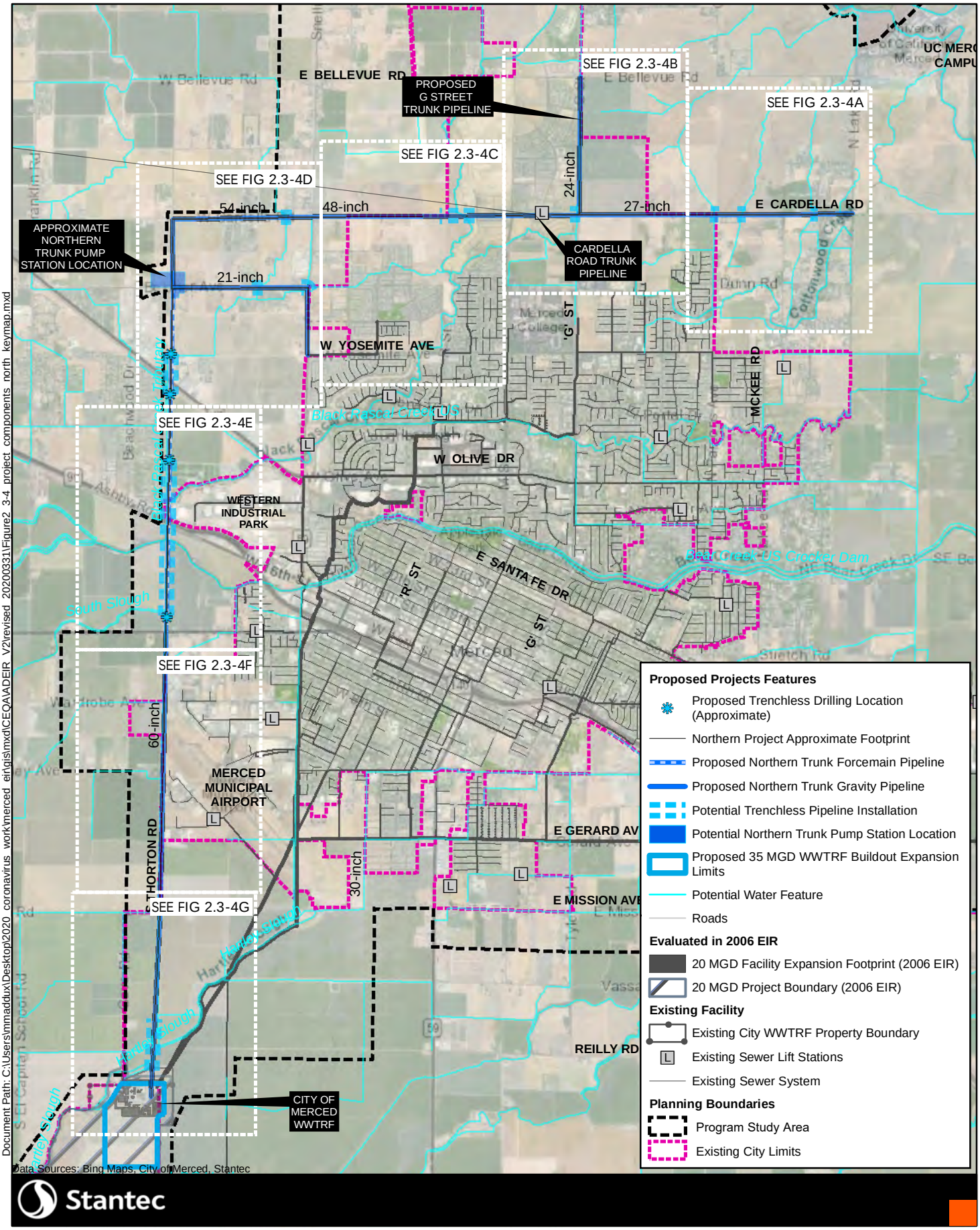
Figure 2.3-3
Typical Pipeline Cross-Section
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Northern Trunk Sewer Project

The Northern Trunk Sewer Project is composed of three components: the Northern Trunk Sewer Gravity Pipeline (designated as “Gravity” in Table 2.3-2), the Northern Trunk Sewer Forcemain Pipeline (designated as “Forcemain” in Table 2.3-2), and the Northern Trunk Pump Station. These three components are made up of five trunk sewer pipelines. The Northern Trunk Sewer Project would construct approximately 11 miles of pipeline ranging from 21 to 60 inches in diameter (Table 2.3-2) to serve the North Merced service area. The Northern Trunk Sewer Project would be partially gravity fed (the Northern Trunk Sewer Gravity Pipeline) and partially pressurized (the Northern Trunk Forcemain Pipeline) requiring an approximately 33 Mgal/d flow capacity pump station (the Northern Trunk Pump Station) near the intersection of W Cardella Road and Thornton Road as denoted on Figure 2.3-4. The Northern Trunk would generally follow W Cardella Road/E Cardella Road and Thornton Road east-west then north-south until reaching the WWTRF as illustrated on Figure 2.3-4.

The new Northern Trunk Sewer would be gravity sewer pipeline along the existing and proposed portions of Cardella Road and the northern segment of Thornton Road. The new pump station, the Northern Trunk Sewer Pump Station, sited near the intersection of W Cardella Road and Thornton Road, would be constructed to assist flows as the pipeline runs south to the WWTRF under Santa Fe Drive, State Route (SR) 140, and the railroad tracks. From the Northern Trunk Sewer Pump Station to south of the railroad tracks near SR 140, the Northern Trunk Sewer Project would be pressurized with a forcemain to accommodate changes in elevation. South of SR 140 gravity flows would return for the remainder of the pipeline until it reaches the WWTRF.

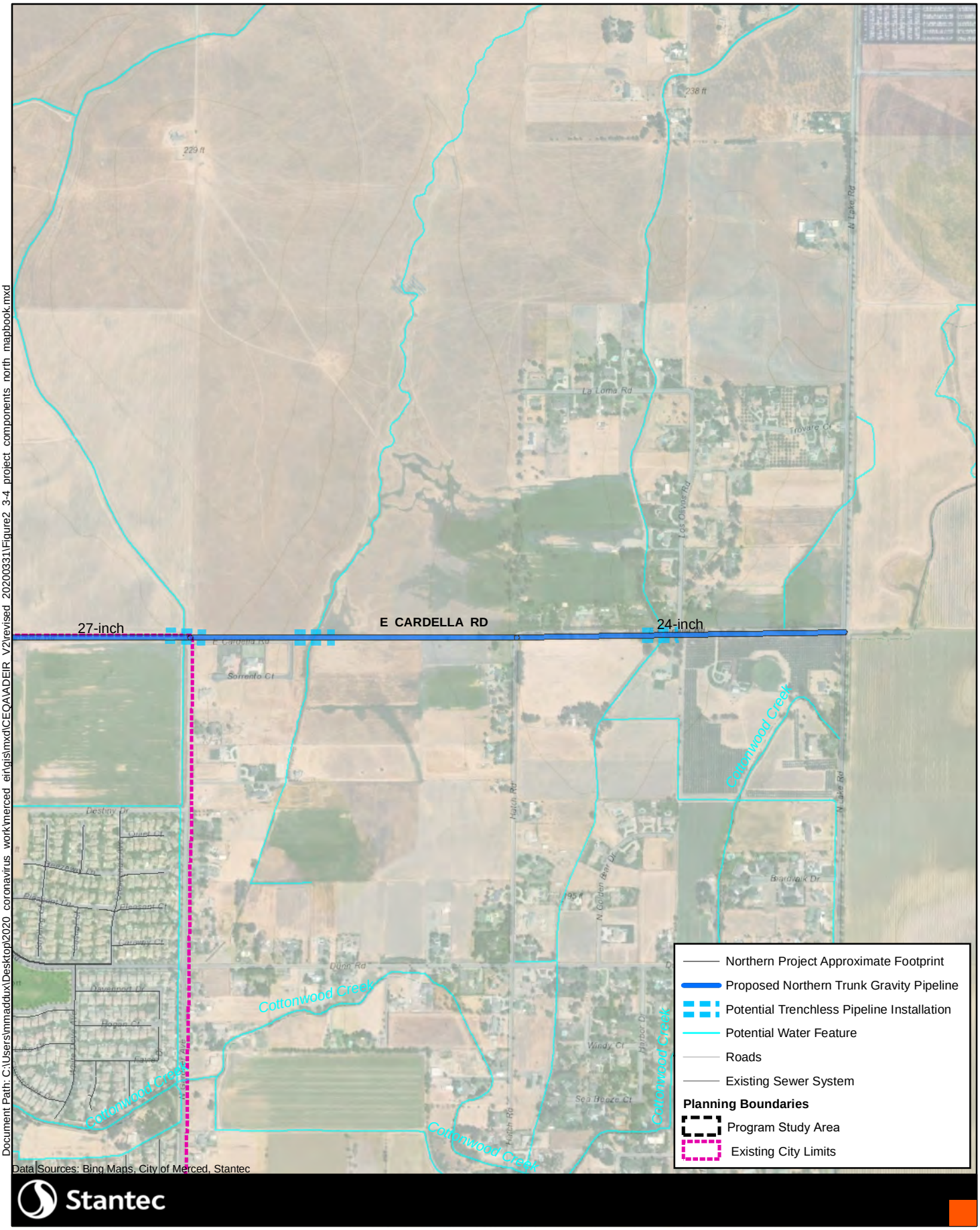
The Northern Trunk Sewer system would also require new trunk sewer pipes that would connect to Bellevue Avenue and G Street as demand warrants as shown in Table 2.3-2. Above-ground features associated with the new Northern Trunk Sewer Project would be limited to the new Northern Trunk Sewer Pump Station (an approximately 2,000 square foot above-ground structure illustrated on Figure 2.3-4D below) and associated control boxes, air-blow off, and air release valves, which would all have small, inconspicuous footprints of a few square feet and architectural finishes that match the surrounding area. The Northern Trunk Sewer Pump Station would be sized for approximately 33 Mgal/d of flow and would require backup power generation, grid power connections, and mechanical and chemical equipment to operate. The Northern Trunk Sewer Pump Station would be installed adjoining to the sewer trunk at a depth around 40 feet. Excavations associated with construction of the pump station are anticipated to require depths of up to 50 feet subsurface. Engineering studies are needed prior to identification and selection of a specific design; however, it can generally be assumed the pumps would be submerged subsurface pumping wastewater flows up to the elevation of the forcemain.



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Figure 2.3-4
Proposed Northern Trunk Sewer Project Components Key Map
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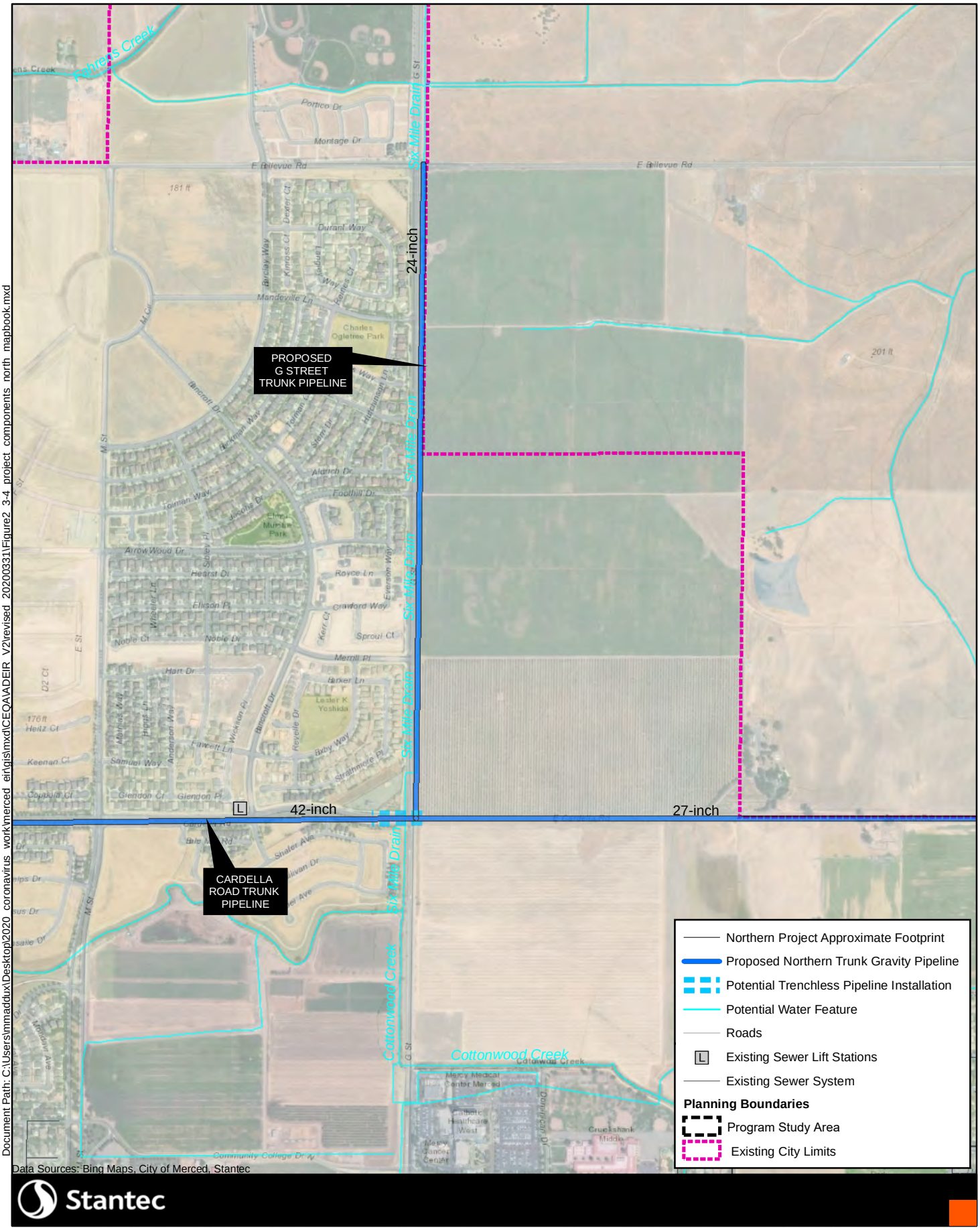


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Figure 2.3-4A
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report

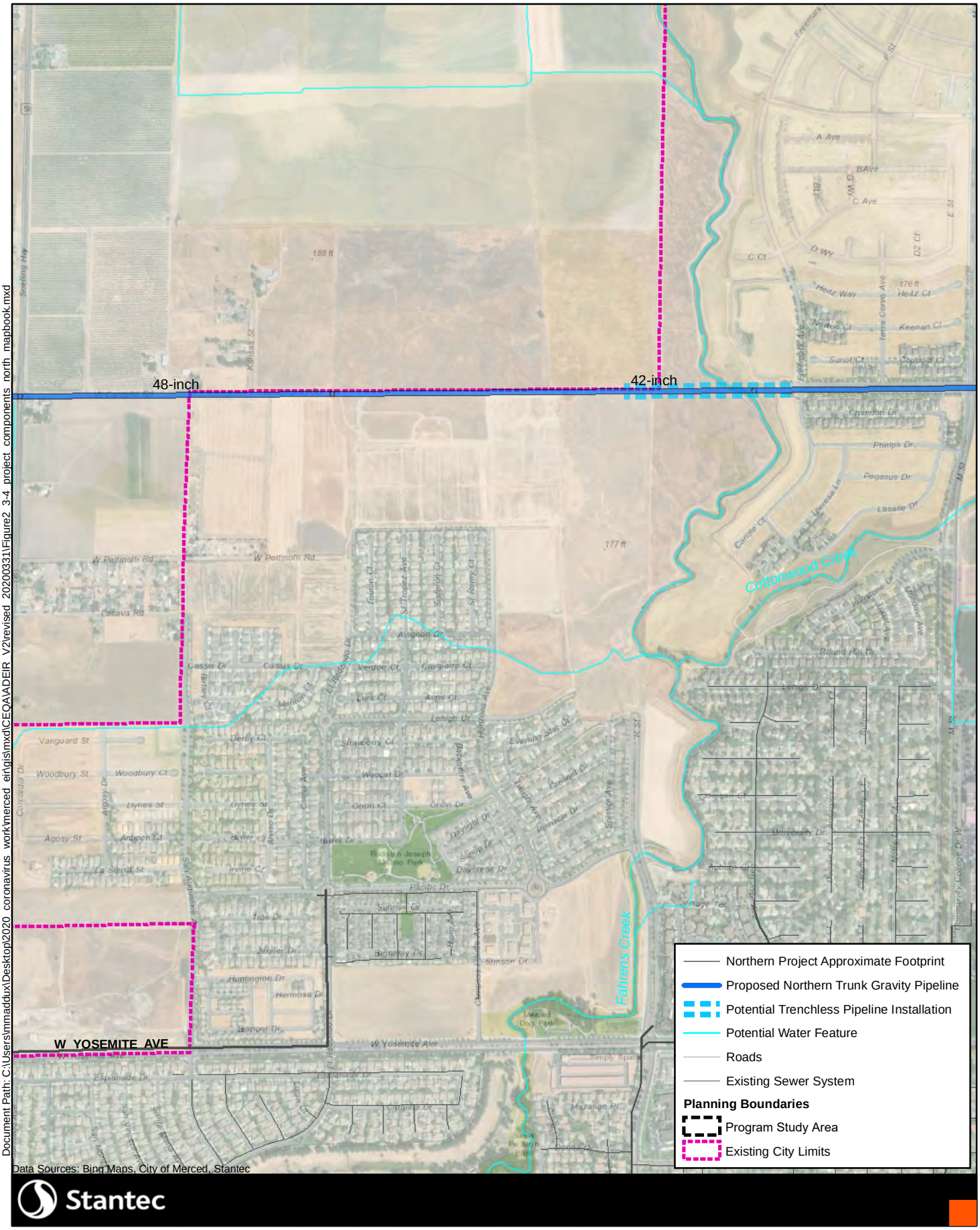


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Figure 2.3-4B
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report



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Figure 2.3-4C
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report

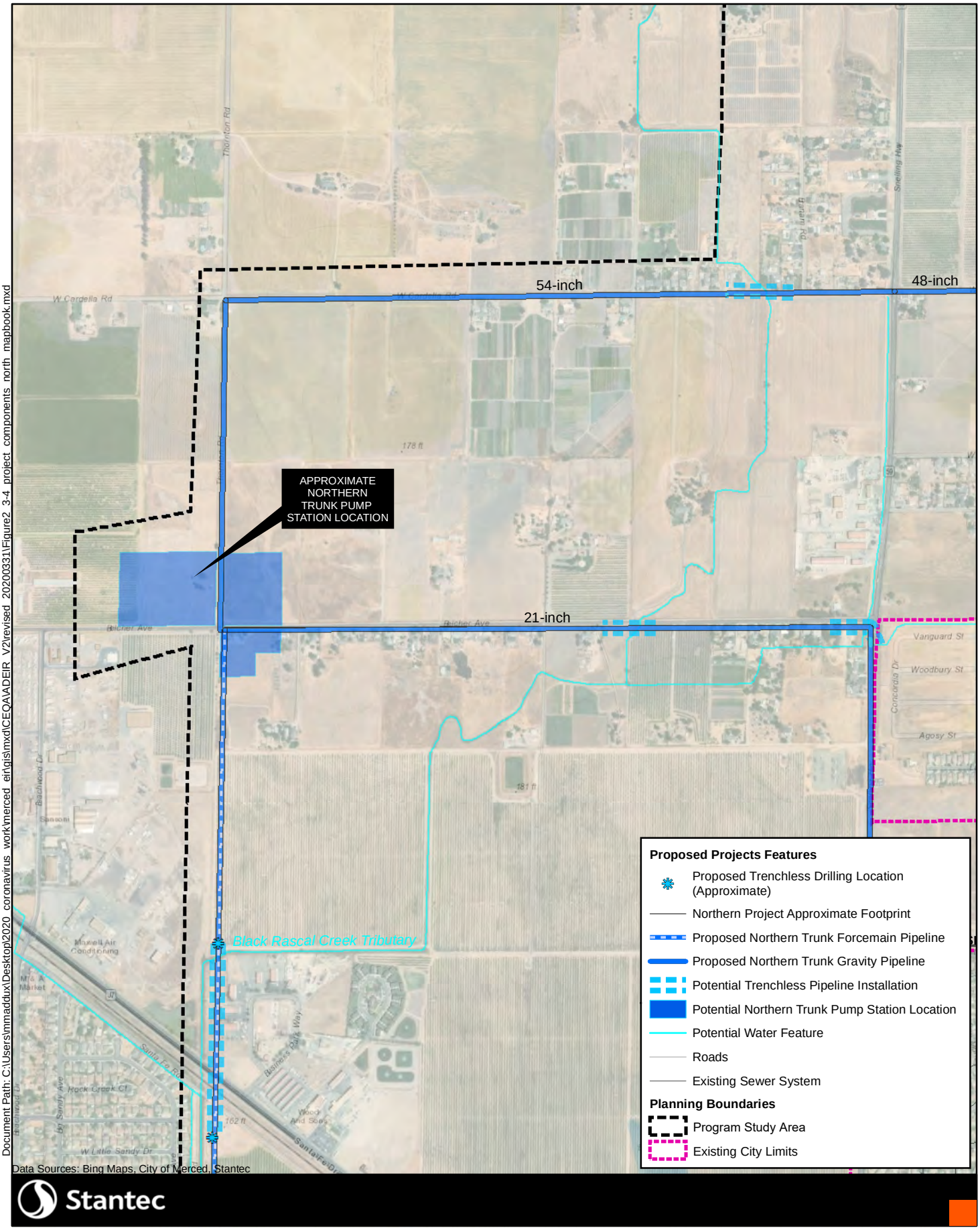
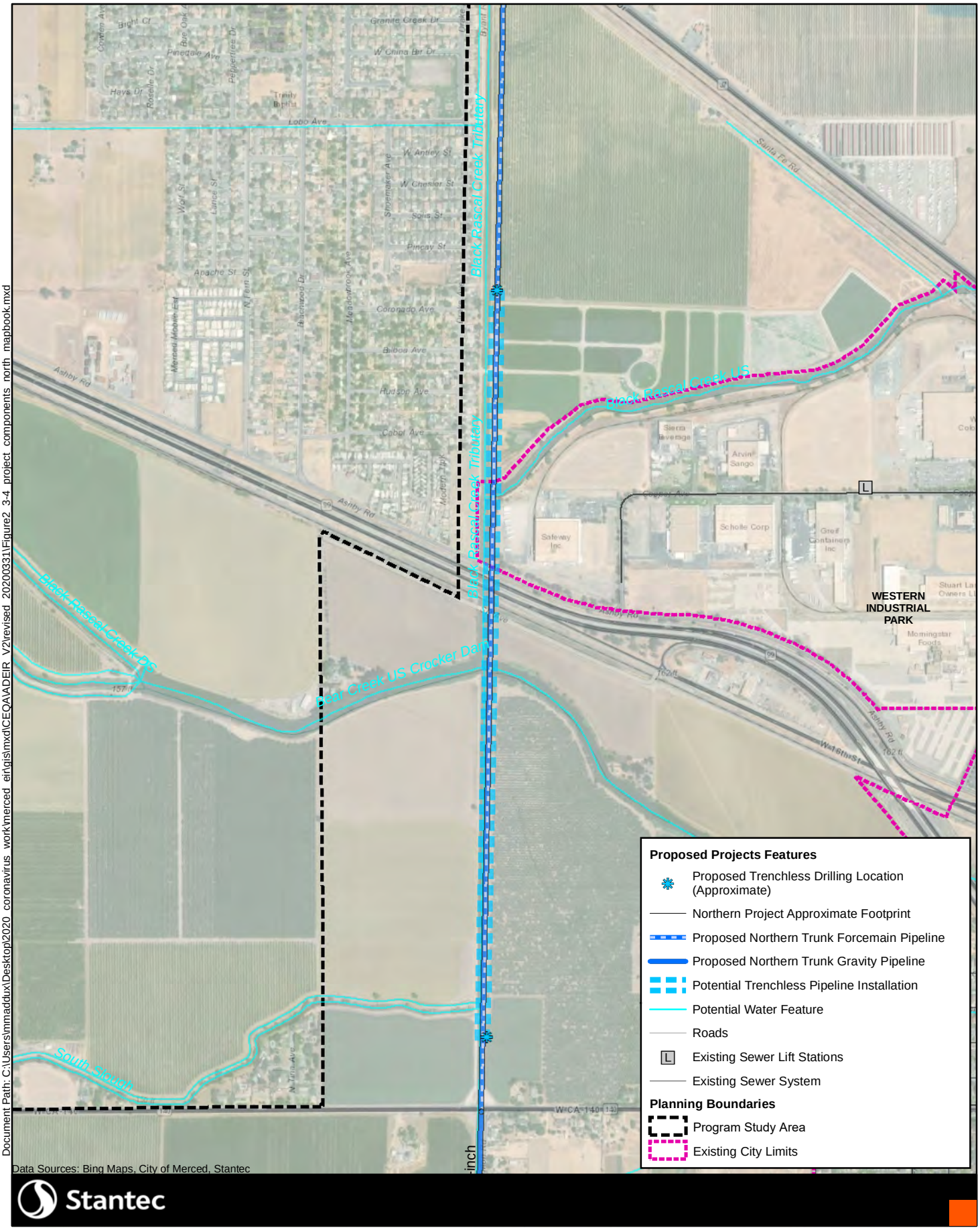
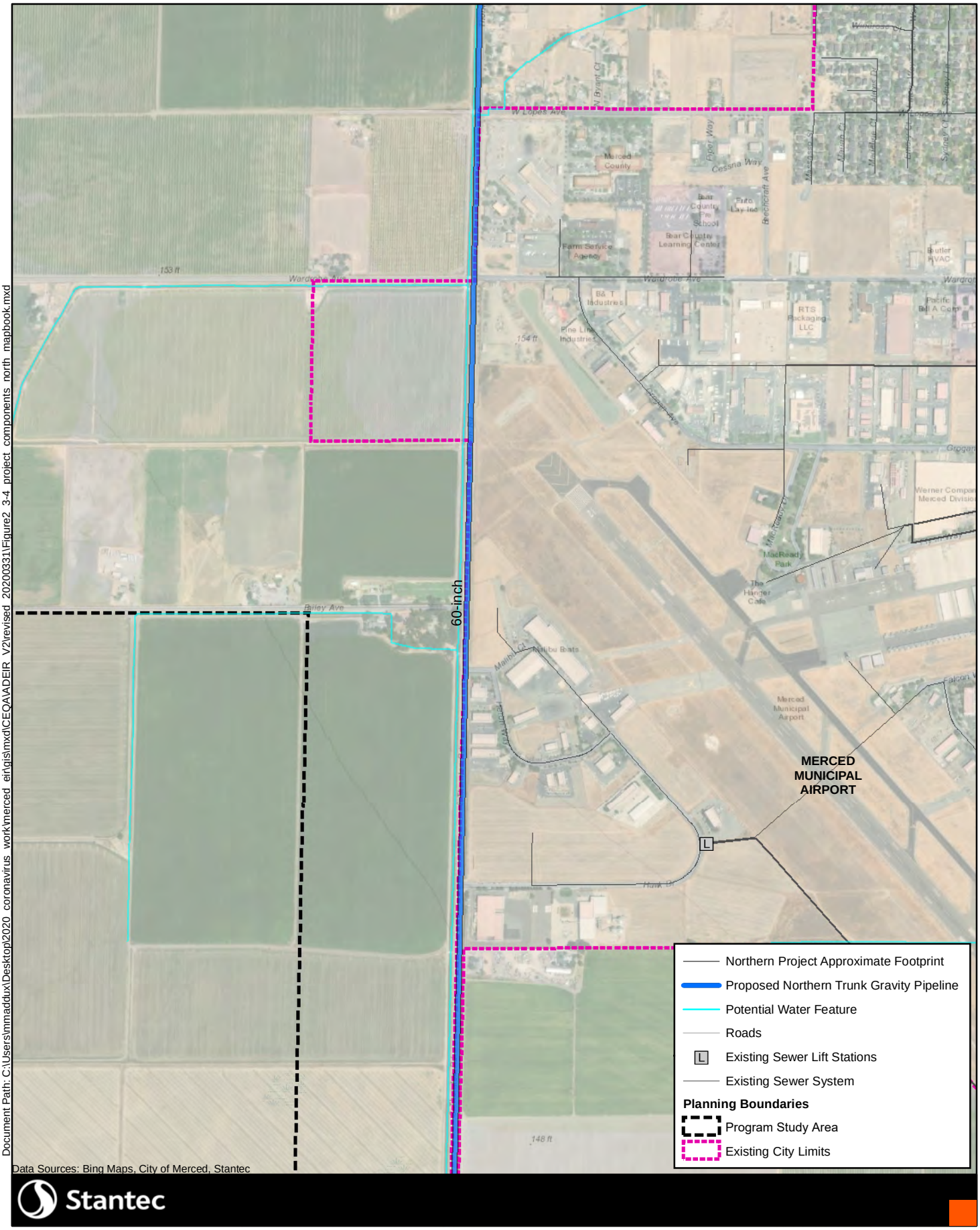


Figure 2.3-4D
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report



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Figure 2.3-4E
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report



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Figure 2.3-4F
Proposed Northern Trunk Sewer Project Components
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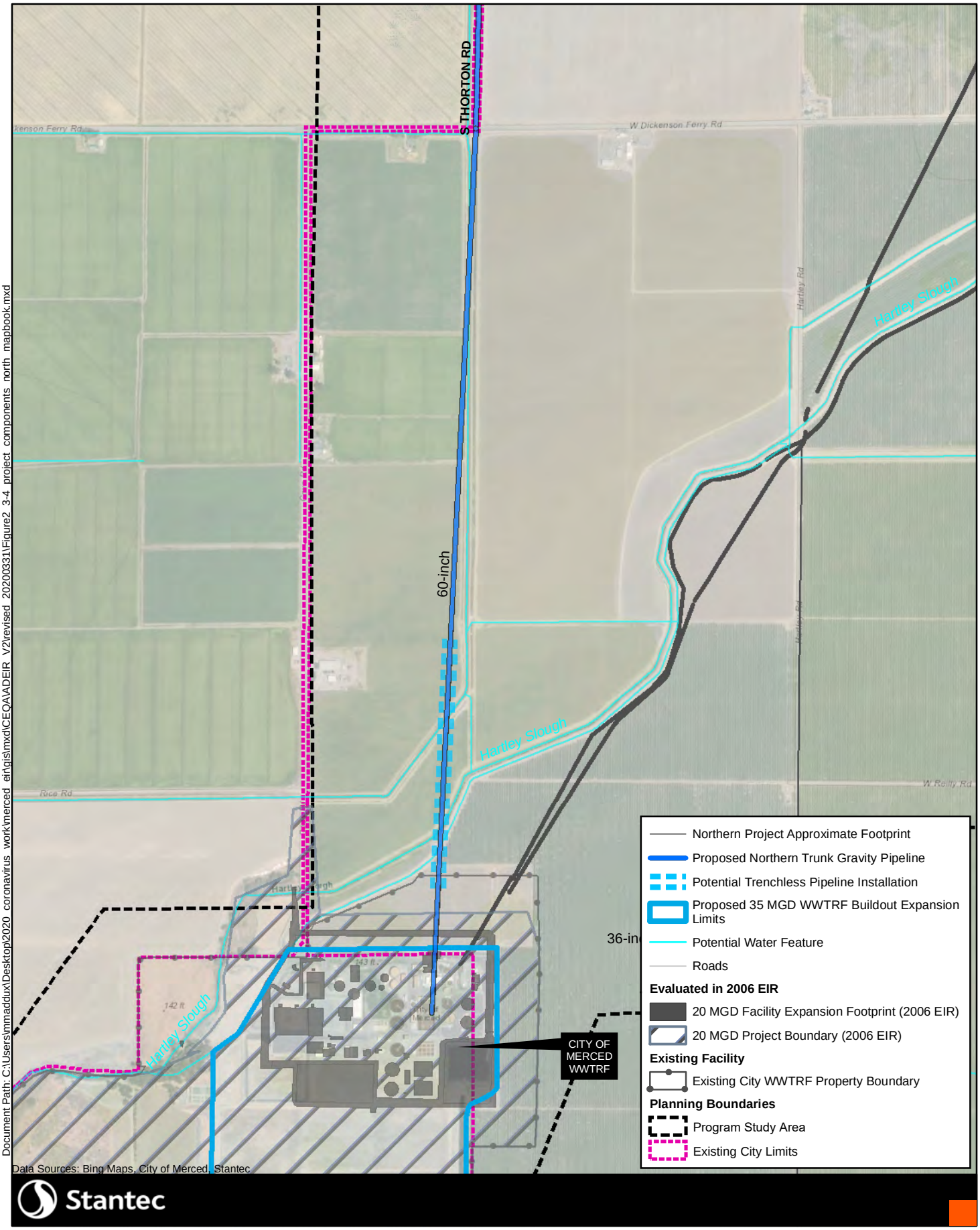


Figure 2.3-4G
Proposed Northern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report

Southern Trunk Sewer Project

The Southern Trunk Sewer Project is composed of one gravity component made up of four trunk sewer pipelines that would make up approximately 10 miles of pipeline ranging from 18 to 36 inches in diameter (Table 2.3-2) serving the Southern Merced service area. The Southern Trunk Sewer Project would be gravity fed and would generally follow along E Mission Avenue/W Dickenson Ferry Road, Yosemite Parkway, and Kibby Road until reaching the WWTRF.

The Southern Trunk Sewer Project would follow E Mission Avenue/W Dickenson Ferry Road from the eastern limits of SUDP/SOI to west of SR 59 where the pipeline is anticipated to turn south and then west again to reach the WWTRF. Figure 2.3-5 illustrates the alignments of these new trunk sewers, and Table 2.3-2 outlines the specific locations and sizing of pipelines that would be required for reasonable build-out within the SUDP/SOI.

Above-ground features associated with the new Southern Trunk Sewer Project would be limited to the associated control boxes and air-blow off and air release valves that would all have small, inconspicuous footprints of a few square feet and architectural finishes that match the surrounding area. It is not anticipated that a new pump station would be required for the Southern Trunk Sewer Project at this time.

Program-Level Trunk Sewer Projects

Under the Program, it is anticipated that additional shorter trunk sewer pipelines would be required to serve the needs of reasonable build-out and private development within the SUDP/SOI. Sizing and locations of these pipelines would be determined as development occurs. However, size would be limited by the sizing of the entire wastewater collection system, which would generally constrain pipe sizes to less than 30 inches in diameter and a mile or less in length. Where feasible, trunk sewers would be gravity fed; however, pressurized forcemains may be required. Forcemains would be accompanied by pump/lift stations. These pump stations are anticipated to require smaller footprints than the Northern Trunk Pump Station and are not anticipated to have a footprint greater than 2,000 square feet. It is anticipated that power would be available adjacent to any required pump stations. These pipelines would be planned within roadways and utility ROWs in future developments and pump/lift stations would be located immediately adjacent to the roadway on City ROWs. These trunk sewers would generally be located in the future service areas as shown on Figure 2.3-1.

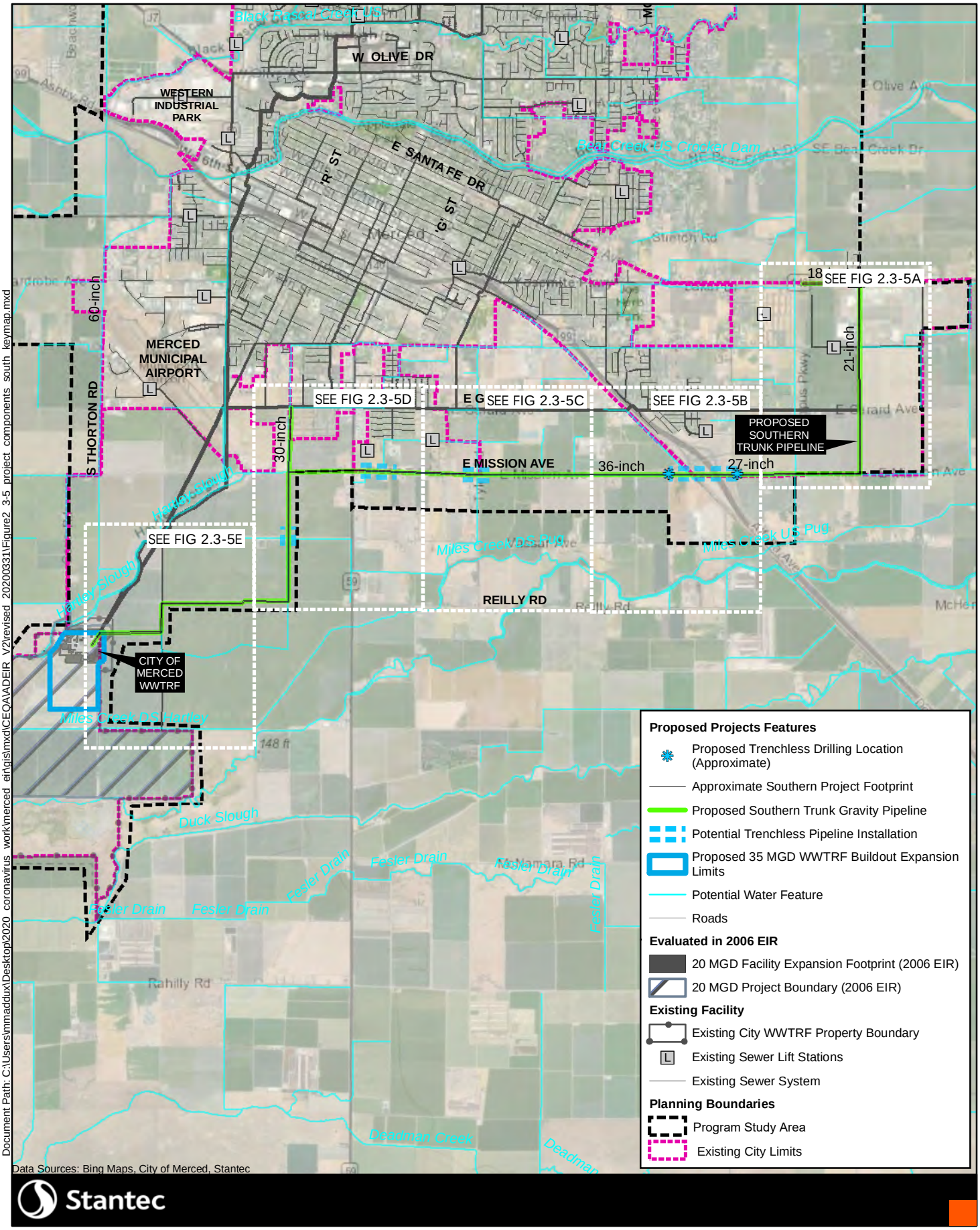
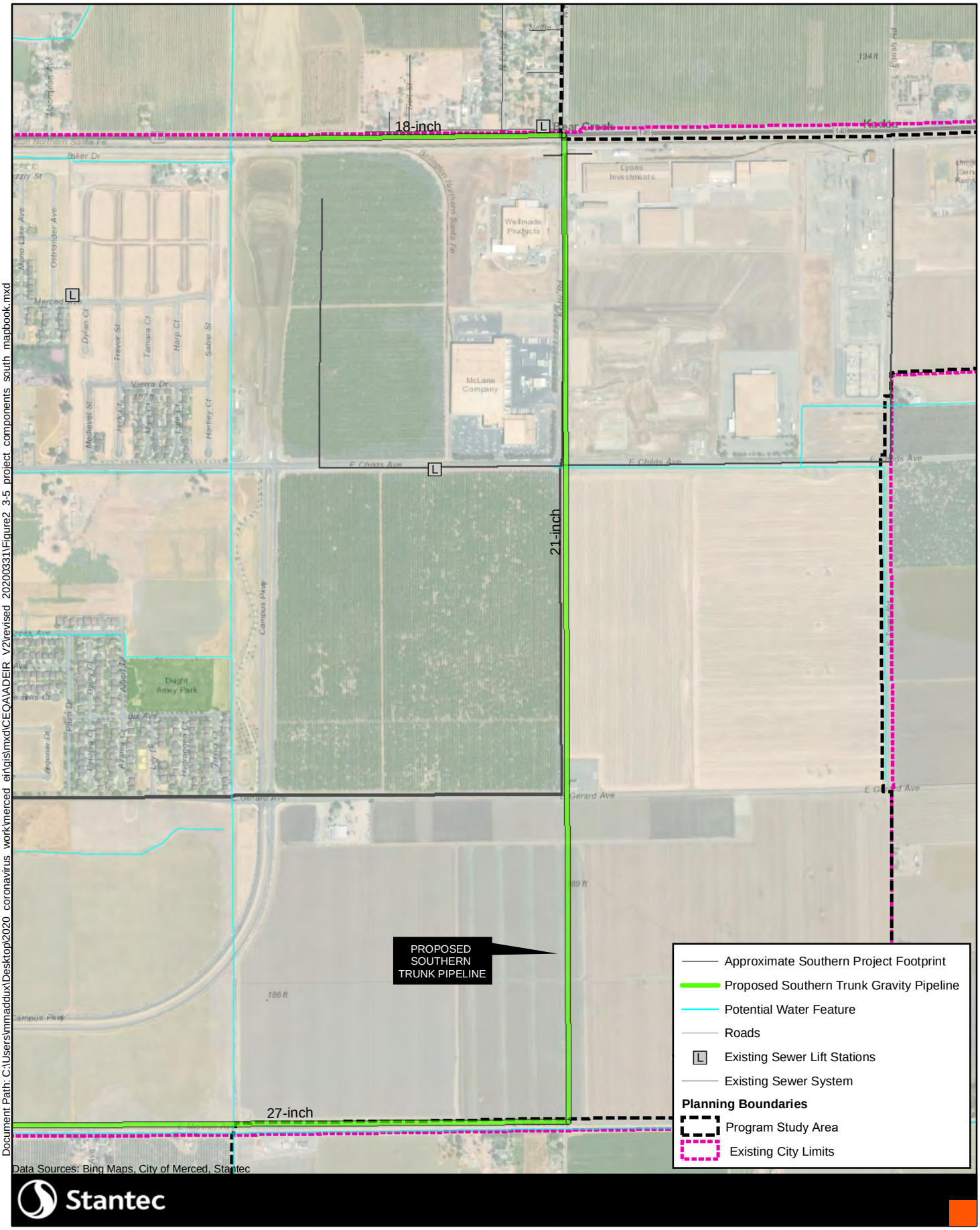


Figure 2.3-5
Proposed Southern Trunk Sewer Project Components Key Map
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Figure 2.3-5A
Proposed Southern Trunk Sewer Project Components
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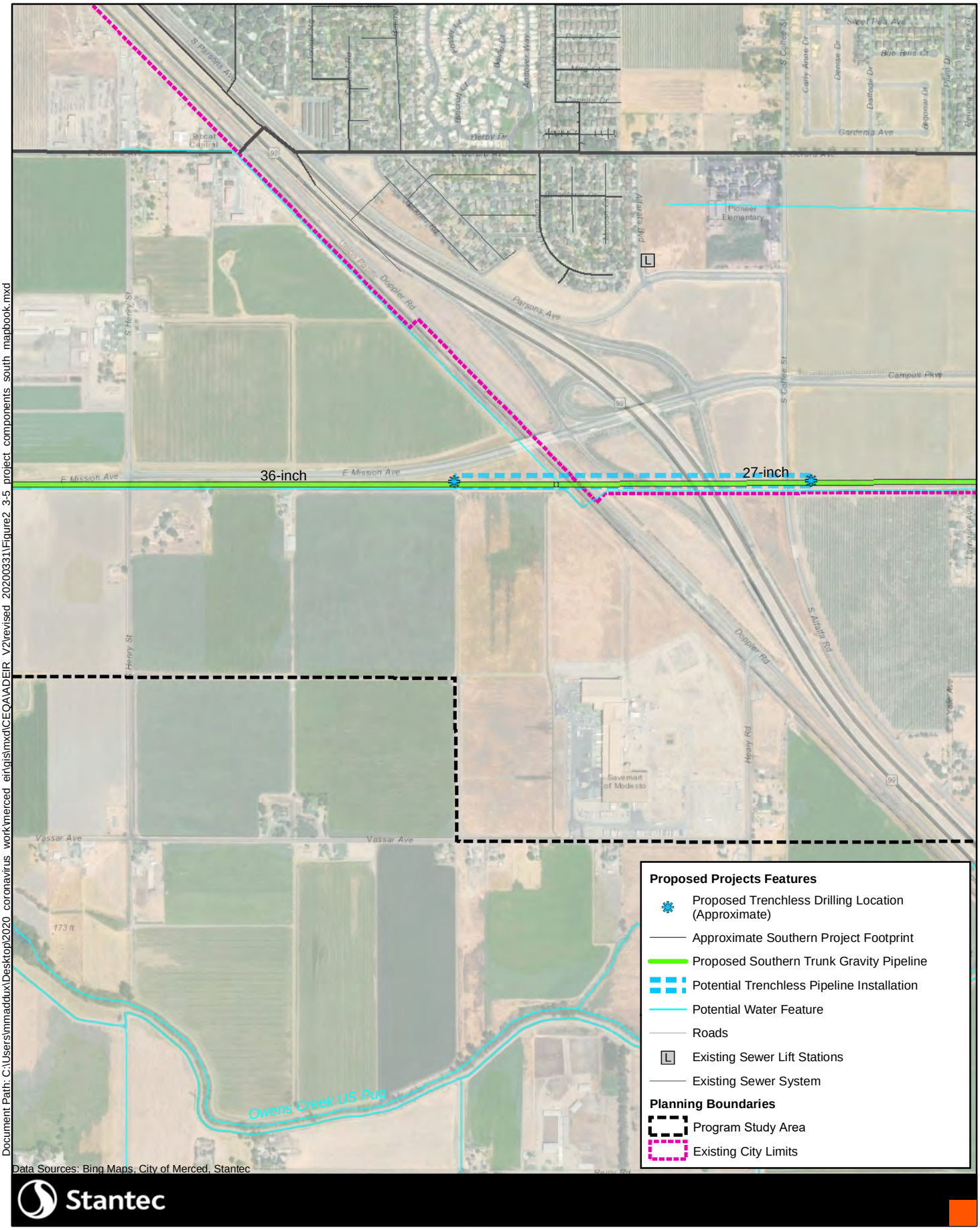
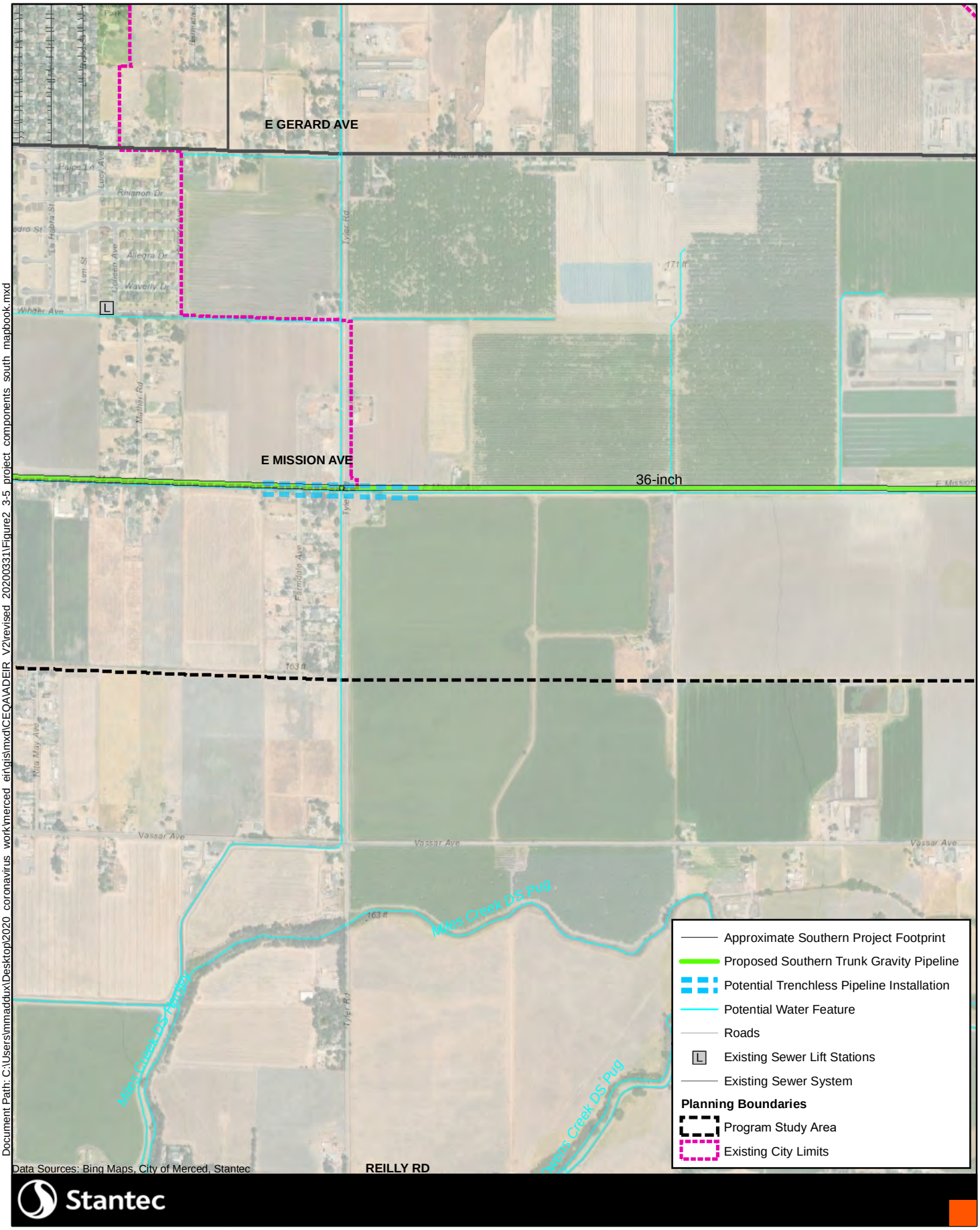


Figure 2.3-5B
Proposed Southern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report



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Figure 2.3-5C
Proposed Southern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report

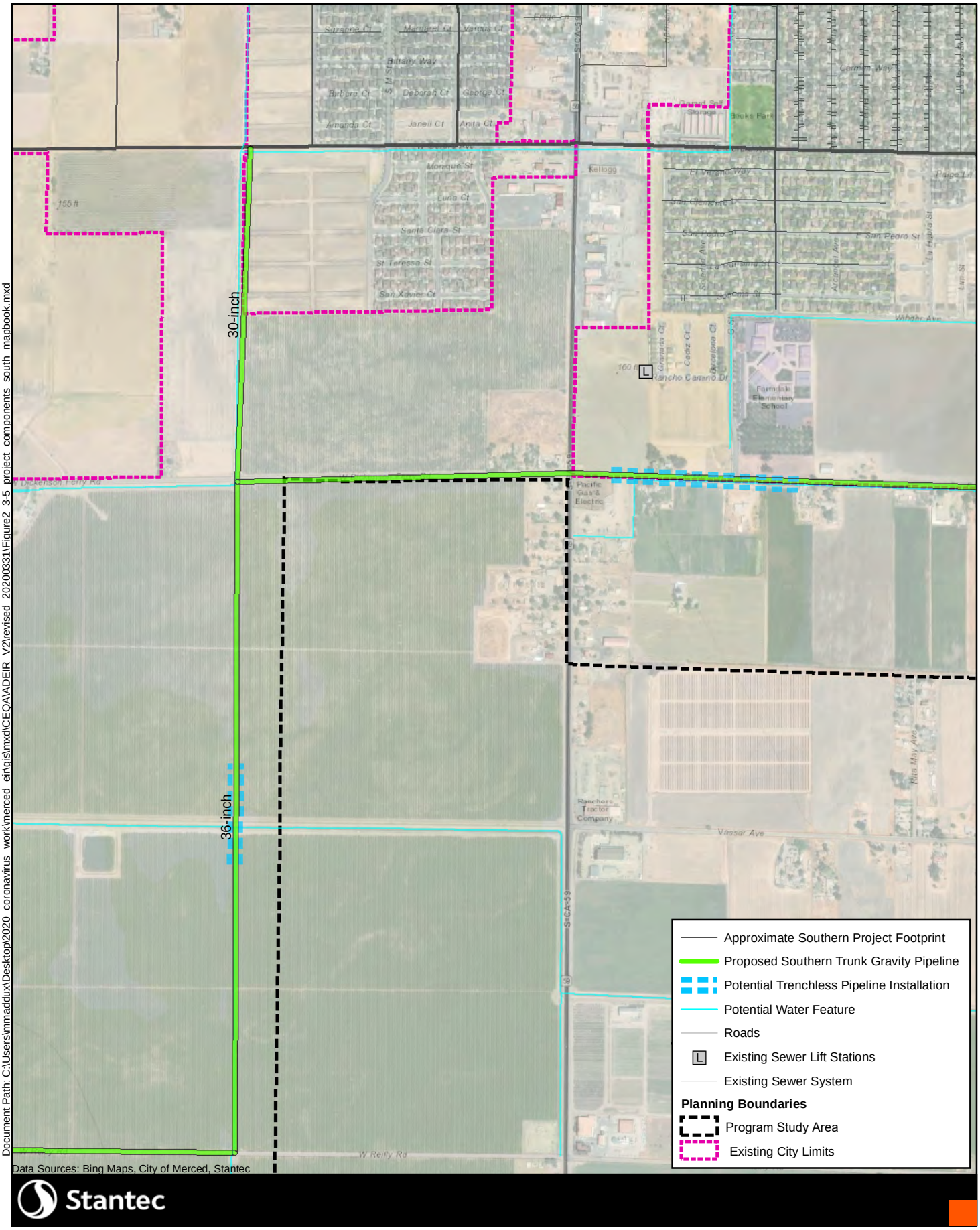
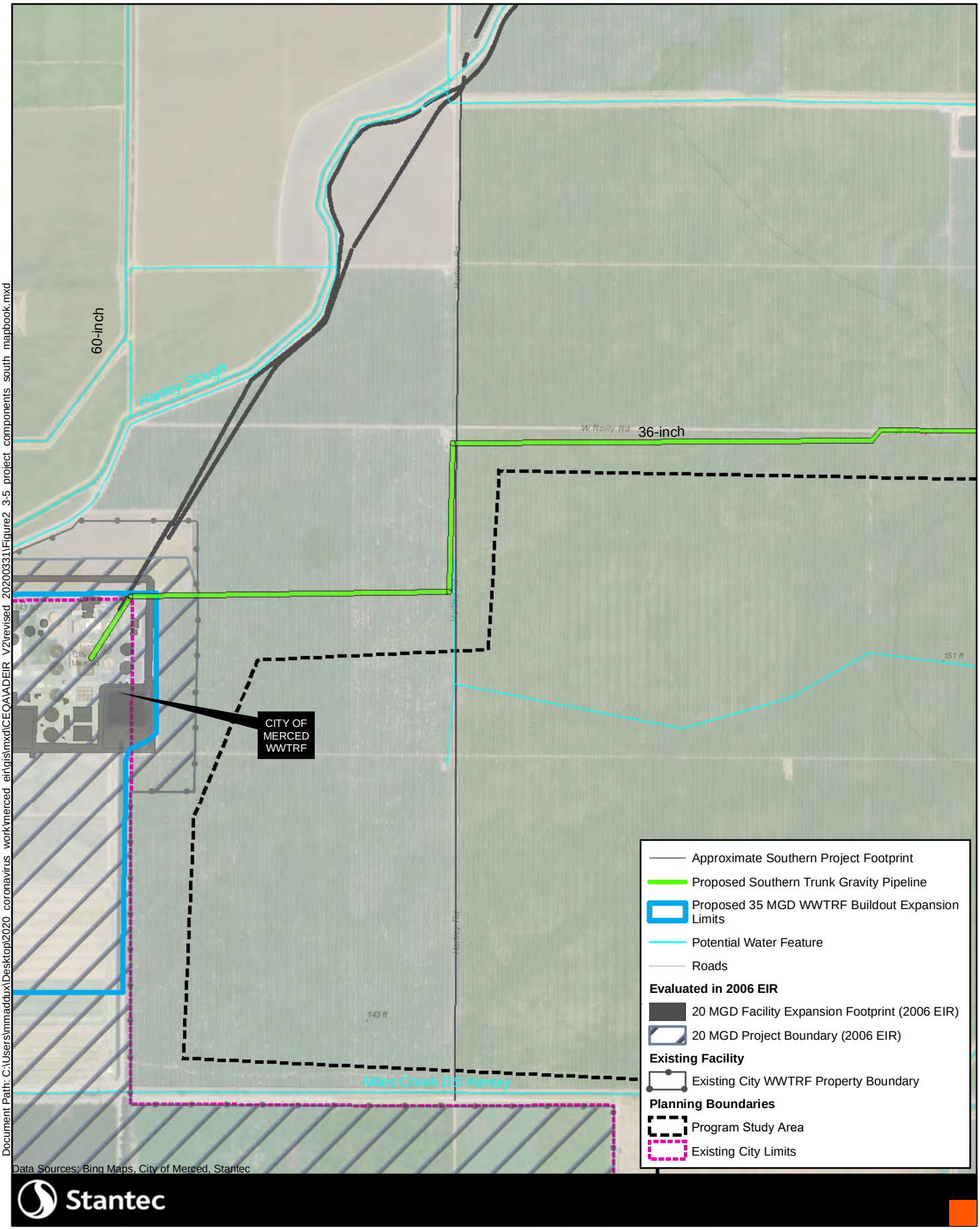


Figure 2.3-5D
Proposed Southern Trunk Sewer Project Components
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Figure 2.3-5E
Proposed Southern Trunk Sewer Project Components
City of Merced - Draft Environmental Impact Report

2.3.2.2 Program-Level New Localized Collector Infrastructure

A **collector sewer** is a pipeline used to convey wastewater from smaller tributaries feeding a larger trunk line as the sewage flows toward the wastewater treatment plant.

The 2017 WCSMP identifies the need for new localized collector infrastructure to provide residential, commercial, and industrial (etc.) sewer connections to transport the flow to the main trunk sewers. As development occurs within the SUDP/SOI, localized collector infrastructure would be developed to serve these future connections and to connect them to the proposed trunk sewers. These collector lines would be planned and developed as specific developments within the SUDP/SOI are proposed (i.e., future entitlements occur). While a project-specific level of detail is not available for these Projects, typical conditions for the collector system can generally be characterized as requiring trenches with a maximum 30-foot depth and a work corridor of up to 50 feet.

The collectors are programmatically analyzed in this document but would require evaluation as a part of specific development plans. Infrastructure needs may include new pipelines, smaller pump stations (anticipated maximum footprint of 100 by 100 foot building), and associated appurtenances (such as control panels, blow-off and air release valves, and backup generators similar to those described for the Trunk Sewer Projects) that would connect the current and planned wastewater collection systems as growth occurs within the SUDP/SOI. Generally, these future developments are anticipated in the areas of North Merced near the UC Merced Campus and in southeastern Merced as illustrated by the future service areas of North and South Merced within the SUDP/SOI shown on Figure 2.3-1.

The 2017 WCSMP in conjunction with the 2030 General Plan and community specific plans have developed growth projections and corresponding wastewater flow estimates for these undeveloped or unconnected areas of the SUDP/SOI as described in Section 5.0 of the 2017 WCSMP. A total of 106,132 equivalent dwelling units were estimated to be connected to the wastewater collection system under reasonable build-out conditions as shown in Table 5-5 of the 2017 WCSMP. Specific pipeline sizes, lengths, and locations have yet to be determined but would be smaller than the trunk sewers that they feed into and would be placed within current or planned roadways for areas where development proposals are submitted and wastewater collection system needs are more clearly defined. While it is difficult to estimate particular development sizes, it is estimated that there would be anywhere from 500 to 5,000 collector pipelines varying in length from a few hundred feet to a few miles to serve the undeveloped areas within the SUDP/SOI at reasonable build-out conditions.

2.3.2.3 Existing Wastewater Treatment and Reclamation Facility Expansion Projects

Tertiary treatment involves a series of additional steps after secondary treatment to further reduce organics, turbidity, nitrogen, phosphorus, metals, and pathogens.

Title 22 regulations govern the discharge and use of treated and recycled wastewater under the 1969 Porter-Cologne Water Quality Control Act and the SWRCB's Water Recycling Policy.

The City's existing 12 Mgal/d WWTRF currently collects and treats the wastewater that it receives from the City's existing wastewater collection system. The WWTRF provides disinfected tertiary treatment that meets Title 22 treatment requirements for "effluent" discharged from the WWTRF. Effluent, or treated wastewater, is either applied on the WWTRF property or discharged into Hartley Slough, which is a tributary of the San Joaquin River.

Although the WWTRF is currently permitted to treat 12 Mgal/d of flows, the City has already approved an expansion to 20 Mgal/d (as evaluated within the City of Merced 2006 Wastewater Treatment Plant Expansion EIR [State Clearinghouse {SCH} No. 2005101135]). The limits and features of the previous approvals are shown on Figure 2.3-5. As a part of the 2017 WCSMP, treatment expansion options were evaluated to the level of detail needed to support reasonable build-out of the collection system. The 2017 WSCMP identifies that reasonable build-out requires 35 Mgal/d. Therefore, this EIR analyzes the incremental increases to take the WWTRF from 20 to 35 Mgal/d in 4 to 5 Mgal/d projects as needed.

Unlike the collection system that requires advanced planning for a 50- to 75-year horizon, treatment capacity is relatively easily added on in an incremental fashion as demand warrants. Expansion of the WWTRF from 20 to 35 Mgal/d is evaluated in 4 to 5 Mgal/d expansion increments because the expansion of the WWTRF would occur as demand warrants (i.e., in 4 to 5 Mgal/d increases), rather than all at once (i.e., a 15 Mgal/d increase). WWTRFs are typically designed in a fashion that allows for the processes in the treatment train to be expanded without much interruption to the existing treatment process. At the WWTRF, these expansions have historically been done in 4 to 5 Mgal/d increments which are anticipated to continue if the growth rate within the SUDP/SOI stays consistent with historic conditions until reasonable build-out is reached. If growth rates were to increase, demand would subsequently increase, and the plant could be expanded in larger intervals. This flexibility in increasing capacity only as needed is a cost savings measure to ensure that expensive unnecessary projects are not undertaken.

To reach reasonable build-out, the WWTRF expansion would expand the WWTRF footprint to the south immediately adjacent to the existing WWTRF. The expansion is anticipated to require a similar amount of space for siting facilities to those facilities currently in use at the WWTRF, which would essentially triple the existing 12 Mgal/d facility footprint requiring approximately 133 additional acres immediately to the south of the existing facility to accommodate the full expansion as shown on Figure 2.3-5 would be needed to develop the WWTRF to reasonable build-out capacity. The exact configuration and processes of these improvements and ultimate capacity would be determined as growth and development occurs in accordance with the latest design standards, treatment technologies, and permit requirements; however, the treatment components, footprints, and processes can be reasonably estimated with enough specificity to provide a project-specific level of detail.

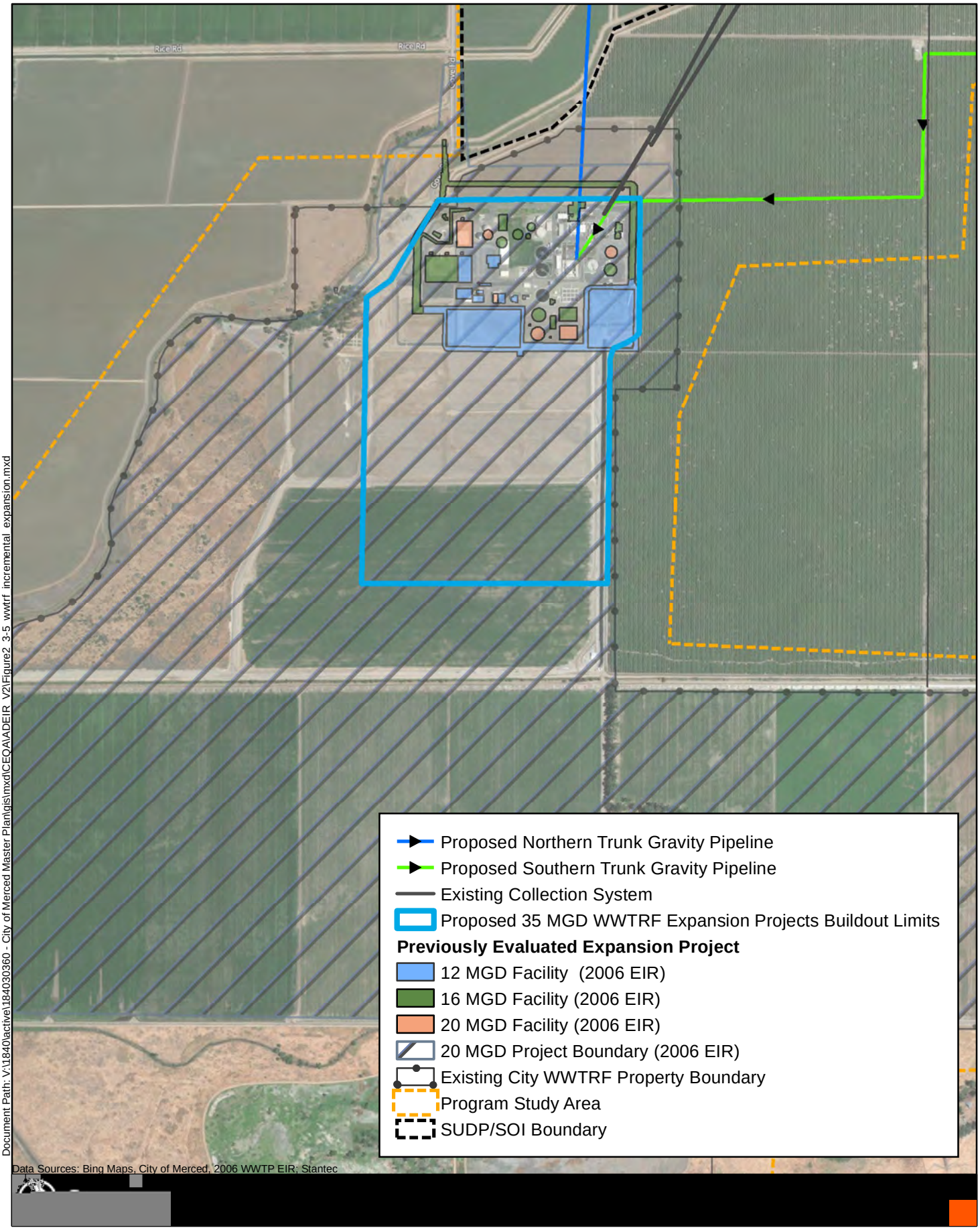


Figure 2.3-6
WWTRF Expansion Projects
City of Merced - Draft Environmental Impact Report

The WWTRF is sited on a large parcel of land with plenty of room for expansion of the current facilities. Increased wastewater flows would continue to be treated to a tertiary level and disinfected prior to disposal. The treatment processes and project details for how reasonable build-out at the WWTRF would be met are described below. Descriptions and assumptions are based on similar projects and typical wastewater treatment plant expansions. Incremental increases to the wastewater treatment facilities would be completed by expanding the WWTRF footprint to the south much like the expansion from 12 to 20 Mgal/d described in the City's 2006 EIR. The City is concurrently conducting engineering studies and preparing plans to provide reliable wastewater treatment capacity that is capable of serving planned future wastewater loads and that will meet National Pollution Discharge Elimination System (NPDES) and Waste Discharge Requirements (WDRs) (CVRWQCB WDRs Order No. R5-2014-0096 and NPDES No. CA0079219). The City is in the process of renewing the NPDES permit and WDRs, which are expected to have more stringent WDRs even if the improvements associated with development of the Program are not implemented.

Existing Wastewater Treatment Reclamation Facility Expansion

Specific improvements to the WWTRF would include increased treatment capacity and additional effluent equalization storage capacity and have the potential to incorporate newer wastewater treatment technologies. Anticipated equipment and processes associated with each phase of treatment include the following:

- **Headworks and primary treatment facilities improvements** – Headworks and treatment facilities are the portion of the WWTRF where wastewater is initially received and undergoes primary treatment at the plant. With the increase in capacity, facilities would need to be expanded to accommodate increased flows. Required improvements anticipated would include additional pumps at the influent pump station, additional screen and grit basin at the headworks facilities, an increase in the total capacity of the equalization basins, and improvements to the primary clarifiers.

- **Secondary treatment improvements** – Secondary treatment is a treatment process where wastewater undergoes physical phase separation to remove settleable solids and a biological process to remove dissolved and suspended organic compounds. Secondary treatment facilities improvements required for expansion of the WWTRF are anticipated to include expansion of the aeration basin; a splitter box, blower building and blowers; secondary clarifiers; and Return Activated Sludge/Waste Activated Sludge pump stations. However, more efficient treatment technologies, such as a membrane bioreactor facility, may be used in lieu of the traditional secondary treatment facilities. If different technologies are identified during engineering studies, they would be implemented within similar footprints and be consistent with the NPDES discharge permit.

- **Tertiary treatment improvements** – Tertiary treatment is the final cleaning process that improves wastewater quality before it is reused, recycled, or discharged into the environment. Tertiary treatment improvements associated with the upgrades to the existing WWTRF are anticipated to include an upsized tertiary pump station, rapid mix and flocculation basins, and tertiary disc filters , but could also include alternate treatment technologies such as membrane bioreactor treatment trains, as well. These improvements would require new structures. Tertiary treatment upgrades would

be required to produce acceptable quality tertiary effluent consistent with California Department of Health Services "Title 22" pathogen-free reuse criteria.

- **Disinfection system improvements** – The existing WWTRF uses an ultraviolet (UV) disinfection system, which is a physical process that instantaneously neutralizes microorganisms as they pass by UV lamps submerged in the effluent. This UV disinfection system would need to be expanded incrementally by adding an additional UV disinfection facility to accommodate flows up to 35 Mgal/d.

- **Miscellaneous structures improvements** – Miscellaneous structure improvements associated with the upgrades to the existing WWTRF would include improvements and/or upsizing to the operations/lab/admin building, generator building, chemical storage facility, chemical building, plant water pump station, stormwater pump station, and stormwater detention basin. Additional lighting or electrical components could also be required for the upgrades to the WWTRF in order to accommodate the upgrades to the facility. New concrete and gravel pathways would also likely be required for access to any new structures. Alternative energy sources such as solar or use of methane-powered electric generators could potentially be used or implemented as a part of the Program.

- **Biosolids handling facilities improvements** – Improvements to the biosolids handling facilities would be required including, upgrades to the dissolved air flotation thickeners (DAFTs) digester control building, primary digesters, solids holding tank, gas holding system, waste gas flare, biosolids dewatering building, active solar dryers, centrate equalization tank, and centrate pump station. Additional biosolids thickening with an expanded dissolved air flotation thickener, expanded anaerobic digestion facilities, expanded centrifuge dewatering, and expanded drying and stabilization to Class A or B quality biosolids using active solar dryers (or equivalent) would also be required.

  The active solar dryers would be used to dry, stabilize, and temporarily store biosolids prior to land application or offsite hauling. Currently, at 12 Mgal/d, the WWTRF produces an average of 14,800 pounds per day (lbs/day) of biosolids, which is currently applied to the 580 acres of City owned agricultural land at the WWTRF facility where crop rotation is used to balance the chemical levels of the applied soils and regulated by the CVRWQCB Permit No. 97-034.

  At the planned 20 Mgal/d capacity increase, it is estimated that the WWTRF would produce approximately 24,600 lbs/day of biosolids which are anticipated to also be land applied on the WWTRF site (which otherwise would result in approximately 214 haul trips per year). At the 35 Mgal/d buildout, the WWTRF would produce an estimated 43,050 lbs/day total of biosolids (an addition of 28,250 lbs/day increase from current 12 Mgal/d). It is anticipated that the total solids generated would be accommodated on the WWTRF site; however, future conditions, such as permit stipulations, land application chemistry, and other factors, may dictate additional land for disposal or alternate disposal methods. In the event that additional land is required, it is anticipated that an existing City property would be available for discharge and subject to WDR permit amendments. Currently, the City anticipates that land may be available at a City property along Thornton Road. If onsite or nearby City property disposal is not available, it is conservatively estimated that approximately 621 haul trips per

year (approximately two trips a day) would be required to haul all biosolids generated to an approved disposal facility.

As described, the additional biosolids associated with the increased capacity could be applied to additional agricultural areas within 2 miles of the WWTRF or trucked to the Synagro Central Valley Compost Facility (approximately 22 miles from the WWTRF). Any application of these biosolids to offsite areas would be in compliance with the Merced County biosolids disposal ordinance, WDRs, and 40 Code of Federal Regulations part 503. For purposes of this analysis, it is assumed that there would be a total of 621 truck trips offsite (to the Synagro Facility) per year under a worst-case scenario; however, the City would likely continue to land-apply the biosolids where feasible.

Effluent Disposal Facilities

During the 2017 WCSMP planning process, the City considered a range of options for disposal and reuse of effluent resulting from the City's treatment process, ultimately concluding that centralized treatment, reuse through agricultural irrigation, habitat enhancement, and discharge to Hartley Slough (similar to the existing permitted effluent management practices) was preferred. This approach capitalizes on existing City assets, requires limited new infrastructure, has lower life cycle costs, consistent with the principal of maximizing the use of gravity systems, and minimizes energy costs as further described within Section 8.0 of the 2017 WCSMP.

While the City needs to maintain flexibility in wastewater collection and effluent discharge, the City explored an option with Merced irrigation District (MID) to allow for effluent discharges to supplement MID flows in South Merced near the WWTRF while MID would provide irrigation water deliveries in North Merced to offset any potential groundwater depletion. The City has reached an agreement with MID on how increased effluent flows from the WWTRF would be utilized. This supplemental effluent from the WWTRF would allow for recharging of the areas groundwater resources and would also allow for irrigated parks and other City landscaping, rather than using groundwater sources and would accomplish a similar outcome to developing a recycled water system without the associated costs and greater footprint.

Improvements to the outfall structure and irrigation system improvements would be required for the WWTRF expansion. The upgrades to the WWTRF would continue to discharge to Hartley Slough (which flows to Owens Creek and later flows to the Eastside Canal) and would also continue to convey treated effluent to the Merced Wildlife Management Area south of the WWTRF. Expansion of the existing 54-inch pipeline and outfall structure would be required in order to allow for additional capacity associated with reasonable build-out. Effluent discharge into Hartley Slough would continue to achieve an effluent quality (measured at the point of discharge, before mixing with receiving waters occurs) of 10 milligrams per liter (mg/L) biological oxygen demand, 10 mg/L total dissolved solids, and 10 mg/L nitrate consistent with permitting requirements. Effluent disposal options are dependent on flows, treatment standards, and permit requirements. Among other factors specific discharge details would be determined as development and expansion occur.

2.3.2.4 Operations and Maintenance

The Program also warrants the considerations of O&M of these new and upgraded facilities once construction is complete. Placement of Program facilities would require routine inspections, maintenance, repair, and ongoing minor improvements associated with keeping the system in working order. It is anticipated that this maintenance would be performed by City staff and would not generate a substantial increase in trips or vehicle miles traveled since this infrastructure would be added into the current responsibility of maintaining existing infrastructure.

As discussed in the 2017 WCSMP, the ongoing O&M of both the existing and new infrastructure would be required to ensure that the system remains in sound working order. Pipeline, pump station, and WWTRF operation would require regular cleaning maintenance of the valves, odor control devices, and associated WWTRF features. The frequency of these O&M activities would depend upon the water quality, and cleaning of the pipelines and pump stations would occur often enough to maintain desirable pumping efficiencies. Operational access to existing and new pipelines would occur within the public sewer easement and from existing access points. Access to the WWTRF would occur along the existing roadways and within the footprint of the WWTRF.

2.4 CONSTRUCTION CHARACTERISTICS

2.4.1 Proposed Activities

Implementation of the Program and proposed Projects can generally be categorized into pipeline-related activities and stationary site building activities. The Program and specific Projects themselves are described in Section 2.3; however, to avoid redundancy, these pipeline and building/site activities require similar types of typical construction and phases that are representative of activities under the Program (unless otherwise noted). Key construction activities include site preparation and grading, pipeline and/or facility construction, dewatering, dust control, testing and start-up, and grading and site restoration. Specific equipment and construction assumptions for the proposed Projects were prepared to support this Project Description and the Air Quality analysis in this EIR. These assumptions and Project details are enumerated and are included in Appendix B, Air Quality and Greenhouse Gas Assumptions Memorandum of this document. Typical activities and construction requirements associated with each stage of construction are described below.

2.4.1.1 Mobilization, Site Preparation, and Grading

Construction activities would be mobilized as needed for each individual project. Mobilization would include arrival of crews and equipment onsite. Site preparation and grading would vary based on the underlying site conditions: Paved areas would require removal of existing asphalt, whereas unpaved areas would require minimal vegetation removal through clearing and grubbing. The stationary site would require grading and leveling to prepare the site for building and structure construction. Import base material may be required to facilitate leveling. Preparations would be made for entry and exit holes for trenchless crossings under the railroad(s), stream(s), and highway facilities. Water application on disturbed unpaved areas during construction for dust control would be required pursuant to Regulation

VII, Fugitive Dust Prohibitions (CARB 2019), which requires the application of approximately 2,000 gallons of water per acre of exposed soil.

2.4.1.2 Pipeline and/or Facility Construction

Pipelines: Trenching, Excavation, and Placement

Pipeline placement is expected to occur at an average rate of 250 to 300 feet of pipeline per day within the roadway segments, with some sections requiring longer, more intensive construction durations and other sections occurring at a more rapid sequence. Generally, pipeline installation would involve site preparation and grading, preparation of the pipe, staging of the pipe adjacent to the trench alignment, digging and shoring the trench, placing the pipe in the trench, backfill and compaction in accordance with design and roadway specifications, revegetation or paving, and installation of appurtenances such as air and vacuum release valves or blow-off valves.

Where possible, the pipelines would be placed within the roadway or City ROW to minimize impacts to undisturbed and agriculture lands. Placement of the pipeline would consist of open-cut trenching and selected trenchless pipe installation. It is anticipated that trench widths would range from 3 to 15 feet in width to accommodate the trunk sewers, but in some select instances may reach widths up to 20 feet (to accommodate pipe intersections, dissipaters, valves, joints, etc.). Depths of trenching are anticipated to generally be less than 10 feet deep, with maximum depths of 40 to 50 feet when required to cross existing utilities or to minimize high points and associated additional air valve installations. Exact trench widths and depths would vary depending on soil conditions and would be determined during final design stages. Trenches would be backfilled at the end of each workday or would be temporarily closed by covering with steel trench plates if the site cannot be secured by other safety measures such as fencing. Construction equipment needed for pipeline installations generally includes backhoes, excavators, dump trucks, cranes, shoring equipment, steam rollers, and plate compactors. Based on preliminary desktop review and previous work within the City, it is not expected that any blasting would be required for the Project other than minor spot blasting if shallow rock is encountered.

A trenchless piping installation methodology (i.e., horizontal directional drilling [HDD], jack and bore, or microtunneling) would be used to avoid conflicts with potentially jurisdictional waters, MID canals, railroad ROWs (Union Pacific Railroad [UPRR] and Burlington Northern Santa Fe [BNSF]), and highway ROWs SR 99, SR 140, and SR 59). These technologies are less invasive and would allow construction to proceed under a particular feature with minimal disturbance. Each of these trenchless technologies differ slightly in methodology for how the pipeline is installed. HDD or directional boring is a minimal impact trenchless method of installing underground utilities such as pipe in a relatively shallow arc or radius along a prescribed underground path using a surface-launched drilling rig (Figure 2.4-1). Jack and boring is a method that drills a hole underground horizontally between two points (below-grade pits) without disturbing the surface between sending and receiving pits (Figure 2.4-2). Microtunneling is a digging process that uses a remote-controlled microtunnel boring machine (MTBM) combined with the pipe jack-and-bore method to directly install pipes underground in a single pass (Figure 2.4-3). The technology for trenchless tunneling and technologies would be selected during the design process based on cost, minimizing disturbance impact, and other factors. For impact analysis purpose, it is assumed that drill pits

on both sides of the trenchless section would be needed during construction. The maximum depth of these pits would be approximately 40 feet. These methods would require a specialized drilling construction crew, drill equipment, settlement basins, etc.

Figure 2.4-1: Trenchless: Representative Horizontal Directional Drilling Process

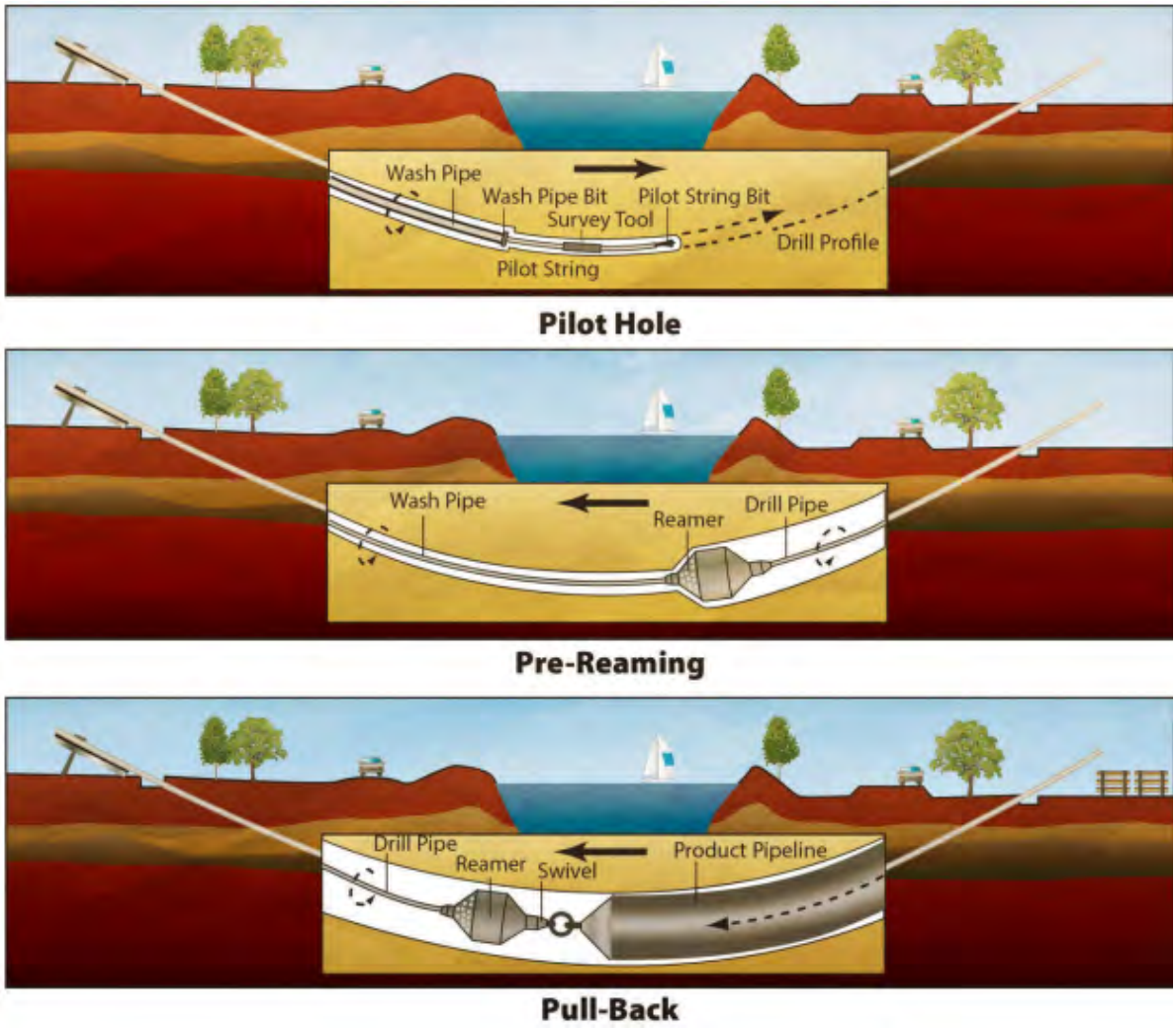


Figure 2.4-2: Trenchless: Representative Microtunneling Process

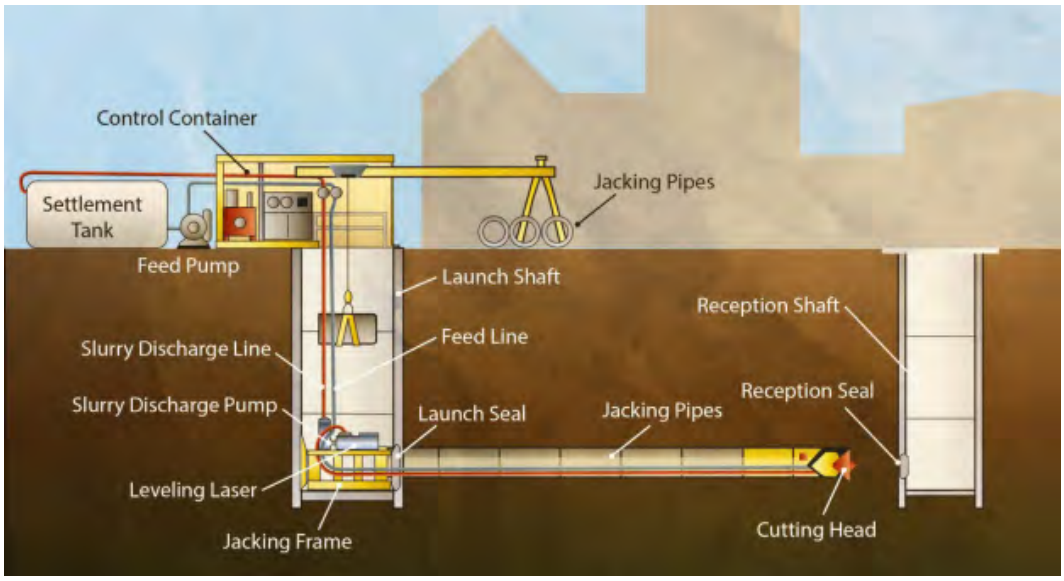
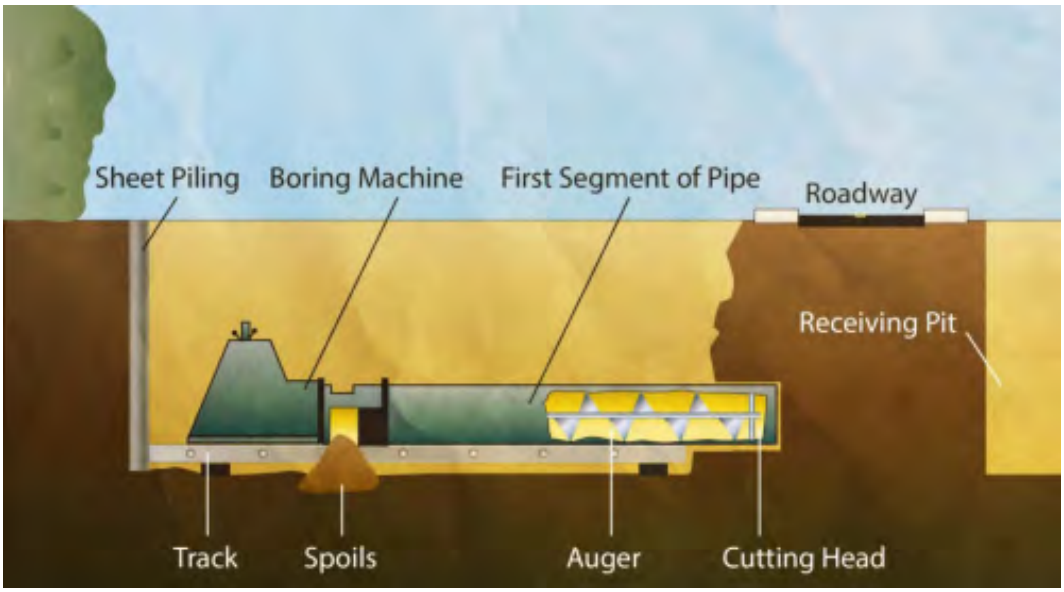


Figure 2.4-3: Trenchless: Representative Jack and Bore Process



Pump Station: Excavation and Construction

The pump station(s) would be housed in single-story building(s) that would include features such as a pump room, an electric control room, and a room for disinfection facilities. The exterior of the pump station(s) would-be built in accordance with standard construction methods for roofed masonry buildings and would be designed to blend with the surrounding landscape. The Northern Trunk Sewer Pump

Station, which would be the largest pump station associated with the 2017 WCSMP, is conservatively anticipated to be housed in a 2,000 square foot building on a site that could be up to 2-acres in size depending on City acquisition of property, in Northwest Merced near the intersection of Thornton Road and W Cardella Road. It is anticipated that a depth of 40-50 feet would be required for construction of the pumps and connection with the collection system. Smaller pump stations required for collectors or infrastructure would have much smaller footprints of approximately 100 by 100 feet.

Construction of the pump station(s) would begin with grading and site preparation and then excavation. Once the area is excavated, the crew would install a structural foundation consisting of concrete, construct the pump house, and install the pumps and motors. The pump station(s) would be equipped with a portable emergency generator and manual transfer switches. Power to the pump station(s) would be provided through underground service to minimize the possibility of damage during fires. Excavated soils would be reused onsite (for site leveling or stockpiling for future use) to the extent feasible and otherwise disposed of offsite. Concrete would be required for construction of pump station foundations and pads.

WWTRF: Expansion

Similar to the construction undertaking described in the 2006 WWTRF, a 4 to 5 Mgal/d expansion would require grading, excavation and soil removal, transporting and installing equipment, and constructing process units. Excavated material would mostly remain onsite and would be used for backfilling; however, when additional material would require transport on- or offsite or when equipment is being transported to and from the WWTRF, construction traffic would use Gove Road, Dickenson Ferry Road, Thornton Road, and SRs 99 and 140 to haul these materials to the landfill or other suitable disposal location. Construction at the WWTRF would occur with periodic activity peaks, requiring brief periods of substantial effort, followed by longer periods of reduced activities.

2.4.1.3 Dewatering

Based on the topography and groundwater table levels throughout the City, it is anticipated that dewatering would be required during trenching and excavation activities, particularly near creek crossings where trenchless crossings would occur. Groundwater pumps would be installed as needed during the trenching and excavation stages, and groundwater would be discharged in accordance with permit conditions and statewide NPDES permit requirements (typically a low-threat discharge dewatering permit). The construction contractor would be required to develop a Construction Dewatering Management Plan to ensure compliance with regulations of the CVRWQCB, California Department of Fish and Wildlife (CDFW), and any other regulatory agency that has jurisdiction in the Program area. All flushing water (used during the testing and start-up phase) would be treated and discharged into the wastewater system.

2.4.1.4 Excavated Soils Handling, Testing, and Disposal

Construction would generate excavated soils, which would be used for backfilling when feasible. If excavated soils are found to be inadequate for backfill, new backfill material would be imported. All

excess excavated soils would be disposed of in accordance with applicable laws and are anticipated to be accepted at the local landfill (likely the Highway 59 Landfill).

2.4.1.5 Start-up and Testing, Final Grading, and Site Restoration

Once the pipelines and facilities are constructed, a testing and start-up period would be required to check that the facilities are in proper working order, which would require water usage. Once the pipeline, pump stations, and other associated Project components are installed, the disturbed areas would be restored to pre-construction conditions in accordance with City standards. The in-road segments would be repaved, and any overland segments would be graded to match the existing topography and re-seeded with native vegetation where necessary.

2.4.2 Construction Schedule

Construction of the proposed Projects would generally occur as development occurs in accordance with the 2030 General Plan. As described throughout this Section, construction of the trunk sewers would be required before additional development within the Program area (SUDP/SOI) is approved, whereas expansion of the WWTRF would be done incrementally as demand warrants.

2.4.2.1 Pipelines

The two proposed trunk sewer Projects would form the backbone of the wastewater collection system necessary to allow for growth. They would be the first critical pieces constructed. It is anticipated that construction on the Northern Trunk Sewer Project would occur first due to demand surrounding the UC Merced campus area; however, construction of the Southern Trunk Sewer Project could occur simultaneously. Construction is anticipated to begin as early as 2022 and is projected to occur within a 5-year period. Once initiated, it is anticipated that construction of each of the trunk sewer Projects would take approximately 18 months or 395 working days to construct the pipelines.

Other segments of the collector system constructed as part of the Program would be smaller in size and with less total construction effort than either of the two trunk sewer Projects. It is anticipated that the construction period of any given pipeline would be less than 18 months or 395 working days. While conservative estimates for air quality and other impact assessments would evaluate construction of reasonable build-out conditions happening all at once, that is highly unlikely. It is anticipated that growth within the SUDP/SOI would continue at a similar rate to that was analyzed in the 2017 WCSMP, which indicates reasonable build-out would not occur until beyond 2030 (likely, much longer in the future). For the purpose of analysis, where conservative estimates are necessary it is assumed that reasonable build-out would be reached by 2030.

2.4.2.2 Pump Stations

The Northern Trunk Pump Station would be constructed at the same time as the Northern Trunk Sewer, within the same 5-year period potentially beginning as early as 2022. It is anticipated that the pump station may take closer to 18 months or approximately 365 working days to complete.

If required, construction of additional pump stations under the Program would be lesser in duration than the Northern Trunk Pump Station construction as they would likely have shorter depths and would be much smaller. Other pump station construction could be staggered and would not be anticipated to occur at the same time as another pump station. However, it is likely that new pump stations would be constructed as a part of a new pipeline project, and those construction activities would run simultaneously.

2.4.2.3 WWTRF Expansions

WWTRF expansions would be completed as growth and demand warrant. It is anticipated that since the WWTRF expansion to 20 Mgal/d (as previously analyzed in the City's 2006 EIR) has not yet been constructed, that would be completed first (likely in 2022 or 2023). When construction occurs, it is anticipated that a 4 to 5 Mgal/d expansion of the WWTRF would take approximately 24 months or 474 working days to complete. Each subsequent expansion of the WWTRF would take approximately the same amount of time unless the expansions were combined, in which case, construction could be completed more quickly than back-to-back projects. This construction schedule provides flexibility in implementation of the 2017 WCSMP, with the earliest portions of the 2017 WCSMP being operational by 2024 and subsequent projects operational between 2024 and 2030 as reasonable build-out of the 2030 General Plan warrants.

2.4.2.4 Other Construction Activities

Other activities under the Program could warrant as-needed construction activities to make repairs and construct ancillary infrastructure like valves or effluent disposal equipment. Construction of these facilities would be determined as plans for specific projects were set forth but are estimated for the purpose of assessment to require 3 months of construction within the period of reasonable build-out.

2.4.2.5 Construction Hours

In general, construction would occur between 7:00 a.m. and 8:00 p.m., Monday through Friday; however, longer hours could occur in certain specific circumstances (i.e., when trenchless drilling operations need to be completed for stability reasons or when working in a narrow ROW). It is expected that the collection system backbone would be installed first, with associated infrastructure and smaller collectors and laterals developed as needed.

2.4.3 Construction Equipment and Workers

Typical construction equipment associated with pipeline construction activities includes the use of excavators, back hoes, loaders, dump trucks, water trucks, concrete trucks, and drilling and boring equipment. Mobile construction equipment used for the Project would depend on the selected contractor's planned operations, but may include the following equipment:

- Excavators
- Scrapers
- Graders
- Rollers
- Asphalt trucks
- Pickup trucks
- Air compressors
- Welding equipment
- Pumps and piping

- Generators
- Back-up lighting systems,
- Communications, and safety equipment
- Water trucks
- Vehicle maintenance truck
- Erosion control materials
- Front-end loaders
- Highway trucks
- Cranes
- Miscellaneous equipment customary to the mechanical and electrical crafts, and vehicles used to deliver equipment and materials

Construction of the Project would require workers to perform various duties and would include truck drivers, heavy equipment operators, flaggers, etc. Table 2.4-1 summarizes the number of workers needed for each construction activity.

Table 2.4-1: Anticipated Number of Construction Workers per Project

Construction Stage	Anticipated Number of Workers
Site preparation/Grading	15
Pipeline and/or Facility Construction	50
Paving	10
Architectural Coating	5

2.4.4 Construction-Related Traffic

Construction activities would require material haul trips, excavated material trips, and employee trips over the duration of the Project. Temporary construction-related road closures may entail single lane or detours where necessary. Traffic control would be necessary throughout construction activities. Traffic control would typically require five to ten workers to implement traffic control measures during active construction. Equipment required for traffic control would include changeable message signs, delineators, arrow boards, and K-Rails. The traffic plan for each project would be coordinated with the applicable jurisdictions including the City of Merced and County of Merced. Specifics of the traffic plan are discussed in greater detail in Section 3.15, Transportation.

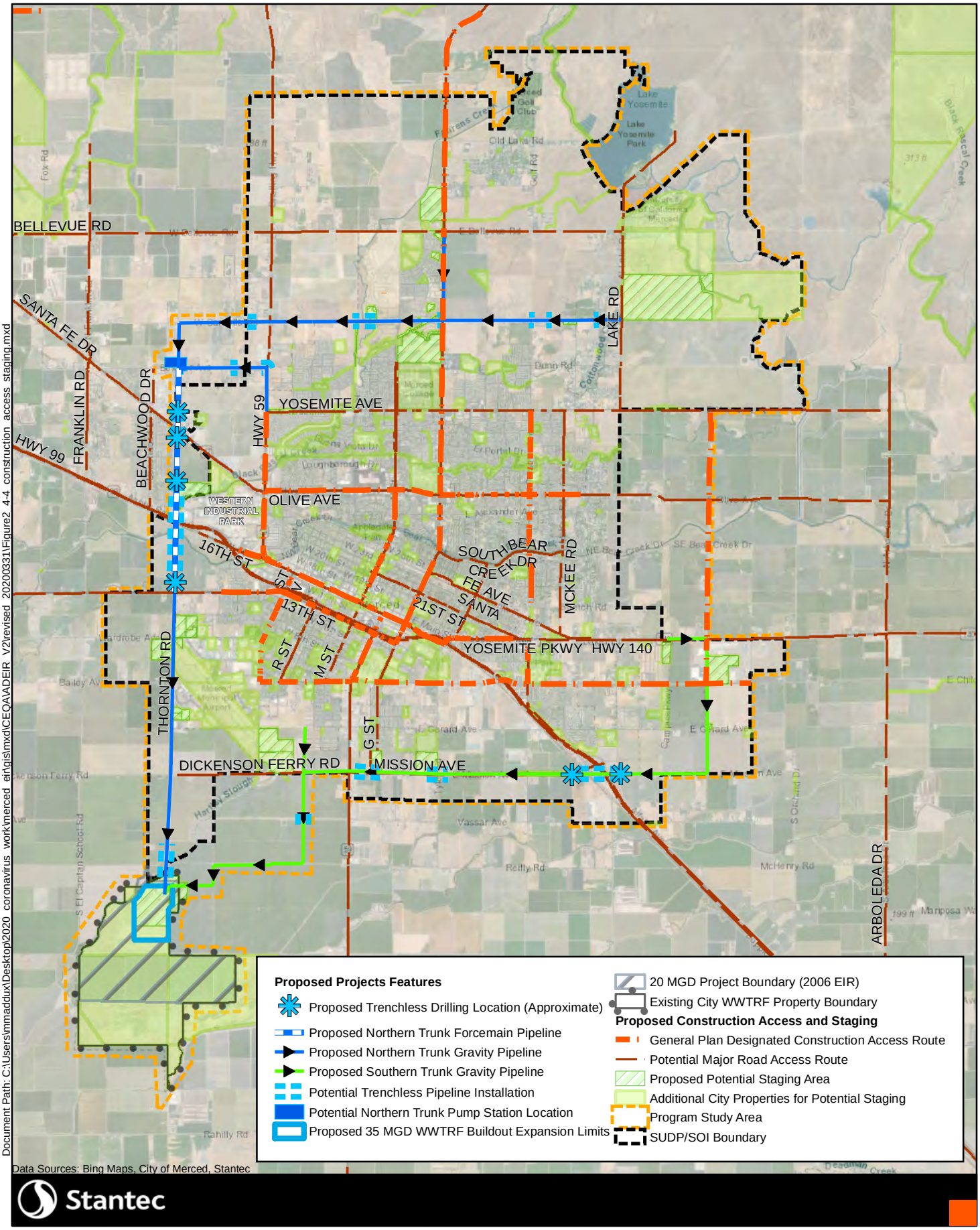


Figure 2.4-4
Construction Access and Staging Areas
City of Merced - Draft Environmental Impact Report

2.4.5 Proposed Access and Staging Areas

Staging and access associated with the majority of the in-road pipeline placement is anticipated to occur within or adjacent to the pipeline alignment (within the 200-foot construction buffer) and associated roadways. Additional staging areas would occur on City-owned property adjacent to the Project activities. It is anticipated that key staging areas would include the WWTRF, City property along Thornton Road across from the airport, City property within the Airport Business Park, trenchless drilling sites along the pipeline alignment, City property along Thornton Road south of the intersection of W Cardella, and City property along Dickenson's Ferry Road as shown on Figure 2.4-4. Figure 2.4-4 also shows the construction access, including potential disposal sites, and staging areas for the Project.

2.5 REFERENCES

California Air Resources Board (CARB). 2019. San Joaquin Valley Air Pollution Control District List of Current Rules. https://www.arb.ca.gov/drdb/sju/cur.htm. Accessed January 2019.

City of Merced. 2012. Merced Vision 2030 General Plan. https://www.cityofmerced.org/departments/development-services/planning-division/merced-vision-2030-general-plan#:~:text=The%20Merced%20Vision%202030%20General%20Plan%20was%20adopted%20on%20January,which%20can%20be%20downloaded%20below. Accessed June 2018.

_____. 2017. Wastewater Collection System Master Plan https://www.cityofmerced.org/depts/engineering_division/sewer_master_plan.asp. Accessed April 2019.

Central Valley Regional Water Quality Control Board (CVRWQCB). 2009. Resolution No.R5-2009-0028. In Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants. Website: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2009-0028.pdf. April 2009. Accessed March 2020.

2.6 ABBREVIATIONS

BNSF	Burlington Northern Santa Fe
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CVRWQCB	Central Valley Regional Water Quality Control Board
City	City of Merced
DAFT	dissolved air flotation thickener
EIR	Environmental Impact Report
HDD	horizontal directional drilling
lbs/day	pounds per day

Mgal/d	million gallons per day
mg/L	milligrams per liter
MID	Merced Irrigation District
MTBM	microtunnel boring machine
NPDES	National Pollution Discharge Elimination System
O&M	operations and maintenance
Program	"roadmap" for wastewater collection services as defined by the 2017 Wastewater Collection System Master Plan
Project	Specified project under the 2017 WCSMP
ROW	right-of-way
SCH	State Clearinghouse
SR	State Route
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
UC	University of California
UPRR	Union Pacific Railroad
UV	ultraviolet
WDRs	Waste Discharge Requirements
WWTRF	Wastewater Treatment and Reclamation Facility
2017 WCSMP	2017 Wastewater Collection System Master Plan
2030 General Plan	City of Merced Vision 2030 General Plan

2.7 GLOSSARY

2017 WCSMP	The 2017 Draft Wastewater Collection System Master Plan.
Plan A	The identified preferred option in the 2017 Draft Wastewater Collection System Master Plan (WCSMP) and the overarching "Program" in this EIR.
Program	Implementation of the 2017 WCSMP including the proposed Projects identified in this EIR as well as future programmatic components of the WCSMP that are being analyzed programmatically throughout this document.
Program Area or Program Study Area	All areas in the City's SUDP/SOI where potential wastewater collection system infrastructure would be constructed and operated, as well as additional areas of physical impact analyzed in the 2017 WCSMP and this EIR.
Proposed Projects	The 'proposed Project(s)' are specific projects identified under Plan A of the 2017 WCSMP that have been carried forward in this EIR in a project-specific level of detail. The proposed Projects include the following: - New Trunk Sewer Infrastructure Projects: o Northern Trunk Sewer Project o Southern Trunk Sewer Project - WWTRF Expansion Projects
Reasonable build-out	The projected growth and development of the City of Merced as described in the City of Merced's Merced Vision 2030 General Plan (2030 General Plan) (City of Merced 2012) used for modeling the wastewater collection system in the City's Wastewater Collection System Master Plan (2017 WCSMP).

SUDP/SOI	The Specific Urban Development Plan/Sphere of Influence. This includes the City's boundary limits as well as the ultimate growth boundary of the community over the life if the 2030 General Plan. The SUDP/SOI and the Program Area are the same.

3.0 ENVIRONMENTAL IMPACT ASSESSMENT

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.2, this Draft Environmental Impact Report (EIR) identifies and focuses on the potentially significant direct and indirect environmental effects of the Program compared to baseline conditions, considering both its potential short-term and long-term effects. Short-term effects are generally those associated with construction of the Program, while long-term effects are generally those associated with operation of Program components. Each resource area requires the following:

Organization of Resource Area Assessment

Each environmental issue analyzed in Chapter 3.0 contains the following components:

Basis for Analysis presents the thresholds of significance used in this Draft EIR that were developed using criteria from the 2019 CEQA Guidelines' Appendix G Checklist; state, federal, and local regulatory schemes; local and regional plans and ordinances; accepted practices; consultation with recognized experts; and other professional opinions.

Regulatory Framework presents the laws, regulations, plans, and policies that are relevant to each issue area. Regulations originating from the Federal, State, and/or Local levels are each discussed as appropriate. The majority of the Program falls within the City's Specific Urban Development Plan/Sphere of Influence (SUDP/SOI); however, there are a few portions that fall within Merced County, and therefore, where applicable, County plans, policies, and ordinances were also considered in the analysis.

Environmental Setting presents the existing environmental conditions within the Program Study Area and surrounding geographic area appropriate to establish baseline conditions for a particular resource, in accordance with CEQA Guidelines Section 15125. The extent of the environmental setting area evaluated (the Program Study Area) differs among resources, depending on the locations where impacts would be expected. For example, air quality impacts are assessed for the air basin (macro-scale), as well as the site vicinity (micro-scale), whereas aesthetic impacts are only assessed for the general vicinity.

Environmental Impacts includes two subheadings: Methodology for Analysis and Impact Analysis. The Methodology for Analysis Sections include any resource-specific procedures for assessing impacts. The Impact Analysis Sections include an analysis of the Program's potential to cause a significant environmental impact as well as the potential of the identified proposed Project's potential to cause a significant environmental impact. Potential impacts are assessed by evaluating the Program's potential to result in a substantial adverse change from the baseline conditions established in the Environmental Setting and determined by a comparison with the thresholds of significance set forth in the Basis for Analysis section. Where a potentially significant impact is identified, mitigation, is identified and described for how it reduces potential impacts, where feasible.

The potential impacts are organized numerically in each subsection with a discussion of the Program Impacts (e.g., Impact AES-1, Impact AES-2, Impact AES-3, etc.). A bold-font environmental impact statement precedes the

discussion of each impact, while its level of significance follows the discussion of each impact. The discussion that follows the impact summary includes the substantial evidence supporting the impact significance conclusion.

Required Mitigation includes specific details of the mitigation identified in the Environmental Impacts with performance standards, timing, and responsible parties identified.

Format Used for Impact Analysis and Mitigation Measures

The format adopted in this Draft EIR to present the evaluation of potential environmental impacts is described and illustrated below.

Summary Heading of Impact (Example)

Impact AIR-1:	**An impact summary heading appears immediately preceding the impact description (Summary Heading of Impact in this example). The impact abbreviation identifies the Section of the report (AIR for Air Quality in this example) and the sequential order of the impact (1 in this example) within that Section. To the right of the impact number is the impact statement, which identifies the potential impact.**

Impact [AIR-1] Analysis

A narrative analysis follows the impact statement assessing the baseline condition of the Program and proposed Projects compared to the established thresholds of significance. This analysis identifies the level of significance of a potential impact before mitigation and if potentially significant, any potential mitigation that would be required. It also includes an explanation of how the mitigation would affect the potential impact and a conclusion of the level of significance post-application of mitigation. The analysis concludes with the level of significance with all factors considered.

Level of Significance: Less than Significant with Mitigation (The evaluated Level of Significance concluded in the analysis after mitigation is considered is included here, such as Less than Significant with Mitigation in this example)

This Section describes the determination of the severity of project impacts. This is fundamental to achieving the objectives of CEQA. CEQA Guidelines Section 15091 requires that decision-makers mitigate, as completely as is feasible, the significant impacts identified in the Draft and Final EIRs. If the EIR identifies any significant unmitigated impacts, CEQA Guidelines Section 15093 requires decision-makers to adopt a statement of overriding considerations that explains why the benefits of the project outweigh the adverse environmental consequences identified in the EIR.

Mitigation Required: [MM AIR-1] This finding lists all mitigation required to make the finding listed above for a specific impact.

Mitigation Required lists any feasible measures that could avoid, minimize, rectify, reduce, or compensate for significant adverse impacts, with measures having to be fully enforceable through incorporation into the project (Public Resources Code [PRC] Section 21081.6[b]) as discussed under the impact analysis.

Mitigation measures are not required for environmental impacts that are found to be less than significant. Where feasible mitigation for a significant environmental impact is available, it is described following the impact analysis of

the section. If sufficient feasible mitigation was not available to reduce environmental impacts to a less than significant level, or where the Lead Agency lacked the authority to ensure that the mitigation would be implemented when needed, the impacts would be identified as significant and unavoidable. None of the impacts identified for the Program have been identified as significant and unavoidable.

In some cases, following the impact discussion, reference is made to state and federal regulations and agency policies that would fully or partially mitigate the impact. In addition, policies and programs from applicable local land use plans that would partially or fully mitigate the impact may be cited.

Mitigation measures, beyond those contained in other documents, are identified with a summary heading, and described using the format presented below:

Mitigation Measure AIR-1 [Title]: [Description] indicates mitigation that is identified that would reduce the impact to the lowest degree feasible.

ABBREVIATIONS

CEQA	California Environmental Quality Act
EIR	Environmental Impact Report
PRC	Public Resources Code
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence

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3.1 AESTHETICS AND VISUAL RESOURCES

3.1.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Have a substantial adverse effect on a scenic vista.
- Substantially damage scenic resources including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway.
- 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 a publicly accessible vantage point). If the Project is in an urbanized area, the potential of the project to conflict with applicable zoning and other regulations governing scenic quality.
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to aesthetics and visual resources that may result from implementation of the Program, identifying mitigation for significant impacts, where feasible.

3.1.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives relevant to the Program that are related to aesthetics and visual resources.

3.1.2.1 Federal and State

There are no federal or state scenic designations within the Program Study Area, thus, no federal or state regulations apply.

3.1.2.2 Local

Merced Vision 2030 General Plan

The City of Merced (City) Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012), contains goals and policies that directly or indirectly pertain to aesthetics, light, and glare, including the following:

Goal Area OS-1: Open Space for the Preservation of Natural Resources.

- **Policy OS-1.3. Promote the Protection and Enhancement of Designated Scenic Routes.** Historically, the City of Merced has developed along routes and corridors which have come to be part of the City's identity. The City has designated many of these scenic routes for special development review regulation in the past. This practice has served the City well and will be continued into the future.

The 2030 General Plan further designates the following Scenic Corridors within the City's Specific Urban Development Plan/ Sphere of Influence (SUDP/SOI):

- North and South Bear Creek Drive within the City limits
- N Street from 16th Street to the Merced County Courthouse
- 21st Street from the Merced County Courthouse to Glen Avenue
- M Street from Black Rascal Creek to Bellevue Road
- West 28th Street from M Street to G Street
- Lake Road from Yosemite Avenue to Lake Yosemite
- R Street (extended) from Black Rascal Creek to Bellevue Road
- Olive Avenue East of McKee Road
- M Street from 18th Street to Bear Creek
- Campus Parkway
- Bellevue Road from Lake Road to G Street

The 2030 General Plan also includes the following implementation measure to preserve these designated scenic corridors:

- Utility lines should be placed underground wherever feasible.
- Signing should be carefully controlled to insure that it does not detract from the scenic beauty of the corridor. Specific guidelines for signing along these corridors should be established.
- Limit the intrusion of future land uses which may detract from the scenic quality of the corridor.
- Unsightly mechanical and utility structures shall be screened from view by the use of planting, grading, and fencing.
- Heights and setbacks of buildings should be regulated to avoid obstructing important scenic views.
- Every effort should be made to preserve and properly maintain existing stands of trees and other plant materials of outstanding value.
- Structures on private and public properties visible from the corridor should be maintained in good condition (free of trash, weeds, etc.).
- Architectural and landscape design should result in an attractive appearance and a harmonious relationship with the surrounding environment.

Additionally, the 2030 Draft General Plan EIR subsequently describes scenic vistas within the City, which include views of natural features such as topography, water courses, rock outcrops, natural vegetation, and manmade structures (City of Merced 2010).

3.1.3 Environmental Setting

Aesthetic resources are those natural resources, landforms, vegetation, and manmade structures in the region and local environment that generate sensory reactions and evaluations by viewers. Potential viewers in the Program Study Area include local residents, roadway users, recreationalists, and commercial users throughout the Program Study Area. These viewer groups are discussed in more detail below.

The Program Study Area is located within the Central Valley of California, just west of the Sierra Nevada Mountain Range near the geographic center of Merced County. The Program Study Area consists of gently rolling terrain, with flatter areas occurring near the southern boundaries. The Program Study Area does not contain any designated scenic vistas; however, the 2030 General Plan EIR does identify general scenic vistas such as water courses and natural vegetation and the 2030 General Plan designates scenic corridors within the City's SUDP/SOI as outlined in Section 3.1.2.2. Land uses within the Program Study Area consist of an urban environment surrounded by low-

density residential development and agricultural areas. As detailed in the Section 2.0, Project Description, major highways that provide regional and local access within the Program Study Area include State Routes (SR) 59, 99, and 140. Additionally, several creeks traverse the Program Study Area, including Bear Creek, Black Rascal Creek, Fahrens Creek, Parkinson Creek, and Cottonwood Creek.

3.1.3.1 Viewer Groups

Residents

Residences occur throughout the Program Study Area, with the largest concentration of residences occurring near the center of the City (i.e., near Main Street). Residence types vary from single-family homes to apartment buildings. In general, residential views can be spilt into two categories: neighborhood views and rural (agricultural) views. Residents who live in single-family-type neighborhoods have views typical of a residential neighborhood including surrounding residences, varied native and ornamental vegetation, roadways with moving vehicular traffic, and the occasional maintenance activities associated with existing utilities such as sewer or power lines. Residences that occur on the outer portions of the Program Study Area have views more typical of an agricultural setting, with flat or gently sloping lands for growing crops, agricultural activities such as movement of tractors or other farm equipment, and general traffic from surrounding roadways. Exposure level is high for residences in both of these settings (neighborhood and rural) because their length of exposure is long, and their positions are fixed. Rural residences could have a slightly higher viewer sensitivity since their views are generally unobstructed by other buildings and the surrounding topography is typically flat, allowing for further viewing distances.

Recreational Users

Recreational users vary throughout the Program Study Area depending on location and type of recreational activity. There are several parks throughout the Program Study Area as well as bike paths, trails, tennis courts, ball fields, and general open space for public access. Additionally, Lake Yosemite, located just outside of the Program Study Area north of University of California, Merced (UC Merced), attracts a large number of recreational users throughout the year, particularly from UC Merced. Visitors from UC Merced typically travel by bike from the campus along Lake Road to the lake itself. The use of bikes and bicycle paths has been increasing since the UC Merced Campus became operational, which has increased recreational use of local roadways both within the existing campus and the surrounding community (City of Merced 2010). In the future, as the campus grows in number of students, recreational use within the UC Merced Campus and in the surrounding community is likely to increase.

Recreational views generally consist of native and ornamental vegetation and traffic on local roadways, and could include views of existing bike paths, other pedestrians and recreational users, residences, and the surrounding topography of the area where the recreational activity is taking place. Exposure level for recreational users varies from high to low depending on location of the recreational activity (i.e., in a natural setting versus a human-made area such as a bike path) and movement during recreational activity (i.e., just passing through an area on a bike versus a stationary activity such as picnicking at a local park).

Roadway Users

Motorists on roadways within the Program Study Area would have views typical of roadway traffic such as movement of other vehicles, passing signs, buildings, and vegetation, occasional construction work within roadways, and passing pedestrians in crosswalks and sidewalks. These views could range from full exposure to limited exposure

depending on topography of the surrounding landscape and obstacles that could obstruct views. Motorists' exposure when assessing Program impacts would be considered low since their speed and movement allows for only short-duration views of stationary objects.

Commercial/Industrial Users

Commercial and industrial businesses are spread throughout the Program Study Area; however, the majority of commercial business activity is concentrated around the center portion of the City, along SR 99 and 59, and industrial businesses are more concentrated near the western portion of the City. Commercial and industrial users consist of the public who are generally only briefly in any one business for any period of time, and commercial and industrial business staff who would be considered a more stationary user since their positions are fixed throughout the day.

3.1.3.2 Visual Sensitivity

Viewer sensitivity levels within the Program Study Area would depend on the location of a particular viewer and how fixed their views are. Generally, fixed views that would be closer to construction activities would have a high viewer sensitivity, while temporary or passing views would have a lower viewer sensitivity.

3.1.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to aesthetics and visual resources. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.1.4.1 Impact Analysis

Impact AES-1 Potential to have a substantial adverse effect on a scenic vista.

Impact AES-1 Analysis
Program Impacts

Construction and Operation

The 2030 Draft General Plan EIR defines scenic vistas as expansive views of highly valued landscapes from publicly accessible viewpoints. Scenic vistas include views of natural features such as topography, water courses, rock outcrops, and natural vegetation as well as manmade scenic structures (City of Merced 2010). Given the unrelieved topography of the City and Program Study Area, there are no officially designated scenic vistas and the majority of vistas will be local. Most areas of the Program Study Area have views of the Sierra Nevada and the Coast Range, when air quality permits. Program features are predominately underground, located on the outskirts of the City (generally away from visual receptors), and are not expected to be tall enough to significantly impact the views of the few existing residents within viewing distance.

The 2030 General Plan EIR evaluated the change in visual character within the Program Study Area noting that the area will eventually change from open agricultural fields and pastureland to urban development (City of Merced 2010).The 2030 General Plan identifies scenic corridors (identified in Section 3.1.2, Regulatory Framework above) intended to preserve the scenic corridors and resources by promoting the protection and enhancement of scenic routes. Table 3.1-1 outlines the intersection of the scenic corridor with proposed Program and Project features.

Table 3.1-1 Program Study Area Overlap with Scenic Corridors

Designated Scenic Corridor	Potential for Program Impacts
North and South Bear Creek Drive within the City limits	Along Bear Creek within Existing North and South Merced Service Areas (respectively), outside anticipated Program development locations
N Street from 16th Street to the Merced County Courthouse	Within Existing South Merced Service Area, outside anticipated Program development locations
21st Street from the Merced County Courthouse to Glen Avenue	Within Existing South Merced Service Area, outside anticipated Program development locations
M Street from Black Rascal Creek to Bellevue Road	Within Existing North Merced Service Area, potentially adjacent to Program development along open space adjacent to M Street. Intersection of M Street and Bellevue Road adjacent to Northern Trunk Sewer Pipeline Alignment.
West 28th Street from M Street to G Street	Along Bear Creek within Existing South Merced Service Area, outside anticipated Program development locations
Lake Road from Yosemite Avenue to Lake Yosemite	Within Existing North Merced Service Area, potentially adjacent to Program development along open space at Lake Road and E Cardella Road. Intersection of Lake Road and E Cardella Road adjacent to Northern Trunk Sewer Pipeline Alignment.
R Street (extended) from Black Rascal Creek to Bellevue Road	Within Existing and Future North Merced Service Area, potentially adjacent to Program development along open space at R Street (extended) and Bellevue Road. Intersection of R Street (extended) and Bellevue Road adjacent to Northern Trunk Sewer Pipeline Alignment.
Olive Avenue East of McKee Road	Within Existing North and South Merced Service Areas (respectively), outside anticipated Program development locations
M Street from 18th Street to Bear Creek	Within Existing South Merced Service Area, outside anticipated Program development locations
Campus Parkway	Within Existing and Future South and North (when extended) Merced Service Area, potentially adjacent to Program development locations. Part of the Southern Trunk Sewer Pipeline Alignment runs through Campus Parkway.
Bellevue Road from Lake Road to G Street	Within Future and Existing North Merced Service Area, potentially adjacent to Program development locations. Intersection of E Bellevue Road and G Street adjacent to the G Street Trunk Sewer portion of the Northern Trunk Sewer Pipeline Alignment.

Impacts to scenic corridors resulting from Program components would occur if construction activities were to take place over prolonged periods of time within these designated corridors or if a permanent above-ground features would obstruct views within these corridors (i.e., placement of pump stations), or if above ground facilities were left unmaintained or in disrepair. The Program and proposed Trunk Sewer Projects would overlap five of the designated scenic corridors:

- M Street from Black Rascal Creek to Bellevue Road,
- Lake Road from Yosemite Avenue to Lake Yosemite,
- R Street (extended) from Black Rascal Creek to Bellevue Road,
- Campus Parkway, and
- Bellevue Road from Lake Road to G Street.

Although there is geographic overlap with the scenic corridors and Program features, trunk and collector sewers would be in the existing and planned roadways in all five of these corridors and would be predominately underground.

While construction activities and vehicles may temporarily disrupt the scenic nature the overall nature and viewscape of the corridor would be preserved and no significant impact would occur. It is possible that pump stations or other above ground future Program components could be identified as necessary within these scenic corridors. These above ground features are compliant with the City's 2030 General Plan guidelines. As described in Section 2.0, Project Description, pump stations and above ground facilities would be enclosed in small buildings (less than 2,000 square feet) or utility boxes (approximately 1 to 5 square feet) which would be screened from view by the use of planting, grading, and fencing if determined to be unsightly. Structures visible from the corridor (and throughout the Program) would be maintained in good condition (free of trash, weeds, etc.) and the architectural and landscape design would be selected in accordance with City design standards similar to existing pump stations and above ground sewer facilities within the City to provide an attractive appearance and a harmonious relationship with the surrounding environment. As a result, above ground Program features would be consistent with the 2030 General Plan guidelines and would result in a less than significant impact to scenic vistas or corridors.

The wastewater treatment and reclamation facility (WWTRF) sits on a secluded parcel removed from potential visual receptors and scenic corridors neither construction or operation would not substantially affect scenic corridors in this area and no impact would occur.

Therefore, impacts resulting from the Program would be considered less than significant.

Level of Significant Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Installation of the new trunk sewer infrastructure would occur largely on the outer portions of the Program Study Area and the City's SUDP/SOI limits in existing and planned roadways. Similar to the Program discussion above, scenic vistas within the Project corridors are localized with views of the Sierra Nevada mountains on clear days. Project construction could intermittently and unsubstantially interfere with these localized vistas; however, the impact would be limited to where viewers are located which would be very infrequent along the Project alignments. Additionally, the majority of viewers would be roadway users and would be moving past construction equipment where their views would momentarily be impacted if at all. Thus, the proposed New Trunk Sewer Infrastructure Projects would have a less than significant construction related impact to scenic vistas.

As noted in Table 3.1-1 and described for the Program impacts above, designated scenic corridors that overlap proposed Project components are limited to the intersections of M Street and Bellevue Road, Lake Road and E Cardella Road, R Street (extended) and Bellevue Road, E Bellevue Road and G Street, and along Campus Parkway. Project features in these areas would be almost entirely underground consistent with the 2030 General Plan policy (See Section 3.1.2.2 above). Construction in these areas would be short in duration and would not significantly alter the views within these designated corridors. Therefore, the proposed New Trunk Sewer Infrastructure Projects would have a less than significant construction related impact to scenic vistas.

Operation

Once constructed pipelines would be subsurface and no potential impact to scenic vistas or scenic corridors would occur. Therefore, there would be no operational impacts related to the new trunk sewer infrastructure.

Level of Significant Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

The existing WWTRF footprint is located outside all designated scenic corridors, as identified in the 2030 General Plan and has no nearby visual receptors who would experience localized scenic vistas. The expansion to the existing WWTRF would therefore have no impact to scenic vistas and corridors.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AES-1 Findings

Level of Significant Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact AES-2 Potential to damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a scenic highway.

Impact AES-2 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

According to the California Department of Transportation (Caltrans) list of Eligible and Officially Designated Scenic Routes, there are no officially designated state scenic highways within the Program Study Area, and thus, implementation of the Program would have no potential to damage resources within a scenic highway (Caltrans 2018). The nearest designated scenic highway to the City is Highway 5, which is located approximately 30 miles to the west of the City (Caltrans 2018). As such, no impact would occur, and no mitigation measures would be required.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AES-2 Findings

Impact AES-2 Overall Level of Significance Prior to Mitigation: No Impact

Impact AES-2 Mitigation Required: None Required

Impact AES-2 Overall Level of Significance After Mitigation: No Impact

Impact AES-3	**In non-urbanized areas, potential to 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 a publicly accessible vantage point). If the Project is in an urbanized area, the potential of the project to conflict with applicable zoning and other regulations governing quality.**

Impact AES-3 Analysis

Program Impacts

A project is considered to "substantially degrade" the visual character or quality of a site if it would have a strong negative influence on the public's experience and appreciation of the visual environment. As such, visual changes are always considered in the context of a site's or locale's visual sensitivity. Visual changes caused by a project are evaluated in terms of their visual contrast with the area's predominant landscape elements and features, their dominance in views relative to other existing features, and the degree to which they could block or obscure views of aesthetically pleasing landscape elements.

Construction and Operation

The construction impacts, as they relate to aesthetics, would involve views of construction equipment (e.g., trucks, excavation equipment, protective fencing, construction workers) in and around the footprints of the pipelines, pump stations, and WWTRF expansion, and any resulting disruption in the immediate visual environment due to the presence of such equipment. The presence of construction equipment by itself would not result in a significant effect as construction activities of various sorts (including trucks and tractors entering and exiting roadways) are common events, and the presence of construction equipment within the urban and rural areas within the Program Study Area is not unusual.

Construction of Program components would affect local views for residents (i.e., when they leave or enter their properties from public access points), recreationalists, motorists, and commercial users including views of staging areas and construction equipment throughout the Program Study Area. Construction of Program components would include movement and storage of equipment and materials within staging areas, as well as the operation of worker vehicles and construction equipment on the nearby roads. Construction of the Program would include the activities described in Section 2.4 of the Project Description such as vegetation removal, excavation and trenching, pipeline installation, pump station installation, appurtenance installation, grading, backfilling, and site restoration. Temporary visual impacts would occur throughout construction of the Program, with the average project lasting less than 2 years. Any staging areas needed for the Program would be approved and cleared by the City before use as needed during construction. Additionally, stationary construction sites (i.e., staging areas, the pump station site associated with the

Northern Trunk Sewer, and future pump station sites) have the potential to be fenced as needed, which would alter the views of the construction sites from construction activities to fencing materials, however, fencing would be consistent with the 2030 Genal Plan policy described in Impact AES-1 and in Section 3.1.2.2, Regulatory Setting . Construction dust and particulate matter that could be generated from construction of proposed Projects under the Program could be visible but for the regulatory limits on fugitive dust imposed by the local San Joaquin Valley Air Pollution Control District's Fugitive Dust Rule (as analyzed and described in Section 3.3, Air Quality), which would limit generation of dust and particulate matter from construction or stockpiling activities occurring at individual proposed Project sites. Therefore, impacts from staging areas, operation of construction equipment, and dust generated by construction of the Program would result in a less than significant impact to the existing visual character and quality of the area.

Typical views within the Program Study Area for sensitive receptors could be negatively affected by construction activities that would occur during implementation of the Program, particularly in the case of residential viewers who have fixed views from public vantage points (i.e., sidewalks and streets in front of houses) and could encounter construction activities as close as 25 feet from homes during pipeline placement. However, as discussed in Section 3.1.3, Environmental Setting, residential views include occasional construction work and traffic within the region under existing conditions, and views would be intermittent depending on location and obstructions blocking views. Further, construction activities would not be concentrated in any one location within the Program Study Area but would be spread out throughout the Program Study Area. Ultimately, no one neighborhood or residence would be impacted for an extended period of time. Recreational, motorist, and commercial/industrial views of construction activities would be less impacted by visual changes in the environment from construction due to movement throughout the Program area and distance from construction activities. Therefore, construction impacts to residents, as well as recreation, motorists, and commercial and industrial viewers would be less than significant, and the existing visual character and quality of the area would not be substantially affected for these viewer groups.

Once built there is the potential for landscape scarring if non paved sites and paved sites are not returned or restored to existing conditions or better. If not restored the Program and Projects could have a lasting potentially significant impact on visual character that would be noticeable from multiple viewers and vantage points. Any sites disturbed during construction activities, including staging areas, would need to be restored to pre-construction conditions to avoid lasting visual impacts to the visual character. This site restoration would be implemented through MM AES-1, Restoration of Disturbed Areas, which would restore disturbed areas through regrading to allow for historic drainage, repaving of roadways, and seeding of native grasses and other vegetation where necessary to avoid long-term land scarring. This would reduce associated impacts to the long-term visual character of project sites within the Program Study Area to a less than significant level.

Therefore, the overall construction-related impacts resulting from the Program to the existing visual character of the area would be less than significant with MM AES-1 incorporated.

Once constructed, the majority of Program components, including new pipelines, would be located underground and would not be visible to the public. Various appurtenances and pump stations (ranging in size from a few feet for control panels to 100-2,000 square feet of enclosed structures or fenced areas for pump stations) could be located above-ground and could have adverse permanent visual impacts to the surrounding area if the architecture of these features is not designed to match the existing visual character of the area. Therefore, MM AES-2, Guidance for Design and Maintenance of Above Ground Facilities, would be implemented requiring above-ground facilities to be designed to match the existing surroundings (i.e., choosing colors and finishes that would match the existing

buildings and/or surrounding landscape). Implementation of this MM would result in above-ground structures that blend with the surrounding landscape and reduce long-term visual impacts associated with permanent above ground features to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AES-1 and MM AES-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Installation of the new Trunk Sewer Infrastructure Projects would result in similar impacts to the existing visual character of the Program Study Area as described for the overall Program above. Since a majority of the new trunk sewer infrastructure would occur on the outer edges of the Program Study Area and the City (i.e., along Thornton Road, East Mission Avenue, and East Bellevue Road), these installations would impact fewer viewer groups due to the existing rural nature and limited number of sensitive receptors of these areas. However, since these new trunk sewers would still involve construction activities that would traverse areas with some viewers (i.e., rural residences located on or near agricultural properties), a potentially significant impact related to degradation of the existing visual character could occur prior to mitigation. Therefore, MM AES-1 would be required for the new trunk sewer infrastructure to prevent long-term visual impacts associated with land scarring from staging areas and pipeline work not within existing or planned roadways. With implementation of MM AES-1, proposed Project sites would be returned to pre-construction conditions, and therefore, would not result in any long-term land scarring or other visual impacts.

Additionally, the new pump station associated with the Northern Trunk Sewer Project would be located in an area adjacent to sensitive receptors, which could result in a permanent change to the visual character of the area. As such, MM AES-2 would be implemented to limit visual impacts of the new pump station associated with the Northern Trunk Sewer by including elements in the design of the structure that would match the existing visual character of the surrounding area. With implementation of MM AES-2, the new pump station associated with the Northern Trunk Sewer would be located within an approximate 2,000-square-foot structure that would look similar to other residences in the area, rather than a municipal service zone or industrial area. Therefore, construction and operational impacts related to the new trunk sewer infrastructure as they relate to the existing visual character would be less than significant within MM AES-1 and MM AES-2 incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AES-1 and MM AES-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

Unlike the Program and new trunk sewer infrastructure discussions above, the WWTRF footprint and surrounding area does not include any nearby sensitive receptors or significant viewer groups that could be affected by changes to the visual character of the site. The existing visual character of the WWTRF footprint includes paved and dirt roadways, irrigated pasture, and maintenance and control buildings supporting operations of the WWTRF. Therefore, any expansions to the WWTRF would be consistent with the existing visual character of this area and would not constitute a significant impact.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact AES-3 Findings

Impact AES-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact AES-3 Mitigation Required: MM AES-1 and MM AES-2

Impact AES-3 Overall Level of Significance After Mitigation: Less than Significant

Impact AES-4 Potential to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Impact AES-4 Analysis

Program Impacts

Construction

Temporary construction lighting associated with construction staging areas and nightshift work crews would have the potential to create a new source of light, which could temporarily affect views in the area. If not appropriately implemented, this temporary light source could result in lighting that could adversely affect nighttime views in the area for nearby residences, commercial and industrial businesses, motorists, and recreational users, thus resulting in a potentially significant impact prior to mitigation. However, these temporary impacts from construction lighting would be reduced to a less than significant level with the implementation of MM AES-3, Use of Best Management Practices to Minimize Lighting Impacts from Construction and Operation, which would implement protective measures such as selecting warm-toned lights and facing light fixtures in a downward direction to minimize potential impacts from temporary lighting. These measures would reduce nighttime glare from leaving the site and adversely affecting nearby sensitive receptors. Therefore, the Program's potential to create a new source of light or glare during construction would be less than significant with the implementation of MM AES-3.

Operation

Permanent sources of lighting would be limited to new upgrades at the WWTRF (see WWTRF Expansion Impacts below) and for related maintenance or pump station buildings that could occur along pipeline alignments. If new permanent sources of light are situated near a residence or other sensitive receptor that could have prolonged views, this could result in a permanent significant impact prior to mitigation. As such, these new sources of permanent light

would be required to comply with the restrictions identified in MM AES-3, and therefore, operational impacts related to Program lighting would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AES-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Construction and operation of the new trunk sewer infrastructure would include the similar impacts as described for construction and operational lighting for the Program impacts above. The new pump station associated with the Northern Trunk Sewer would include permanent above-ground lighting for security and maintenance purposes. This new lighting source could result in a potentially significant impact prior to mitigation if the lighting from this structure adversely affects (i.e., shines directly toward) nearby sensitive receptors. Specifically, there is a residence located approximately 50 feet across Belcher Avenue from the two properties identified as potential pump station locations. In order to ensure that permanent above-ground lighting impacts are reduced to a less than significant level, MM AES-3 would be implemented. MM AES-3 would include implementation of protective measures such as selecting warm-toned lights and facing light fixtures in a downward direction to minimize potential impacts from temporary lighting. These measures would reduce nighttime glare from leaving the site and adversely affecting nearby sensitive receptors. Additionally, MM AES-3 includes construction-related lighting measures such as identifying when and where lighting is needed, confining and minimizing lighting to the extent necessary to meet safety purposes, selecting warm color temperature bulbs (less than 5,000K), limiting the height of fixtures to minimize the amount of light crossing property lines and overall light levels, and using temporary lighting shields during construction where construction lighting impacts to sensitive receptors cannot be avoided. These measures would ensure that sensitive receptors within any of the New Trunk Sewer Infrastructure Project footprints are not adversely affected by any construction or operational lighting. Therefore, impacts related to substantial lighting and glare associated with the new trunk sewer infrastructure would be less than significant with MM AES-3 incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AES-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

Construction lighting impacts would be similar to those described for the Program above. Operational lighting at the WWTRF would likely include new permanent lighting within the footprint of the existing WWTRF and may result in a significant impact prior to mitigation if this new lighting is not consistent with the existing lighting at the WWTRF or substantially affects nighttime views or operations for the nearby Merced Regional Airport. As such, this permanent lighting could result in a potentially significant impact prior to mitigation. MM AES-3 would be required, which would

include measures to reduce permanent above-ground lighting by installing lights at the lowest allowable height; casting low-angle illumination while minimizing incidental light spill onto adjacent properties or open spaces; choosing light fixtures that direct light downward and that would shield direct lighting from sensitive receptors; using "shut off" controls such as sensors, timers, and motion detectors, etc. where appropriate; and installing light fixtures that have non-glare finishes that would not cause reflective daytime glare. Implementation of MM AES-3 would reduce any potential impacts related to permanent lighting to a less than significant level. Therefore, impacts related to substantial lighting or glare associated with expansions to the WWTRF would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AES-3

Level of Significance After Mitigation: Less than Significant

Impact AES-4 Findings

Impact AES-4 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact AES-4 Mitigation Required: MM AES-3

Impact AES-4 Overall Level of Significance After Mitigation: Less than Significant

3.1.5 Aesthetics and Visual Resources Mitigation

Mitigation Measure AES-1: Restoration of Disturbed Areas

Roads, paths, staging areas, and areas along pipeline alignments that are affected by construction activities shall be restored to pre-construction conditions by the City's chosen contractor. Restoration may include repairing, repaving, re-graveling, or grading disturbed areas. Staging areas and other non-road areas would be revegetated following City standards. The City shall comply with the City's trees, shrubs, and plants ordinance for removal and replacement of any City trees (Merced Municipal Code 14.12). Additionally, construction sites shall be kept neat and free of trash and unnecessary debris throughout construction to prevent unsightly views.

Mitigation Measure AES-1 Implementation

Responsible Party: The City of Merced and chosen contractor

Timing: During construction and prior to certification of completion of construction

Monitoring and Reporting Program: The design documents approved for construction shall be required to include notes requiring restoration standards in accordance within this mitigation measure, The Contractor shall be required to prepare and submit a rehabilitation strategy prepared in accordance with this mitigation measure for all staging areas that shall be submitted, approved, and kept on file by the City. The City shall verify implementation of the rehabilitation strategy.

Standards for Success: Long-term scarring of sites is avoided, and trees and other native vegetation are avoided where possible and replaced when needed in accordance the Merced Municipal Code 14.12.

Mitigation Measure AES-2: Guidance for Design and Maintenance of Above Ground Facilities

As projects are identified and designed under the Program, City Guidance from the Merced Vision 2030 General Plan Implementing Policy 1.3c shall be implemented (City of Merced 2012) in the following way:

- Utility lines, including sewer and supporting electrical lines, should be placed underground wherever feasible;
- Unsightly mechanical and utility structures, such as pump stations and control boxes, shall be architecturally coated consistent with City design standards and/or screened from view by the use of planting, grading, and fencing;
- Buildings shall be designed to ensure heights and setbacks avoid obstructing important scenic views of nearby permanent visual receptors such as residences;
- When selecting sites and alignments stands of trees and other plant materials of outstanding value (natural or economic) shall be preserved and sites and alignments shall be selected with avoidance of tree and vegetation removal factored in;
- Structures on private and public properties should be maintained in good condition (free of trash, weeds, etc.);
- Architectural and landscape design should result in an attractive appearance and a harmonious relationship with the surrounding environment;
- Design above ground structures to blend with the existing facilities and surrounding environment.
- Select colors and finishes that are the same as or complementary to the existing buildings, structures, and vegetation within the surrounding landscape.
- The design plans for the proposed Projects shall indicate these architectural features and will be approved by the City.

Mitigation Measure AES-2 Implementation

Responsible Party: The City of Merced and chosen contractor

Timing: The design documents approved for construction shall include appropriate finishes for any above-ground features in accordance with this mitigation measure. These standards shall be carried through during construction.

Monitoring and Reporting Program: The construction drawings and plans issued for construction shall be required to indicate material finishes and color selections, and the City shall be required to verify that the selections have been made in conformance with this mitigation measure. Following construction, City staff shall confirm that the Contractor has performed construction in conformance with the plans through visual verification.

Standards for Success: Visual character impacts are avoided or minimized, and permanent features blend with their exiting visual environment.

Mitigation Measure AES-3: Use of Best Management Practices to Minimize Lighting Impacts from Construction and Operation

The following best management practices (BMPs) shall be implemented and incorporated into design plans approved by an electrical engineer to ensure minimal adverse impacts to nighttime views for adjacent sensitive receptors. These BMPs shall apply to the construction activities, staging areas implemented by the contractor during construction, and any permanent operational lighting. BMPs shall include but are not limited to the following:

Construction Lighting

- Identify when and where lighting is needed and confine and minimize lighting to the extent necessary to meet safety purposes.
- To the extent feasible, limit the height of fixtures to minimize the amount of light crossing property lines and overall light levels.
- Select warm color temperature bulbs (less than 5,000kW).
- Use temporary lighting shields during construction where construction lighting impacts to sensitive receptors cannot be avoided.

Operational Lighting

- Install lights at the lowest allowable height and cast low-angle illumination while minimizing incidental light spill onto adjacent properties or open spaces.
- Choose light fixtures that direct light downward and that shield direct lighting from sensitive receptors to the maximum extent feasible.
- Select warm color bulbs
- Use "shut off" controls such as sensors, timers, and motion detectors, etc., where appropriate.
- Light fixtures shall have non-glare finishes that do not cause reflective daytime glare.

Mitigation Measure AES-3 Implementation

Responsible Party: The City of Merced.

Timing: All phases including design, construction, and operation.

Monitoring and Reporting Program: The design plans shall be approved by a licensed professional electrical engineer, incorporating the requirements of this mitigation measure. The City shall verify that the measure is appropriately reflected within the design plans. The City shall verify that the chosen contractor is implementing construction light reduction measures and that the design plans meet the operational light reduction measures in accordance with this mitigation measure.

Standards for Success: Lighting impacts are reduced to a less than significant level for all sensitive receptors adjacent to Project features during both construction and operation.

3.1.6 Abbreviations

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental Impact Report
MMs	Mitigation Measures
NOP	Notice of Preparation
SR	State Route
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
UC Merced	University of California, Merced
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.1.7 References

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3.2 AGRICULTURE AND FORESTRY RESOURCES

3.2.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use or a Williamson Act contract;
- Conflict with existing zoning for or cause rezoning of forest land (as defined in Public Resources Code [PRC] Section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; and
- Involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to agriculture and forestry resources that may result from implementation of the Program, identifying mitigation for significant impacts, where feasible.

3.2.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives are relevant to the Program that are related to agriculture and forestry resources.

3.2.2.1 Federal

Farmland Protection Policy Act

The Farmland Protection Policy Act of 1981 (Sections 1539-1549 Public Law 97-98, Dec 22, 1981), requires the Secretary of Agriculture to establish and carry out a program to "minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to the extent practicable, will be compatible with State, units of local government, and private programs and policies to protect farmland." (7 United States Code [USC] 4201-4209 & 7 USC 658).

3.2.2.2 State

Williamson Act

The California Land Conservation Act (Williamson Act) of 1965 is the state's principal policy for the "preservation of a maximum amount of the limited supply of agricultural land in the State" (California Government Code [CGC] Section 51220[a]). The purpose of the Williamson Act is to preserve agricultural and open space lands by discouraging premature and unnecessary conversion to urban uses. The Williamson Act enables private landowners to contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. In return for this guarantee by landowners, the government jurisdiction assesses taxes based on the agricultural value of the land rather than the market value, which typically results in a substantial reduction in property taxes.

CGC Section 51238 states that, unless otherwise decided by a local board or council, the erection, construction, alteration, or maintenance of electric and communication facilities, as well as other facilities, are determined to be compatible uses within any agricultural preserve. Also, Section 51238 states that a board of supervisors may impose conditions on lands or land uses to be placed within preserves to permit and encourage compatible uses in conformity with Section 51238.1. Further, CGC Section 51238.1 allows a board or council to allow as compatible any use that without conditions or mitigations would otherwise be considered incompatible; however, this may occur only if that use meets the following conditions:

- The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels on other contracted lands in agricultural preserves.
- The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves. Uses that significantly displace agricultural operations on the subject contracted parcel or parcels may be deemed compatible if they relate directly to the production of commercial agricultural products on the subject contracted parcel or parcels or neighboring lands, including activities such as harvesting, processing, or shipping.
- The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

California Farmland Mapping and Monitoring Program

The Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the state's farmland to and from agricultural use, relies on information from the Natural Resources Conservation Service (NRCS) soils surveys, NRCS land inventory and monitoring criteria, and land use and water availability. Topography, climate, soil quality, and available irrigation water all factor into the FMMP farmland classifications.

The FMMP was established by the California Department of Conservation (DOC), under the Division of Land Resource Protection. Important Farmland maps are compiled by the FMMP pursuant to section 65570 of the California Government Code. Under the FMMP, "important Farmland Categories" were established based on soil characteristics that have significant agricultural production values. Categories mapped by the FMMP are as follows:

- Prime Farmland. Prime Farmland is land that has been used for irrigated agricultural production and meets the physical and chemical criteria for Prime Farmland as determined by the United States Department of Agriculture (USDA), NRCS. This land has the soil quality, growing season, and moisture supply needed to produce

sustained high yields. Land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

- Farmland of Statewide Importance. Farmland of Statewide Importance is similar to Prime Farmland but generally includes steeper slopes or less ability to store soil moisture. In order to be classified as Farmland of Statewide Importance, the land must have been used for irrigated agricultural production at some time during the 4 years prior to the mapping date.

- Unique Farmland. Unique Farmland is farmland of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards. Land must have been cropped at some time during the 4 years prior to the mapping date.

- Farmland of Local Importance. Farmland of Local Importance is land important to the local economy as determined by the County Board of Supervisors and a local advisory committee. This land includes dryland grain producing lands and farmlands that are presently irrigated but do not meet the soil characteristics of Prime Farmland or Farmland of Statewide Importance.

- Grazing Land. Grazing Land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen's Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

- Urban and Built-up Land. Urban and Built-Up Land is land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately six structures to a 10-acre parcel. This land is used for residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.

- Other Land. Other Land is land not included in any other mapping category. Common examples include low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines and borrow pits; and water bodies smaller than 40 acres.

- Water. This category includes perennial water bodies with an extent of at least 40 acres.

California Open Space Subvention Act

The California Open Space Subvention Act (CGC Section 16143) states that land shall be deemed to be devoted to open space uses of statewide significance if it meets the following criteria:

a) Could be developed as prime agricultural land, or

b) Is open-space land as defined in Section 65560 which constitutes a resource whose preservation is of more than local importance for ecological, economic, educational, or other purposes. The Secretary of the Resources Agency shall be the final judge of whether the land is in fact devoted to open-space use of Statewide significance.

California Public Resources Code

The following California PRC sections are set forth in the thresholds of significance for this section and discussed in the impact analysis below.

PRC Section 12220(g): "Forest land" is land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.

PRC Section 4526: "Timberland" means land, other than land owned by the federal government, and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees.

PRC Section 54404(g): "Timberland production zone" or "TPZ" means an area which has been zoned pursuant to Section 51112 or 51113 and is devoted to and used for growing and harvesting timber, or for growing and harvesting timber and compatible uses, as defined in subdivision (h). With respect to the general plans of cities and counties, "timberland preserve zone" means "timberland production zone".

PRC Section 21060.1: "Agricultural land" means prime farmland, farmland of statewide importance or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.

PRC Section 51238: The following guidelines for Williamson Act contracted land and allowable uses is included in Section 51238:

> "(a)(1) Notwithstanding any determination of compatible uses by the county or city pursuant to this article, unless the board or council after notice and hearing makes a finding to the contrary, the erection, construction, alteration, or maintenance of gas, electric, water, communication, or agricultural laborer housing facilities are hereby determined to be compatible uses within any agricultural preserve."

3.2.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to agriculture and forestry resources, including the following:

Goal Area OS-2: Open Space for the managed Production of Resources

- **Policy OS-2.1.** Protect agricultural areas outside of the City's Specific Urban Development Plan/Sphere of Influence (SUDP/SOI) from urban impacts.

Merced Municipal Code

Section 20.44.110 (Photovoltaic energy systems and public utility distribution lines) of the Merced Municipal Code, under subsection 'D' states that public utility distribution and transmission lines, if underground, shall be permitted in all zoning districts without a zoning permit as are small public utility structures, such as transformers. However, overhead lines shall require a conditional use permit in all zoning districts.

3.2.3 Environmental Setting

3.2.3.1 Regional Setting

According to the California Department of Food and Agriculture, Agricultural Statistics Review for 2015-2016, Merced County was ranked sixth in the state for total value of agricultural production in 2015 (California Department of Food and Agriculture 2015). The main agricultural commodities for total value of production include milk, almonds, chickens, cattle, and calves, indicating that Merced County generally relies heavily on agricultural production operations and contains large portions of agricultural lands.

3.2.3.2 Local Setting

The Program Study Area consists largely of an urban setting at the City's core with surrounding agricultural lands. The historic center of the City was established on an alluvial fan and historic flood plain of Bear and Black Rascal Creeks, which consists largely of what would be classified as soils capable of supporting Prime Farmlands. However, the northeast areas of the Program Study Area contain soils with poorer quality and are mostly used for livestock pasture and grazing, and soils south of the City's center tend to be classified as poorly drained with high concentrations of saline-alkali (City of Merced 2012).

According to the FMMP for the Program Study Area, the majority of the area contains lands classified as Urban and Built-Up Land, with surrounding Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Areas (Figure 3.2-1) (FMMP 2016). Additionally, the areas surrounding the Program Study Area also contain Williamson Act contracted lands (Figure 3.2-1). These Williamson Act contracted lands including lands under both mixed enrollment agricultural lands and non-renewal lands. The mixed enrollment agricultural lands include enrolled lands containing a combination of Prime Farmland, Non-Prime Farmland, Open Space, and other contracted or enrolled lands not yet delineated by Merced County. Williamson Act contracted lands under non-enrollment include enrolled lands that a non-renewal has been filed pursuant to Government Code Section 51245, but the contract remains until the balance of the period remaining on the contract expire (DOC 2013). No Williamson Act contracted lands occur directly within the Wastewater Treatment and Reclamation Facility (WWTRF), or within the Northern or Southern Trunk Sewer Projects.

No lands within the Program Study Area meet the definition of "Forest Land" as defined by PRC Section 12220(g) as supporting a minimum of 10 percent native tree cover under natural conditions.

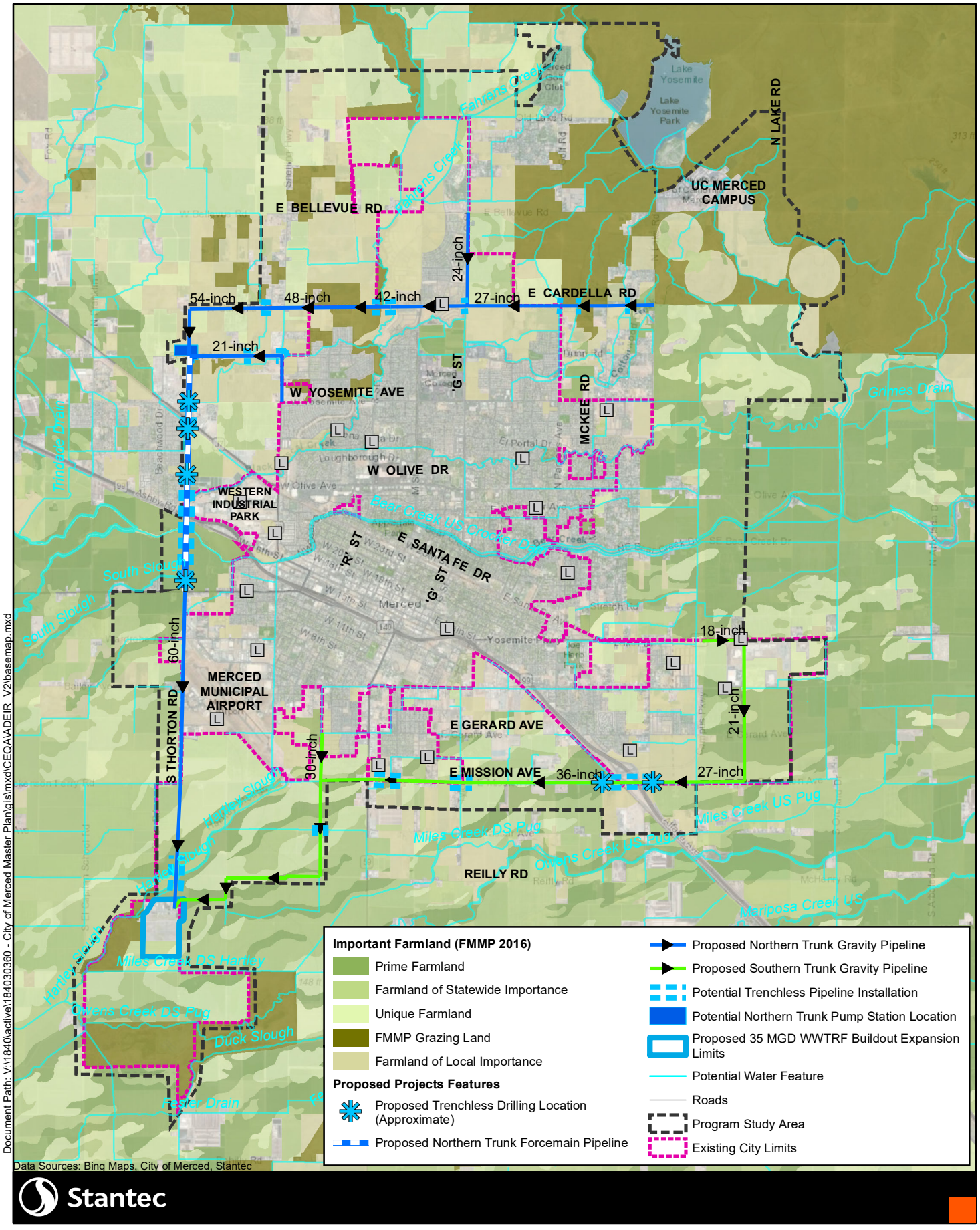


Figure 3.2-1
Important Farmland
City of Merced - Draft Environmental Impact Report

3.2.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to agriculture and forestry resources. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.2.4.1 Impact Analysis

Impact AG-1	**Potential to covert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance , as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring program of the California Resources Agency, to non-agricultural use.**

Impact AG-1 Analysis

Program Impacts

According to the DOC's FMMP, much of the Program Study Area is located within Urban and Built-Up Land, but as shown on Figure 3.2-1, the lands surrounding the Program Study Area are designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Grazing Land (FMMP 2016).

Construction

The majority of the Program construction activities would consist of placement of pipelines within the existing or future right-of-way (ROW) (i.e., roads) and would not affect designated Farmland. Sewer infrastructure is a compatible use with agricultural uses, and construction activities under the Program would be implementing development planned in the 2030 General Plan. Therefore, construction impacts associated with the Program would be considered less than significant.

Operation

Other Program features that would be located above ground, such as pump stations or associated appurtenances, are anticipated to be less than 2,000 square feet (i.e., the size of the pump station associated with the Northern Trunk Sewer). This area is considered less than 5 percent of any individual acre, which would be a fractional amount of any given parcel and would be considered to be a compatible use with farmlands. Existing agricultural operations would be able to continue with minimal interruptions, and there would be no long-term conversions of any substantial amounts of farmland.

The overall impact from construction and operation of the Program as related to conversion of important farmland to non-agricultural use would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Impacts to lands designated as Farmland for the new trunk sewer infrastructure would be similar to that of the Program, as described above. The majority of the new trunk sewer infrastructure would be placed in the outer portions of the Program Study Area in both existing and proposed ROWs (e.g., along Thornton Road, East Mission Avenue, and East Bellevue Road). Important agricultural lands, as identified by the California DOC's FMMP (FMMP 2016) occur throughout the areas surrounding the Program Study Area, including directly adjacent to portions of the new trunk sewer infrastructure. Construction activities associated with underground infrastructure is not proposed in areas with these designations and similar to the Program discussion above, would not affect these designated Farmlands. Therefore, there would be a less than significant impact.

Operation

The Northern Trunk Sewer pump station would be located on land designated as Farmland of Local Importance (FMMP 2016). However, as discussed under the Program discussion above, this new pump station would be relatively small (consisting of a maximum of a 2,000-square-foot structure) and would not result in substantial conversion of the Farmland in the area. Further, there are no existing agricultural operations on this parcel, and therefore, no ongoing agricultural operations would be adversely affected by construction or operation of this new pump station. Additionally, wastewater collection services are compatible with agricultural operations and supporting infrastructure for those operations. Operation of the new pump station would be considered a compatible use with any future agricultural operations on or around the site, and therefore, the operational impact related to conversion of Farmland would be less than significant.

The overall impact associated with the new trunk sewer construction and operations as related to conversion of important agricultural lands to non-agricultural use would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

The existing WWTRF footprint is located on lands identified by the DOC as Urban and Built-Up Land (FMMP 2016). The expansion of the WWTRF would not result in the conversion of any of these surrounding important Farmlands to non-agricultural use and would not adversely affect any of the existing agricultural operations in the area. Therefore, the WWTRF expansions would have no potential to convert important agricultural lands to non-agricultural use, and there would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AG-21Findings

Impact AG-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact AG-1 Mitigation Required: None Required

Impact AG-1 Overall Level of Significance After Mitigation: Less than Significant

Impact AG-2 Potential to conflict with existing zoning for agricultural use or Williamson Act contract.

Impact AG-2 Analysis

Program Impacts

Construction and Operation

Williamson Act contract lands are located near the outskirts of the Program Study Area and include Williamson Act contracted lands under both mixed enrollment agricultural lands and non-renewal lands (Figure 3.2-1).

Similar to the analysis for Impact AG-1, implementation of the Program would involve placement of pipelines within existing and proposed ROWs throughout the Program Study Area and placement of pump stations and improvements at the WWTRF adjacent to the ROWs. The areas within the Program Study Area do not contain Williamson Act contracted parcels. Existing agriculture uses on parcels within the Program Study Area would not be impacted by the Program. The placement of pipelines, pump stations, and improvements at the WWTRF would occur within the existing and future ROW and on parcels that would not affect Williamson Act contracted lands. Therefore, construction and operation of the Program would result in no impact to Williamson Act contracted lands.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

The new trunk sewer infrastructure would be placed in the outer portions of the Program Study Area in both existing and proposed ROWs (e.g., along Thornton Road, Cardella Road, East Mission Avenue, and East Bellevue Road). Additionally, the Northern Trunk Sewer pump station would not be placed on any Williamson Act contracted lands or other lands where agriculture use would be impacted. Construction and operational impacts would be similar to those described under the overall Program impacts above and would not affect or conflict with existing Williamson Act contracted lands. Therefore, the new trunk sewer infrastructure would have no impact related to conflicting with Williamson Act contracted lands.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

The existing WWTRF footprint is not located on any parcels subject to Williamson Act contracts. The expansion to the WWTRF would occur within this existing footprint and would therefore have no potential to conflict with existing zoning for agricultural use or Williamson Act contracted lands. There would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AG-2 Findings

Impact AG-2 Overall Level of Significance Prior to Mitigation: No Impact

Impact AG-2 Mitigation Required: None Required

Impact AG-2 Overall Level of Significance After Mitigation: No Impact

Impact AG-3	**Potential to conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).**

Impact AG-3 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

The Program Study Area does not contain any forest lands as defined in PRC Section 12220(g). Similarly, the Program Study Area does not contain any timberlands as defined by PRC Section 4526 or TPZ areas as defined by Government Code Section 51104(g). The Program Study Area consists of relatively flat, urban environments surrounded by agricultural lands that do not support forest land or timber production areas. Therefore, implementation of the Program, including placement of pipelines, pump stations, and WWTRF expansion components, would have no potential to conflict with any of these designations, and there would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AG-3 Findings

Impact AG-3 Overall Level of Significance Prior to Mitigation: No Impact

Impact AG-3 Mitigation Required: None Required

Impact AG-3 Overall Level of Significance After Mitigation: No Impact

Impact AG-4 Potential to result in the loss of forest land or conversion of forest land to non-forest use.

Impact AG-4 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

The Program would be considered to have a significant impact if construction or operation of projects identified within the Program would result in a direct or indirect substantial loss of forest land or a permanent conversion of forest land to non-forest use.

The City of Merced and the Program Study Area do not contain any areas meeting the definition of "Forest Land" (PRC Section 12220(g)) since the majority of the City and surrounding Program Study Area consists of relatively flat, urban environment with surrounding agricultural lands. The Program Study Area does not support 10-percent native tree cover under natural conditions, and there are no parcels within the Program Study Area zoned as TPZ. Therefore, implementation of the Program, including placement of pipelines, pump stations, and WWTRF expansion components, would have no potential to result in the loss of forest land or conversion of forest land to non-forest use. There would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AG-4 Findings

Impact AG-4 Overall Level of Significance Prior to Mitigation: No Impact

Impact AG-4 Mitigation Required: None Required

Impact AG-4 Overall Level of Significance After Mitigation: No Impact

Impact AG-5	**Potential to involve other changes in the existing environment that, 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.**

Impact AG-5 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

No other changes to the existing environment would occur during construction or operation of the Program beyond what has been discussed under Impacts AG-1 through AG-4. There would be no additional impact to farmland or forest land, and there would be no additional conversion of farmland or forestland to non-agricultural use or non-forest use. Therefore, no impact would occur.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact AG-5 Findings

Impact AG-5 Overall Level of Significance Prior to Mitigation: No Impact

Impact AG-5 Mitigation Required: None Required

Impact AG-5 Overall Level of Significance After Mitigation: No Impact

3.2.5 Agricultural and Forestry Resources Mitigation

No mitigation required.

3.2.6 Abbreviations

CEQA	California Environmental Quality Act
CGC	California Government Code
City	City of Merced
DOC	California Department of Conservation
EIR	Environmental Impact Report
FMMP	Farmland Mapping and Monitoring Program
MM	Mitigation Measure
NOP	Notice of Preparation
NRCS	Natural Resources Conservation Service
PRC	Public Resources Code

ROW	right-of-way
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
TPZ	Timberland Production Zone
USC	United States Code
USDA	United States Department of Agriculture
Williamson Act	California Land Conservation Act
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.2.7 References

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3.3 AIR QUALITY

3.3.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

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

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the impacts to air quality that may result from implementation of the Program identifying mitigation for significant impacts, where feasible.

3.3.2 Regulatory Framework

This section discusses the federal and state regulations, and local policies and objectives related to air quality and that are relevant to the Program.

3.3.2.1 Federal

Clean Air Act and National Ambient Air Quality Standards

The federal Clean Air Act (CAA), promulgated in 1963 and amended several times, thereafter, including the 1990 Clean Air Act amendments (CAAA), establishes the framework for modern air pollution control. The CAA directs the United States Environmental Protection Agency (USEPA) to establish national ambient air quality standards (NAAQS) for six criteria pollutants: ozone (O_3), carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and particulate matter (PM). The NAAQS are divided into primary and secondary standards; the primary standards are set to protect human health within an adequate margin of safety, and the secondary standards are set to protect environmental values, such as plant and animal life. Table 3.3-1 summarizes the NAAQS and the California Ambient Air Quality Standards (CAAQS).

Table 3.3-1: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1,3]	National Standards [2]	
			Primary [3,4]	Secondary [3,5]
Ozone	1 hour	0.09 ppm	N/A	N/A
		(180 µg/m^3)	N/A	N/A
	8 hour	0.07 ppm	0.075 ppm	0.075 ppm
		(137 µg/m^3)	(147 µg/m^3)	(147 µg/m^3)
Carbon monoxide	8 hour	9 ppm	9 ppm	N/A
		(10 mg/m^3)	(10 mg/m^3)	N/A
	1 hour	20 ppm	35 ppm	N/A
		(23 mg/m^3)	(40 mg/m^3)	N/A
Nitrogen dioxide	Annual Average	0.03 ppm	0.053 ppm	0.053 ppm
		(57 mg/m^3)	(100 µg/m^3)	(100 µg/m^3)
	1 hour	0.18 ppm	N/A	N/A
		(339 mg/m^3)	N/A	N/A
Sulfur dioxide	Annual Average	N/A	80 ug/m^3	N/A
		N/A	(0.03 ppm)	N/A
	24 hour	0.04 ppm	0.14 ppm	N/A
		(105 mg/m^3)	(365 µg/m^3)	N/A
	3 hour	N/A	N/A	0.5 ppm
		N/A	N/A	1,300 µg/m^3
	1 hour	0.25 ppm	N/A	N/A
		(655 µg/m^3)	N/A	N/A
PM_{10}	Annual	20 µg/m^3	N/A	N/A
	24 hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
$PM_{2.5}$	Annual	12 µg/m^3	15 µg/m^3	15 µg/m^3
	24 hour	N/A	35 µg/m^3	35 µg/m^3
Sulfates	24 hour	25 µg/m^3	N/A	N/A
Lead[6, 7]	30 day	1.5 µg/m^3	N/A	N/A
	Quarterly	N/A	1.5 µg/m^3	1.5 µg/m^3
	Rolling 3 Month Average[7]	N/A	0.15 µg/m^3	0.15 µg/m^3
Hydrogen Sulfide	1 hour	0.03 ppm	N/A	N/A
		(42 µg/m^3)	N/A	N/A
Vinyl Chloride[6]	24 hour	0.010 ppm	N/A	N/A
		(26 µg/m^3)	N/A	N/A

Pollutant	Averaging Time	California Standards [1,3]	National Standards [2]	
			Primary [3,4]	Secondary [3,5]
Visibility	1 observation	Extinction coefficient of 0.23 per kilometer; visibility of 10 miles or more due to particles when relative humidity is less than 70 percent.	N/A	N/A

Notes:

N/A = Not Applicable

$\mu g/m^3$ = micrograms per cubic meter

°C = degrees Celsius

CARB = California Air Resources Board

mg/m^3 = milligrams per cubic meter

$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

PM_{10} = particulate matter less than 10 microns in diameter

ppm = parts per million

torr. = unit of pressure defined as 1/760 of a standard atmosphere

1. California standards for ozone, carbon monoxide, sulfur dioxide (1- and 24-hour), nitrogen dioxide, PM_{10} and $PM_{2.5}$, and visibility reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

2. National standards, other than ozone, PM, and those based on annual averages or annual arithmetic mean, are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 250°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 250°C and a reference pressure of 760 torr; ppm in this table refer to parts per million by volume (ppmv), or micromoles of pollutant per mole of gas.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

6. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

7. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: CARB 2016a

The CAA requires states to submit a State Implementation Plan (SIP) for areas in nonattainment for NAAQS. The SIP, which is reviewed and approved by USEPA, must demonstrate how the NAAQS would be achieved. Failing to submit a plan or secure approval can lead to denial of federal funding and permits. In cases where the SIP fails to demonstrate achievement of the standards, USEPA is directed to prepare a federal implementation plan.

Clean Air Non-Road Diesel Rule

To reduce emissions from off-road diesel equipment, USEPA established a series of increasingly strict emission standards for new engines. Locomotives and marine vessels are exempt from this rule. Manufacturers of off-road diesel engines are required to produce engines meeting certain emission standards based on the model year that the engine was manufactured according to the following compliance schedule:

- Tier 1 standards were phased in from 1996 to 2000 (year of manufacture), depending on the engine horsepower category.
- Tier 2 standards were phased in from 2001 to 2006.
- Tier 3 standards were phased in from 2006 to 2008.
- Tier 4 standards, which require add-on emissions-control equipment to attain them, were phased in from 2008 to 2015.

3.3.2.2 State

The California Air Resources Board (CARB) is responsible for establishing and reviewing the state standards, compiling the California SIP and securing approval of that plan from USEPA, conducting research and planning, and identifying toxic air contaminates (TACs). CARB also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles, and oversees the activities of California's air quality management districts, which are organized at the county or regional level. Air quality management districts are primarily responsible for regulating stationary sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal CAA and California CAA.

California Clean Air Act and California Ambient Air Quality Standards

In 1988, the State legislature adopted the California CAA, which established a Statewide air pollution control program. Unlike the federal CAA, the California CAA does not set precise attainment deadlines. Instead, the California CAA requires all air districts in the state to endeavor to meet the CAAQS by the earliest practical date. Each air district's clean air plan is specifically designed to attain the standards and must be designed to achieve an annual 5 percent reduction in district-wide emissions of each nonattainment pollutant or its precursors. When an air district is unable to achieve a 5 percent annual reduction, the adoption of all feasible measures on an expeditious schedule is acceptable as an alternative strategy (Health and Safety Code Section 40914[b][2]). CAAQS are generally more stringent than NAAQS and incorporate additional standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride (C_2H_3Cl), and visibility-reducing particles.

The CARB and local air districts are responsible for achieving CAAQS, which are to be achieved through district-level air quality management plans that would be incorporated into the SIP. In California, the USEPA has delegated authority to prepare SIPs to CARB, which in turn, has delegated that authority to individual air districts. The CARB traditionally has established state air quality standards, maintains oversight authority in air quality planning, develops programs for reducing emissions from motor vehicles, develops air emission inventories, collects air quality and meteorological data, and approves SIPs.

The California CAA substantially adds to the authority and responsibilities of air districts. The California CAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The California CAA also emphasizes the control of indirect and area-wide sources of air pollutant emissions and gives local air pollution control districts explicit authority to regulate indirect sources of air pollution.

Toxic Air Contaminants

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The *California Almanac of Emissions and Air Quality* (CARB 2013) presents the relevant concentration and cancer-risk data for the ten TACs that pose the most substantial health risk in California based on available data. These TACs are as follows: acetaldehyde, benzene, 1.3-butadiene, carbon tetrachloride, hexavalent chromium, paradichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel PM (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (CARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen, and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. However, unlike the other TACs no ambient monitoring data are available for DPM because no routine measurement method currently exists. The CARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the CARB emissions inventory's PM less than 10 microns in diameter (PM_{10}) database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Sierra Club v. County of Fresno (Friant Ranch, L.P.)

In the Fifth District Court of Appeal case *Sierra Club v. County of Fresno* (Friant Ranch, L.P.), the Court found the Friant Ranch project EIR deficient because it did not identify specific health-related effects resulting from the estimated amount of pollutants generated by the project. The ruling stated that the EIR should give a "sense of the nature and magnitude of the 'health and safety problems' caused by a project's air pollution. The EIR should translate the emission numbers into adverse impacts or to understand why such translation is not possible at this time (and what limited translation is, in fact, possible)."

3.3.2.3 Local

San Joaquin Valley Air Pollution Control District

The Program Study Area is located within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD), which regulates air pollutant emissions for all sources throughout the San Joaquin Valley Air Basin (SJVAB) other than motor vehicles. The SJVAPCD enforces regulations and administers permits governing stationary sources. The SJVAPCD has developed the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) to

provide technical guidance for the review of air quality impacts as they relate to projects within the jurisdiction of the SJVAPCD (SJVAPCD 2015).

The SJVAPCD also has numerous rules and regulations which are enforced by the California Health and Safety Code. The following rules, regulations, and plans would apply to the Program (CARB 2019):

Regulation IV (Prohibitions)

Regulation IV contains rules developed pursuant to USEPA guidance for specific prohibitions in the region. Rule 4101, Visibility, limits the visible plume from any source to 20 percent opacity. Rule 4102, Nuisance, prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public or that endanger the comfort, repose, health, or safety of any such person or the public.

Regulation VIII (Fugitive PM_{10} Prohibitions)

Regulation VIII – Fugitive PM_{10} Prohibitions is a control measure that is one main strategies from the 2006 PM_{10} Plan for reducing the PM_{10} emissions that are part of fugitive dust. Projects greater than 10 acres are required to file a Dust Control Plan that contains dust control practices sufficient to comply with Regulation VIII. Regulation VIII contains rules developed pursuant to USEPA guidance for serious PM_{10} nonattainment areas. Rules included under this regulation limit fugitive PM_{10} emissions from the following sources: construction, demolition, excavation, extraction, and other earth moving activities, bulk materials handling, carryout and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. The City of Merced (City) would be required to implement the following control measures during project construction activities pursuant to Rule 8021, Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.

- A.1: Pre-water site sufficient to limit visible dust emissions (VDE) to 20 percent opacity.
- A.2-: Phase work to reduce the amount of disturbed surface area at any one time.
- B.1: Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20 percent opacity.
- B.2: Construct and maintain wind barriers sufficient to limit VDE to 20 percent opacity. If using wind barriers, control measure B1 above shall also be implemented.
- B.3: Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.
- C.1: Restrict vehicular access to the area.
- C.2: Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.
- 5.3.1: An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.

- 5.3.2: An owner/operator shall post speed limit signs that meet State and Federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.

- 5.4.1: Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever VDE exceed 20 percent opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.

- 5.4.2: Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.

- 6.3.1: An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer (APCO) prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the APCO has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the APCO within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.

- 6.3.3: The Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.

- 6.3.4: A Dust Control Plan shall contain all the [administrative] information described in Section 6.3.6 of this rule. The APCO shall approve, disapprove, or conditionally approve the Dust Control Plan within 30 days of plan submittal. A Dust Control Plan is deemed automatically approved if, after 30 days following receipt by the District, the District does not provide any comments to the owner/operator regarding the Dust Control Plan.

Rule 4102 (Nuisance)

Rule 4102 prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public or that endanger the comfort, repose, health, or safety of any such person or the public.

Rule 9510 (Indirect Source Review)

Rule 9510, or the Indirect Source Review (ISR), is a control measure in the 2006 SJVAPCD PM_{10} Plan that requires nitrogen oxide (NO_X) and PM_{10} emission reductions from development projects in the San Joaquin Valley. The NO_X emission reductions help reduce the secondary formation of PM_{10} in the atmosphere (primarily ammonium nitrate and ammonium sulfate) and also reduce the formation of O_3. Reductions in directly emitted PM_{10} reduce particles such as dust, soot, and aerosols. Rule 9510 is also a control measure in the 2016 Plan for the 2008 8-Hour Ozone Standard. Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases through onsite measures or pay off-site mitigation fees.

Rule 9510 requires that these development projects mitigate exhaust emissions from construction equipment greater than 50 horsepower to 20 percent below statewide average NO_X emissions and 45 percent below statewide average

PM_{10} exhaust emissions. This rule also requires applicants to reduce baseline emissions of NO_x and PM_{10} emissions associated with operations by 33.3 percent and 50 percent respectively over a period of 10 years.

Air Quality Management Plans

As required by the federal CAA and the California CAA, air basins or portions thereof have been classified as either "attainment" or "nonattainment" for each criteria air pollutant, based on whether the standards have been achieved. Jurisdictions of nonattainment areas also are required to prepare an Air Quality management plan (AQMP) that includes strategies for achieving attainment. The SJVAPCD has approved AQMPs demonstrating how the SJVAB will reach attainment with the federal 1-hour and 8-hour ozone, PM_{10}, and PM less than 2.5 microns in diameter ($PM_{2.5}$) and California CO standards.

The SJVAPCD's most recent AQMP for ozone attainment is the 2016 Plan for the 2008 Eight-Hour Ozone Standard, which was adopted by the SJVAPCD in June 2016. The purpose of this plan is to achieve attainment with the federal 8-hour ozone ambient air quality standards in the SJVAB by 2031 (SJVAPCD 2016a).

The 2007 Ozone Plan approved by CARB on June 14, 2007, demonstrates how the SJVAB would meet the federal 8-hour ozone standard. The 2007 Ozone Plan includes a comprehensive list of regulatory and incentive-based measures to reduce emissions of ozone and PM precursors throughout the SJVAB. Additionally, this plan calls for major advancements in pollution control technologies for mobile and stationary sources of air pollution and an increase in state and federal funding for incentive-based measures to create adequate reductions in emissions to bring the entire SJVAB into attainment with the federal 8-hour ozone standard. The 2016 Plan for the 2008 8-Hour Ozone Standard was adopted in Jun 2016 and ensures the attainment of the 75 parts per billion 8-hour ozone standard (SJVAPCD 2007a).

In June 2007, the SJVAPCD Board adopted the 2007 PM_{10} Maintenance Plan and Request for Redesignation. This plan demonstrates how PM_{10} attainment in the SJVAB will be maintained in the future. Effective November 12, 2008, USEPA redesignated the SJVAB to attainment for the PM_{10} NAAQS and approved the 2007 PM_{10} Maintenance Plan (SJVAPCD 2007b). In April 2008, The SJVAPCD Board adopted the 2008 $PM_{2.5}$ Maintenance Plan and approved amendments to Chapter 6 of the 2008 $PM_{2.5}$ Plan on June 17, 2010. This plan was designed to addresses USEPA's annual $PM_{2.5}$ standard of 15 micrograms per cubic meter ($\mu g/m^3$), which was established by USEPA in 1997. In December of 2012, the SJVAPCD adopted the 2012 $PM_{2.5}$ Plan, which addresses USEPA's 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$, which was established by USEPA in 2006. In April of 215, the SVAPCD adopted the 2015 Plan for the 1997 $PM_{2.5}$ Standard and adopted the 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard in September 2016. On November 15, 2018, the SVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards to create an attainment strategy for the multiple $PM_{2.5}$ standards (SJVAPCD 2018).

Merced Vision 2030 General Plan

The City's Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains policies that directly or indirectly pertain to air quality, including the following:

Goal SD-1: Air Quality and Climate Change

Policy SD-1.1 Acutely determine and fairly mitigated the local and regional air quality impacts of projects proposed in the City.

Policy SD-1.6. Reduce emissions of PM_{10} and other particulates with local control potential.

3.3.3 Environmental Setting

3.3.3.1 Regional Topography, Meteorology, and Climate

The Program Study Area is located in the SJVAB, which occupies the southern half of the Central Valley and comprises eight counties: San Joaquin, Stanislaus, Fresno, Merced, Madera, Kings, Tulare, and portions of Kern County. The SJVAB is about 250 miles long and 35 miles wide (on average) and is bordered by the Coast Range Mountains on the west, the Sierra Nevada mountains on the east, and the Tehachapi Mountains to the south. On the valley floor, the SJVAB is open only to the north, which heavily influences prevailing winds.

Although marine air generally flows into the SJVAB from the San Francisco Bay Area through the Carquinez Strait (a gap in the Coast Range Mountains) and low mountain passes such as Altamont Pass and Pacheco Pass, the mountain ranges restrict air movement through the SJVAB. Additionally, most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet). These topographic features result in weak airflow and poor dispersion of pollutants, and as a result, the SJVAB is highly susceptible to pollutant accumulation.

The average daily maximum and minimum summer temperatures (i.e., July) in Merced, California, are 96 degrees Fahrenheit (°F) and 62 °F, respectively, and the average daily maximum and minimum winter (i.e., January) temperatures are 54 °F and 37 °F, respectively. Average annual precipitation is 13.08 inches (U.S. Climate Data 2019).

3.3.3.2 Air Pollutants of Concern

NAAQS and the CAAQS are established for six criteria pollutants: O_3, CO, Pb, NO_2, SO_2, and PM. The following section discusses the criteria pollutants, as well as additional air pollutants of concern, TACs, and DPM.

Ozone

Ozone is a respiratory irritant that can cause severe ear, nose, and throat irritation and increase susceptibility to respiratory infections. It is also an oxidant that can cause extensive damage to plants through leaf discoloration and cell damage. It can cause substantial damage to other materials as well, such as synthetic rubber and textiles.

O_3 is a secondary pollutant not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. O_3 precursors, reactive organic gases (ROGs) and NO_X, react in the atmosphere in the presence of sunlight to form O_3 and can be formed many miles from the source of emissions. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, O_3 is primarily a summer air pollution problem. ROG and NO_X are mainly emitted by mobile sources and stationary combustion equipment.

Hydrocarbons are organic gases that are made up of hydrogen and carbon atoms. There are several subsets of organic gases, including ROGs and volatile organic compounds (VOCs). ROGs are defined by state rules and regulations, and VOCs are defined by federal rules and regulations. For the purposes of this assessment,

hydrocarbons are classified and referred to as ROGs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels or as a product of chemical processes. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants. Other common sources are petroleum fuels, solvents, dry-cleaning solutions, and paint (through evaporation).

The health effects of hydrocarbons result from the formation of O_3. High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen though displacement. Carcinogenic forms of hydrocarbons are considered TACs. There are no separate health standards for ROGs, although some are also toxic; for example, benzene is both a ROG and a carcinogen.

Nitrogen Oxides

Nitrogen oxides are a family of highly reactive gases that are a primary precursor to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_2, often used interchangeably with NO_X, is a brownish, highly reactive gas that is present in all urban environments. The major human sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with O_3, the NO_2 concentration in a particular geographical area may not be representative of local NO_X emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract. The severity of the adverse health effects primarily depends on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, such as coughing, difficulty breathing, vomiting, headaches, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, coughing, cyanosis, chest pain, and rapid heartbeat. Severe symptomatic NO_2 intoxication after acute exposure has been linked to prolonged respiratory impairment, with such symptoms as emphysema, bronchitis, and aggravating existing heart disease.

Carbon Monoxide

Carbon monoxide, a colorless and odorless gas, interferes with the transfer of oxygen to the brain. It can cause dizziness and fatigue and can impair central nervous system functions. CO is emitted almost exclusively from the incomplete combustion of fossil fuels. In urban areas, motor vehicles, power plants, refineries, industrial boilers, ships, aircraft, and trains emit CO. Automobile exhaust is responsible for most of the CO in urban areas. CO is a nonreactive air pollutant that dissipates relatively quickly, so ambient CO concentrations generally follows the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions, primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, a typical situation at dusk in urban areas between November and February. These locally concentrated peaks in CO are referred to as CO “hotspots.” Because motor vehicles are the dominant source of CO emissions, CO hotspots are normally located near roads and freeways with high traffic volume.

Other Criteria Pollutants
Particulate Matter

PM pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. PM also forms when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. Particulate matter less than 10 microns in diameter, about 1/7th the thickness of a human hair, is referred to as PM_{10}. Particulate matter that is 2.5 microns or less in diameter, roughly 1/28th the diameter of a human hair, is referred to as $PM_{2.5}$. Major sources of PM_{10} include motor vehicles; wood burning stoves and fireplaces; dust from construction, landfills, and agriculture; wildfires and brush/waste burning; industrial sources; windblown dust from open lands; and atmospheric chemical and photochemical reactions. $PM_{2.5}$ results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. In addition, PM_{10} and $PM_{2.5}$ can be formed in the atmosphere from gases such as SO_2, NO_X, and VOCs.

PM_{10} and $PM_{2.5}$ pose a greater health risk than larger-size particles. When inhaled, these tiny particles can penetrate the human respiratory system's natural defenses and damage the respiratory tract. PM_{10} and $PM_{2.5}$ can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. Very small particles of substances, such as Pb, sulfate (SO_4), and nitrates, can cause lung damage directly. These substances can be absorbed into the bloodstream and cause damage elsewhere in the body; they can also transport absorbed gases such as chlorides or ammonium into the lungs and cause injury. Whereas $PM_{2.5}$ and PM_{10} tend to collect in the upper portion of the respiratory system, $PM_{2.5}$ is so tiny that these particles can penetrate deeper into the lungs and damage lung tissues. Suspended particulates also damage and discolor surfaces on which they settle and contribute to haze and reduce regional visibility.

Toxic Air Contaminants

Although NAAQS and CAAQS exist for criteria pollutants, no ambient standards exist for TACs. Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or other acute (short-term) or chronic (long-term) health problems. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk free. Individual TACs vary greatly in the risks that they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health effects, a similar factor, called a Hazard Index, is used to evaluate risk. TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). Examples of TAC sources include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

Sulfur Oxides

Sulfur oxides are any of several compounds of sulfur and oxygen, of which the most relevant to air quality is SO_2. SO_2 is a respiratory irritant that causes the bronchioles to constrict with inhalation at 5 parts per million or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis. SO_2 is produced by coal and oil combustion and such stationary sources as steel mills, refineries, and pulp and paper mills.

Lead

Lead is a natural metal constituent of air, water, and the biosphere; it is neither created nor destroyed in the environment, so it persists forever. Pb was used several decades ago to increase the octane rating in automotive fuel; therefore, gasoline-powered automobile engines were a major source of airborne Pb. Since the use of leaded fuel has been phased out, the ambient concentrations of Pb have dropped dramatically. Short-term exposure to high levels of Pb can cause vomiting, diarrhea, convulsions, coma, or even death. However, even small amounts of Pb can be harmful, especially to infants, young children, and pregnant women. Pb exposure is most serious for young children because they absorb Pb more easily than adults and are more susceptible to its harmful effects. Even low-level exposure may harm the intellectual development, behavior, size, and hearing of infants. During pregnancy, especially in the last trimester, Pb can affect the fetus. Female workers exposed to high levels of Pb have more miscarriages and stillbirths.

Symptoms of long-term exposure to lower Pb levels may be less noticeable but are still serious. Anemia is common, and damage to the nervous system may cause impaired mental function. Other symptoms are appetite loss, abdominal pain, constipation, fatigue, sleeplessness, irritability, and headache. Continued excessive exposure, as in an industrial setting, can affect the kidneys.

Diesel Particulate Matter

In 1998, CARB identified DPM as a TAC (CARB 1998). On a statewide basis, the average potential cancer risk associated with DPM is more than 500 potential cases per million people. OEHHA estimated the potential cancer risk from a 70-year exposure to DPM at a concentration of 1 µg/m^3 ranges from 130 to 2,400 excess cancer cases per million people. A scientific review panel concluded that an appropriate point estimate of unit risk for a 70-year exposure to DPM is 300 excess cancer cases per million people (CARB 2000).

DPM of greatest health concern are those in the categories of fine (PM_{10}) and ultra-fine ($PM_{2.5}$). These fine and ultra-fine particles may be composed of elemental carbon with adsorbed compounds, such as organic compounds, SO_4, nitrate, metals, and other trace elements. The fine and ultra-fine particles are respirable, which means that they can avoid many of the human respiratory system defense mechanisms and enter deeply into the lungs.

Valley Fever

San Joaquin Valley Fever (formally known as coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. San Joaquin Valley Fever is also known as Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human-induced ground-disturbing activities such as construction, farming, etc. Farmers, construction workers, and others who engage in soil-disturbing activities are at highest risk for Valley Fever.

While cases of Valley Fever have been reported throughout California, more than 75 percent of cases have been in the San Joaquin Valley (California Department of Public Health 2016). In 2014, there were 2,217 cases of Valley Fever in California, with the most reported in the Central Valley (Fresno Bee 2015). Anyone who lives, works, or travels in a Valley Fever area could contract Valley Fever; however, those most at risk of developing severe symptoms from Valley Fever include adults more than 60 years of age, African Americans, Filipinos, Hispanics,

pregnant women (especially in the later stages of pregnancy), persons with diabetes, and persons with weakened immune systems (California Department of Public Health 2016).

Farmers, construction workers, and others who engage in soil-disturbing activities are at the highest risk for developing Valley Fever. During the construction of two solar-power generating facilities in San Luis Obispo County, 1.2 cases of Valley Fever were observed per 100 workers (Centers for Disease Control and Prevention 2015). For comparison, the overall incidence in 2011 for states where Valley Fever is endemic (Arizona, California, Nevada, New Mexico, and Utah) was 42.6 cases per 100,000 residents (or approximately 0.43 cases per 100 people) (Centers for Disease Control and Prevention 2016).

Asbestos

Naturally occurring asbestos is found in serpentine soils in the foothills of California and can become ingested during earth-moving activities such as grading. The Naturally Occurring Asbestos Hazards Map was reviewed to determine if the Program would involve construction in areas of relative likelihood for the presence of naturally occurring asbestos (USGS 2011). The Program Study Area is not located in an area mapped as having, or otherwise known to have, ultramafic rock. serpentine, or naturally occurring asbestos. The nearest mapped unit is approximately 35 miles southwest of the Program Study Area (USGS 2011).

In addition to naturally occurring asbestos, many building materials, including pipelines, have the potential to contain asbestos and other hazardous materials that could cause damage to the environment and to people if disturbed. If material containing asbestos is disturbed, tiny fibers can become airborne, which could cause respiratory damage leading to lung disease or other pulmonary complications. Historically, asbestos-cement pipe, or more specifically the brand “Transite” for pipes, was used in the mid-1900s in potable water distribution systems, rather than in wastewater distribution systems (Exponent 2018). However, demolition of old wastewater distribution systems could still have a moderate risk of containing asbestos-cement pipe, which could pose a health risk if particles become airborne.

3.3.3.3 Existing Air Quality Conditions

The SJVAPCD operates a regional monitoring network that measures the ambient concentrations of criteria pollutants. Existing and probable future general levels of air quality in the SJVAB can generally be inferred from ambient air quality measurements conducted by SJVAPCD at its monitoring stations. The major criteria pollutants of concern in the Central Valley (i.e., O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, and SO_2) are monitored at a number of locations. Background ambient concentrations of pollutants are determined by average pollutant emissions, wind patterns, and meteorological conditions in a given area. As a result, background concentrations can vary among different locations within the Program Study Area. However, areas located close together and exposed to similar wind conditions can be expected to have similar background pollutant concentrations. The closest SJVAPCD monitoring stations to the Program Study Area are the Merced-M Street Station and the Merced-Coffee Station, which collectively monitor O_3, NO_2, $PM_{2.5}$, and PM_{10}.

Attainment Status

Local monitoring data is used to designate areas as nonattainment, maintenance, attainment, or unclassified for the NAAQS and CAAQS. The four designations are defined as follows.

- Nonattainment: assigned to areas where monitored pollutant concentrations consistently violate the standard in question.
- Maintenance: assigned to areas where monitored pollutant concentrations exceeded the standard in question in the past but are no longer in violation of that standard.
- Attainment: assigned to areas where pollutant concentrations meet the standard in question over a designated period of time.
- Unclassified: assigned to areas where data are insufficient to determine whether a pollutant is violating the standard in question.

Table 3.3-2: Merced County State and Federal Attainment Status

Criteria Pollutant	State Designation	Federal Designation
Ozone	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified	Unclassified/Attainment
Nitrogen dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Lead	Attainment	Unclassified/Attainment
Hydrogen Sulfide	Unclassified	-
Visibility Reducing Particles	Unclassified	-

$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
Source: CARB 2018; USEPA 2018

Merced County has been designated as nonattainment for O_3 and $PM_{2.5}$ by the USEPA and for O_3, PM_{10}, and $PM_{2.5}$ by CARB. Pollutants that are in nonattainment status can be categorized as moderate, severe, and extreme based on the concentration level of the pollutants.

3.3.3.4 Odors

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., emotional reaction) to physiological (e.g., nausea). With respect to odors, the human nose is the sole sensing device. The ability to detect odors is subjective and varies considerably among the population. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another.

Noxious odors associated with wastewater systems are generally created when the dissolved oxygen content of the wastewater decreases (becomes anoxic). When the wastewater becomes anoxic there are no oxygen molecules to oxidize the sulfates in the wastewater. Which means the sulfates instead combine with hydrogen to form hydrogen

sulfide (H_2S) (or that odor that smells like rotten eggs). Typically, hydrogen sulfides (and other mercaptans) are formed during low flow conditions or when the water in the sewer is flowing so slowly that it is not being aerated and goes anoxic. These odor-generating compounds then tend to settle with the sewage solids on the bottom of the wastewater system as flows decrease. When the flows increase the solids are stirred up releasing the odor-causing compounds into the air where they find their way up through manholes or other places where the gases can be released to the atmosphere. When designing wastewater systems (collection and treatment) engineers consider odor control into design which either creates a closed system where air cannot escape or provides treatment such as odor scrubbers which filter the air before it is released from the system.

3.3.3.5 Sensitive Receptors

Sensitive land uses to air quality impacts are defined as locations where human populations, especially children, seniors, and sick persons, are located and where there is reasonable expectation of continuous human exposure according to the averaging period for the air quality standards (e.g., 24-hour, 8-hour, and 1-hour). Typical sensitive receptors include residences, hospitals, and schools.

Sensitive receptors within the Program Study Area include residences throughout the Specific Urban Development Plan (SUDP)/Sphere of Influence (SOI), recreational users within recreational facilities (i.e., along bike paths or within a designated park), and commercial users throughout the SUDP/SOI. However, most development where substantial concentrations of people are located are typically within the developed areas of the City with scattered rural, residential, and industrial type receptors dominating the SUDP/SOI. Particularly, Along the Northern Trunk Sewer alignment, receptors are located in north Merced along limited portions of Cardella and Bellevue Roads and along G Street in between Cardella and Bellevue. The majority of the alignment includes rural residential agricultural properties or industrial type properties. Along Thornton Road this categorization holds true as well with more concentrated residential receptors located to the west of Northern Trunk Sewer Alignment from Santa Fe Drive to Highway 99. Additionally, there are more concentrated residential, commercial, and industrial receptors along the eastern side of Thornton Road between SR 140 and W Dickenson Ferry Road. There are also a few residential receptors along Belcher Avenue near Thornton Road near the proposed location for the Northern Trunk Sewer pump station. Similarly, the Southern Trunk Sewer alignment has rural residential, agricultural, industrial, and commercial receptors along E Mission Avenue, Campus Parkway, and W Dickenson Ferry Road. There are sensitive receptors within two miles of the WWTRF along Grove Road, S Grur Road, Roduner Road, and Highway 59, but the area is generally put to agricultural use, with very limited sensitive receptors.

As reasonable build-out occurs, it is anticipated that additional receptors would be added to the undeveloped areas of the Program Study Area; however, it is likely Program components would be installed before that development occurs. Additionally, there are numerous hospitals, schools, and parks within the Program Study Area and the developed areas described adjacent to the proposed Projects, (however, generally concentrated in the developed areas within the City limits and near the UC in north Merced) all of which contain sensitive receptors.

3.3.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to air quality. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.3.4.1 Methodology for Analysis

Implementation of the Program would result in both short- and long-term emissions of criteria air pollutants. Construction emissions would include exhaust from the operation of conventional construction equipment and vehicles, from fugitive dust as a result of grading and equipment, and from vehicle travel on unpaved surfaces. The SJVAPCD GAMAQI adopted in 2015 (See Section 3.3.2, Regulatory Framework) contains thresholds for CO, NO_X, ROG, sulfur oxides (SO_X), PM_{10}, and $PM_{2.5}$ and other air quality impacts such as odors. Program-generated construction and operation emissions of criteria air pollutants, precursors, and odors were assessed in accordance with SJVAPCD recommended methods and thresholds. Assessed criteria pollutants and precursors are shown in Table 3.3-3. If emissions exceed the SJVAPCD significance thresholds, mitigation measures would be required for the impacts to be considered less than significant.

Table 3.3-3: Air Quality Thresholds of Significance for Criteria Air Pollutants

Pollutant/Precursor	Tons per Year	
	Construction Emissions	Operational Emissions
NO_X	10	10
CO	100	100
ROG	10	10
SO_X	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15

Notes:
CO = carbon monoxide
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
ROG = reactive organic gas

The SJVAPCD has published guidance on determining the significance of localized impacts to state and federal ambient air quality standards in its GAMAQI. State and federal ambient air quality standards have been established to protect public health and welfare from the adverse impacts of air pollution. A project would be considered to have a significant impact if its emissions are predicted to cause or contribute to a violation of any CAAQS or NAAQS or other standards related to air hazards or odors. The SJVAPCD applies a threshold of 100 pounds per day of any criteria pollutant as a screening threshold. If the Project does not exceed 100 pounds per day of any criteria pollutant, then it can be assumed that it would not cause a violation of an ambient air quality standard. If a project exceeds 100 pounds per day, then additional refined modeling would be necessary to determine if the emissions would cause an exceedance of the CAAQS or NAAQS.

The SJVAPCD also provides the following thresholds of significance for TAC emissions from operation of both permitted and non-permitted sources:

- Carcinogens: Maximally Exposed Individual risk equals or exceeds 20 in a million

- Non-Carcinogens: Acute and Chronic Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

Construction and operational emissions were estimated using the California Emissions Estimator Model (version 2016.3.2) (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants associated with both construction and operation of a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as greenhouse gas emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

The model was developed in collaboration with the air districts in California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable, such as CEQA documents. For the Program, a general discussion surrounding anticipated impacts associated with implementation of the Program was developed based on the quantification and evaluation of the three proposed Projects identified under the Program in the Section 2.0, Project Description: new Northern Trunk Sewer, new Southern Trunk Sewer, and the Wastewater Treatment and Reclamation Facility (WWTRF) Expansion that would have the capacity to treat an additional 35 million gallons per day (Mgal/day) anticipated to be constructed in 4 to 5 Mgal/day increments (and thus modeled for construction of a 4 to 5 Mgal/day increase). These proposed Projects were evaluated and modeled broken into three models: Northern Trunk Pipeline, Southern Trunk Pipeline, and WWTRF Expansion Construction. These models considered each Project's impact areas, construction equipment usage, and timing of construction. Model results were used to capture and evaluate the relevant air quality related information for each specific Project. Consultation with the City and Stantec engineers was conducted to document assumptions needed for model inputs for areas such as grading calculations, equipment vehicle use, and construction schedule. (Air Quality and Greenhouse Gas Assumptions Memorandum is provided in Appendix C).

3.3.4.2 Impact Analysis

Impact AIR-1 Potential to conflict with or obstruct implementation of the applicable air quality plan.

Impact AIR-1 Analysis
Combined Program/Proposed Projects Impacts

Construction and Operation

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable Air Quality Plan (AQP) (See Section 3.3.2, Regulatory Framework). The GAMAQI does not provide specific guidance on analyzing conformity with the AQP. Therefore, this document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for regional and local air pollutants.

2. Will the project comply with applicable control measures in the AQPs? The primary control measures applicable to development projects is Regulation VIII – Fugitive PM10 Prohibitions and Rule 9510 Indirect Source Review.

Contribution to Air Quality Violations

A measure for determining whether the Program and proposed Projects are consistent with the AQPs is whether they would result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin.

Individual projects are generally not large enough to measurably contribute to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for O_3, $PM_{2.5}$, and PM_{10}, if Program or proposed Project-generated emissions of either of the O_3 precursor pollutants (ROG and NO_X), PM_{10}, or $PM_{2.5}$ would exceed the SJVAPCD's significance thresholds, they would be considered to contribute to violations of the applicable standards and would conflict with the attainment plans.

As discussed in Impact AIR-2, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the construction and operation of the proposed Projects would not exceed the SJVAPCD's significance thresholds and other activities under the proposed Project are anticipated to be smaller than the proposed Project and also would not exceed the thresholds; therefore, the Program nor the proposed Project would not contribute to air quality violations.

Compliance with Applicable Control Measures

The AQP contains a number of control measures, which are requirements that are enforceable through the adoption of rules and regulations. A description of rules and regulations that apply to this project is provided below.

- **SJVAPCD Rule 9510** – The proposed Projects and future projects under the Program would comply with the Rule 9510 ISR by implementing control measures to achieve emission reductions, implementation of onsite measures, or payment of off-site mitigation fees.
- **Regulation VIII Fugitive PM_{10} Prohibitions** – Fugitive PM_{10} Prohibitions would be required for the proposed Projects and future projects under the Program that are greater than 10 acres. Projects greater than 10 acres are required to file a Dust Control Plan that contains dust control practices sufficient to comply with Regulation VIII. The proposed Projects and projects greater than 10 acres would be required to prepare a Dust Control Plan to comply with Regulation VIII and thereby do not conflict with or obstruct implementation.
- **Rule 4641 Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operation** – Paving and maintenance operations of the proposed Projects and future projects under the Program would be required to reach a reduction in VOC emissions during paving and thereby do not conflict with or obstruct implementation.
- **Rule 4601 Architectural Coatings** – Architectural Coatings associated with the proposed Projects and future projects under the Program would be limited to the selection of architectural coatings for low VOC

content consistent with the paints and coatings sold in the San Joaquin Valley and thereby does not conflict with or obstruct implementation.

The project would comply with all applicable SJVAPCD rules and regulations. Therefore, the project would comply with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

Compliance with the 2030 General Plan

When the City's 2030 General Plan was adopted in 2012 it found it was inconsistent with the SJVAPCD AQP because the emissions at buildout exceeded the criteria pollutant emission thresholds (see Impact Number 3.3-2 of the 2030 General Plan Draft EIR, Merced 2010). At the time, the City found the impact to be significant and unavoidable and adopted a Statement of Overriding Considerations (SOC) for the conflict. Since that time, the AQP's have been updated and have accounted for the reasonable build-out growth projections within the 2030 General Plan. This means that the Program's accommodation of the 2030 General Plan growth is now consistent with the goals and Plans of the SJVAPCD AQQ and the 2016 Plan for the 2008 8-Hour Ozone Standard, the 2015 Plan for the 1997 $PM_{2.5}$ Standard, and the 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard.

Projects that are consistent with the 2030 General Plan policies and comply with the mitigation measures included in the 2030 General Plan mitigation measures are able to rely upon the SOC finding to address their cumulative air quality impacts and may have a lesser impact themselves since they are consistent with the AQP. The 2030 General Plan EIR indicates that implementation of the General Plan policies and implementation actions would reduce impacts to the extent feasible. The proposed Projects and future projects under the Program are determined to be consistent with applicable General Plan policies and implementation actions as described in Table 3.3-4.

Table 3.3-4: Consistency with Applicable 2030 General Plan Policies

General Plan Policy	Project Consistency
Policy SD-1.1 Acutely determine and fairly mitigated the local and regional air quality impacts of projects proposed in the City.	**Consistent.** The Program and proposed Projects' emissions estimates have been quantified to determine the relative air quality impacts and mitigation measures have been incorporated to reduce potential impacts to a less than significant level.
Policy SD-1.6. Reduce emissions of PM_{10} and other particulates with local control potential.	**Consistent.** The City requires compliance with Regulation VIII to reduce PM_{10} emissions. The Program and proposed Project would comply with this measure.

Note:
PM_{10} = particulate matter less than 10 microns in diameter

The air quality mitigation measures and standard conditions from the 2030 General Plan EIR and a discussion of project compliance with each measure are provided in Table 3.3-5.

Table 3.3-5: Consistency with Applicable 2030 General Plan EIR Mitigation Measures

General Plan EIR Mitigation Measure	Project Compliance
Mitigation Measure #3.3-1a: For any phase of construction in which an area greater than 22 acres, in accordance with Regulation VIII of the	**Consistent**. The Program and proposed Projects would comply with this mitigation measure through preparation

General Plan EIR Mitigation Measure	Project Compliance
SJVAPCD, will be disturbed on any one day, the project developer(s) shall implement the following measures: 1. Basic fugitive dust control measures are required for all construction sites by SJVAPCD Regulation VIII. 2. Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent. 3. Traffic speeds on unpaved roads shall be no greater than 15 mph. 4. Install wind breaks at windward side(s) of construction areas	of dust control plans/dust control notifications as needed to comply with Regulation VIII.
Mitigation Measure #3.3-1b: To reduce emissions and thus reduce cumulative impacts, the City of Merced shall consider adoption of an ordinance requiring the following measures to be implemented in conjunction with construction projects within the City: 1. The idling time of all construction equipment used in the plan area shall not exceed ten minutes when practicable. 2. The hours of operation of heavy-duty equipment shall be minimized when practicable. 3. All equipment shall be properly tuned and maintained in accord with manufacturer's specifications when practicable. 4. When feasible, alternative fueled or electrical construction equipment shall be used at the project site. 5. The minimum practical engine size for construction equipment shall be used when practicable. 6. When feasible, electric carts or other smaller equipment shall be used at the project site. 7. Gasoline-powered equipment shall be equipped with catalytic converters when practicable.	**Not applicable.** This is a City-wide measure; however, the Program and proposed Projects would implement many of the measures being considered for a City ordinance as part of Mitigation Measure AIR-3.

Notes:
City = City of Merced
mph = miles per hour
SJVAPCD = San Joaquin Valley Air Pollution Control District

Conclusion

As shown in Tables 3.3-4 and 3.3-5, the Program and proposed Projects would be consistent with the 2030 General Plan, and as shown in Impact AIR-2, the emissions would be less than significant. Therefore, the Program and proposed Projects would not conflict with the applicable AQPs. The impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: No mitigation is required.

Level of Significance After Mitigation: Less than Significant

Impact AIR-1 Findings

Impact AIR-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact AIR-1 Mitigation Required: No mitigation is required

Impact AIR-1 Overall Level of Significance After Mitigation: Less than Significant

Impact AIR-2	**Potential to result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard.**

Impact AIR-2 Analysis
Combined Program/Proposed Project Impacts

To result in a less than significant impact, the following criteria must be true:

- Regional analysis: emissions of nonattainment pollutants must be below the SJVAPCDs regional significance thresholds. This is an approach recommended by the SJVAPCD in its GAMAQI.
- Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.
- Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Regional Emissions

Air pollutant emissions have both regional and localized effects as described in Section 3.3.3, Environmental Setting. This analysis assesses the regional effects of the Program and proposed Project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the Program and Projects. Localized emissions from construction and operation are assessed under Impact AIR-3 using concentration-based thresholds that determine whether the Program or Projects would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during construction and operation as described in Impact AIR-1 and Section 3.3.3.2, Air Pollutants of Concern, are ROG, NO_X, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO_X, ROG, SO_X, PM_{10}, and $PM_{2.5}$. As described in Section 3.3.4.1, Methodology for Analysis and illustrated in Table 3.3-6.

The SJVAB often exceeds the state and national O_3, PM_{10}, and $PM_{2.5}$ standards. Therefore, if the Program emits a substantial quantity of ozone precursors (NO_X or ROG), PM_{10}, or $PM_{2.5}$, the Program may contribute to an exceedance of the standards. The SJVAPCD's annual emission significance thresholds used for the Program and the

proposed Projects define the substantial contribution for both operational and construction emissions is shown in Table 3.3-3.

Construction

Construction emissions were modeled for the proposed Projects using CalEEMod and reasonable assumptions were extrapolated out for other Program activities based on the assumption that the remainder of Program activities would have smaller footprints than the proposed Projects and would take place in subsequent years (See Table 3.3-7). For assumptions used in estimating emissions please refer to Appendix B. As shown in Table 3.3-6, short-term construction emissions would not exceed the applicable significance thresholds for any criteria pollutants either individually or combined.

Table 3.3-6: Unmitigated Proposed Project Construction Emissions

Year	Project Component	Pollutants (tons/year)					
		ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
2022	Northern Trunk Sewer	0.20	1.97	2.31	0.01	0.29	0.15
	Southern Trunk Sewer	0.10	0.95	1.30	0.00	0.30	0.15
	WWTRF 4 to 5 Mgal/d	0.12	1.01	1.39	0.00	0.40	0.21
	Total	**0.42**	**3.93**	**4.99**	**0.01**	**0.99**	**0.52**
	SJVAPCD Significance Thresholds	10	100	10	27	15	15
	Individually Exceed Threshold	No	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No	No
2023	Northern Trunk Sewer	0.18	1.91	2.07	0.01	0.19	0.09
	Southern Trunk Sewer	0.05	0.53	0.61	0.00	0.06	0.03
	WWTRF 4 to 5 Mgal/d	0.07	0.77	0.74	0.00	0.07	0.04
	Total	**0.31**	**3.21**	**3.42**	**0.01**	**0.32**	**0.16**
	SJVAPCD Significance Thresholds	10	100	10	27	15	15
	Individually Exceed Threshold	No	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No	No
2024	Northern Trunk Sewer	0.04	0.44	0.41	0.00	0.04	0.02
	Total	**0.04**	**0.44**	**0.41**	**0.00**	**0.04**	**0.02**
	SJVAPCD Significance Thresholds	10	100	10	27	15	15
	Individually Exceed Threshold	No	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No	No

Notes:

CO = carbon monoxide
Mgal/d = million gallons per day
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District
WWTRF = Wastewater Treatment and Reclamation Facility

Construction of additional trunk and collector sewer pipelines to new development within the Program Study Area would occur for the duration of the program buildout. Emissions associated with development within the 2030 General Plan were accounted for in the 2030 General Plan Draft EIR. Construction equipment usage over the short-term construction period (several days to several months) makes these Program components minimal with respect to construction emissions; conservatively estimated to represent 10 percent of the proposed Projects' construction emissions. Table 3.3-7 provides a summary of potential construction emissions from these Program components.

Table 3.3-7: Unmitigated Proposed Program Construction Emissions Estimates

Component	Pollutants (tons/year)					
	ROG	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Total Construction Emissions Associated with Project Components	0.77	7.58	8.82	0.02	1.35	0.69
Programmatic Component	0.08	0.76	0.88	0.00	0.14	0.07
SJVAPCD Significance Thresholds	10	100	10	27	15	15
Exceed Threshold	No	No	No	No	No	No

Notes:
CO = carbon monoxide
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District

As shown in Table 3.3-7, based on smaller footprints and shorter duration of construction, future Program components implemented under reasonable build-out conditions would not exceed thresholds of significance. Additionally, due to construction timing, costs, and feasibility, implementation of all the proposed Projects would not occur at once, but even if they were, the combined emissions would not result in a significant impact related to construction emissions.

Operation

Program operational emissions are expected to be similar to existing operations, largely consisting of mobile-source-related emissions (i.e., worker commute trips, periodic facility maintenance visits, and potentially the addition of biosolids haul trips). Operational trips associated with the WWTRF expansions would differ slightly from the new trunk sewer infrastructure, as the additional WWTRF facilities would increase biosolids generation and would require

additional annual truck trips associated with biosolids handling and disposal. It is anticipated that current practices of land-applying biosolids to agricultural areas within the WWTRF footprint would continue, and increased generation of biosolids would not require a substantial increase in the number of haul trips since they would continue to be applied to agriculture lands at the WWTRF and surrounding City agricultural properties. However, there is the potential that land application may not be a viable option for biosolids disposal in the future, in which case, biosolids would require transport to an offsite disposal site potentially more than 20 miles away from the WWTRF. These additional truck trips would equate to approximately 621 truck trips per year, or two truck trips per day. The addition of two truck trips per day would not result in a substantial increase in emissions above the existing conditions within the Program Study Area (with trucks entering and existing the facility for daily workers arriving at the WWTRF, maintenance, and other daily operations at the WWTRF involving diesel vehicles). The operation of the wastewater collection system would include operation of pump stations, much like the current operations and would include the new Northern Trunk Sewer pump station. Pump stations within the system are designed with backup generator to provide system redundancy in the event of unplanned electrical outages and require periodic testing for maintenance purposes. These back-up generators are, just that and only run as needed. As an SJVAPCD permitted low use engine, the hours of the generator would be within the limited maximum of 100 hours for the year. Table 3.3-8 presents the summary of the estimated total operational emissions of the Program and the Proposed Projects.

Table 3.3-8: Unmitigated Proposed Program Operational Emissions Estimates

Program Component	Pollutants (tons/year)					
	ROG	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Mobile Sources	0.001	0.009	0.047	0.0002	0.0054	0.0015
Stationary Sources (Generator)	0.049	0.1255	0.1062	0.0002	0.0007	0.0007
SJVAPCD Significance Thresholds	10	100	10	27	15	15
Individually Exceed Threshold	No	No	No	No	No	No
Exceed Threshold when Combined	No	No	Yes	No	No	No

Notes:
The SJVAPCD considers stationary sources separately for significance determination.
CO = carbon monoxide
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District

Summary of Cumulative Projections

In accordance with CEQA Guidelines 15130(b), the analysis of cumulative impacts is based on a summary of projections associated with reasonable build-out of the SUDP/SOI as presented in the City's 2030 General Plan (and further analyzed in Chapter 5.0). The SJVAPCD attainment plans are based on a summary of projections that accounts for projected growth throughout the SJVAB, and the controls needed to achieve ambient air quality standards. This analysis considers the current CEQA Guidelines, which includes the amendments approved by the California Natural Resources Agency, effective on December 28, 2018. The SJVAB is in nonattainment or

maintenance status for O_3 and PM (PM_{10} and $PM_{2.5}$), which means that concentrations of those pollutants currently exceed the ambient air quality standards, or that the standards have recently been attained in the case of pollutants with maintenance status. When concentrations of O_3, PM_{10}, or $PM_{2.5}$ exceed the ambient air quality standard, then those who are sensitive to air pollution, such as children, the elderly, and the infirm, could experience health effects such as decrease of pulmonary function and localized lung edema in humans and animals; increased mortality risk; and risk to public health implied by altered connective tissue metabolism, altered pulmonary morphology in animals after long-term exposures, and pulmonary function decrements in chronically exposed humans.

Under the CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the SJVAB because that is the area in which the air pollutants generated by the sources within the SJVAB circulate and are often trapped. The SJVAPCD is required to prepare and maintain air quality attainment plans and an SIP to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have authority over land use decisions, it is recognized that changes in land use and circulation planning would help the SJVAB achieve clean air mandates. The SJVAPCD evaluated emissions from land uses and transportation in the entire SJVAB when it developed its attainment plans. Emission inventories used to predict attainment of NAAQS must be based on the latest planning assumptions for mobile sources.

In accordance with CEQA Guidelines Section 15064, Subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program.

The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors and sets plans towards attainment of ambient O_3 standards by 2023. The 2012 $PM_{2.5}$ Plan and the 2015 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ Standard require fewer NO_X reductions to attain the $PM_{2.5}$ standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NO_X and ROG. The 2012 $PM_{2.5}$ Plan requires reductions in directly emitted $PM_{2.5}$ from combustion sources, such as diesel engines and fireplaces, and from fugitive dust to attain the ambient standard and is the applicable plan for $PM_{2.5}$ emissions. $PM_{2.5}$ is also formed in secondary reactions in the atmosphere involving NO_X and ammonia to form nitrate particles. Reductions in NO_X that are required for O_3 attainment are also sufficient for $PM_{2.5}$ attainment. As discussed in Impact AIR-1, the Program, including its project components is consistent with all applicable control measures in the air quality attainment plans. The Program would comply with any SJVAPCD rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

Program Health Impacts

Consistent with the *Sierra Club v. County of Fresno* (Friant Ranch) (See Section 3.3.2, Regulatory Framework), the standard measure of the severity of impact is the concentration of pollutants in the atmosphere compared to the ambient air quality standard for the pollutant for a specified period. The severity of the impact increases with the concentration of the pollutant and the amount of time that people are exposed to the pollutant. The pollutants of concern in the Friant Ranch ruling were regional criteria pollutants O_3 and PM_{10}. It is important to note that the potential for localized impacts can be addressed through dispersion modeling. The SJVAPCD includes screening criteria that if exceeded, would require dispersion modeling to determine whether project emissions would result in a

significant health impact. For this Program, including its project components, no significant localized health impacts would occur. Regional pollutants require more complex modeling as described below.

O_3 concentrations are estimated using regional photochemical models because O_3 formation is subject to temperature, inversion strength, sunlight, emissions transport over long distances, dispersion, and the regional nature of the precursor emissions. The emissions from individual projects are too small to produce a measurable change in O_3 concentrations; it is the cumulative contribution of emissions from existing and new development that is accounted for in the photochemical model. O_3 concentrations vary widely throughout the day and year even with the same amount of daily emissions. The SJVAPCD indicated in an Amicus Brief on Friant Ranch that running the photochemical model with just Friant Ranch emissions (109.5 tons per year of NO_X) is not likely to yield valid information given the relative scale involved. The NO_X inventory for the San Joaquin Valley is 224 tons per day in 2019 or 81,760 tons per year. Under these conditions the Friant Ranch project would result in a 0.13 percent increase in NO_X emissions. A project emitting at the SJVAPCD CEQA threshold of 10 tons per year would result in a 0.01 percent increase in NO_X emissions. Most project emissions are generated by motor vehicle travel distributed on regional roadways miles from the project site, and these emissions are not suited to project-level modeling.

Emissions throughout the San Joaquin Valley are projected to markedly decline in the coming decade. The SJVAPCD 2016 Ozone Plan predicts that NO_X emissions will decline to 103 tons per day by 2029 or 54 percent from 2019 levels through implementation of control measures included in the plan. This means that O_3 health impacts to residents of the San Joaquin Valley would be lower than currently experienced, and most areas of the San Joaquin Valley would have attained O_3 air quality standards. The plan accounts for growth in population at rates projected by the State of California for the San Joaquin Valley, so only cumulative projects that would exceed regional growth projections would potentially delay attainment and prolong the time and the number of people that would experience health impacts. It is unlikely that anyone would experience greater impacts from regional emissions than currently occur. The federal transportation conformity regulation provides a means of ensuring that growth in emissions does not exceed emission budgets for each county. Regional Transportation Plans and Regional Transportation Improvement Plans must provide a conformity analysis based on the latest planning assumptions that demonstrates that budgets would be not be exceeded. If budgets are exceeded, the San Joaquin Valley may be subject to CAA sanctions until the deficiency is addressed. Thus, the Program's contributions were accounted for in regional planning considering reasonable build-out of the SUDP/SOI and thus, would not significantly contribute to increased health risks.

Particulate emission impacts can be localized and regional. Particulates can be directly emitted and can be formed in the atmosphere with chemical reactions. Small directly emitted particles, such as diesel emissions of DPM and other combustion emissions, can remain in the atmosphere for a long time and can be transported over long distances. Large particles, such as fugitive dust, tend to be deposited a short distance from where they are emitted but can also travel long distances during periods of high winds. Particulates can be washed out of the atmosphere by rain and deposited on surfaces. Secondary particulates formed in the atmosphere such as ammonium nitrate require NO_X and ammonia, and they require low inversion levels and certain ranges of temperature and humidity to result in substantial concentrations. These complications make modeling Program and associated project particulate emissions only feasible for directly emitted particles at receptor locations close to the proposed Project sites. Regional particulate concentrations are modeled using a gridded inventory (emissions in tons per day are placed a 4-kilometer, three-dimensional grid to spatially allocate the emissions geographically and vertically in the atmosphere) and an atmospheric chemistry component to simulate the chemical reactions. The model uses relative reduction

factors to determine the amount of reductions of each PM component that would be needed to attain the air quality standards on the days with the conditions most favorable to high particulate concentrations. A small project would not produce sufficient emissions to determine a project's individual contribution to the particulate concentration. Likewise, implementation of projects under the Program would be considered small projects and would not produce emissions substantial enough to be able to determine the project's individual contribution to the particulate concentration.

Cumulative Health Impacts

The SJVAB is in nonattainment for O_3, PM_{10} (state only), and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals, such as children, the elderly, and the infirm. Therefore, when the concentration of those pollutants exceeds air quality standards, it is likely that some sensitive individuals in the population would experience health effects. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from Program emissions, it does not mean that 100 percent of the population would experience health effects.

Since the SJVAB is nonattainment for O_3, PM_{10}, and $PM_{2.5}$, it is considered to have an existing significant cumulative health impact without the Program. When this occurs, the analysis considers whether the Program's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO_X, VOCs, PM_{10}, or $PM_{2.5}$ are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Tables 3.3-6, 3.3-7, and 3.3-8, the regional analysis of construction and operational emissions indicates that the Program and proposed Projects would not exceed the SJVAPCD's significance thresholds and would be consistent with the applicable AQP.

The SJVAPCD AQPs predict that nonattainment pollutant emissions would continue to decline each year as regulations adopted to reduce these emissions are implemented, accounting for growth projected for the region. Therefore, the cumulative health impact would also decline even with the Program's emission contribution and the impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: No mitigation is required

Level of Significance After Mitigation: Less than Significant

Impact AIR-2 Findings

Impact AIR-2 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact AIR-2 Mitigation Required: No mitigation is required

Impact AIR-2 Overall Level of Significance After Mitigation: Less than Significant

Impact AIR-3 Potential to expose sensitive receptors to substantial pollutant concentrations.

Impact AIR-3 Analysis

Combined Program/Project Impacts

Construction associated with implementation of the Program would involve the operation of heavy equipment and activities that would temporarily produce additional dust and air emissions. Sensitive receptors within the Program Study Area include those described in Section 3.3.3.5, Sensitive Receptors and possibly the occasional recreationalist using the surrounding roadways. These sensitive receptors could be affected by construction-generated air emissions depending on location and distance and duration of construction activities. Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Heightened sensitivity may be caused by health problems, proximity to the emissions source, and duration of exposure to air pollutants. As previously stated, children, pregnant women, the elderly, and those with existing health problems are especially vulnerable to the effects of air pollution. Accordingly, land uses that are typically considered to be sensitive receptors include residences, schools, childcare centers, playgrounds, retirement homes, convalescent homes, hospitals, and medical clinics.

Fugitive Dust

Fugitive dust is typically generated during earth-moving activities such as grading and excavation. Trenching activities associated Program components, including placement of pipelines and excavation for the pump station or WWTRF expansion would be among the earth-moving activities that could generate fugitive dust emissions. Fugitive dust can cause health concerns when airborne due to potential inhalation, and the proximity to residences along the new trunk sewer alignments combined with the flat topography of the area could allow dust from construction to effect sensitive receptors. The Program and proposed Project would comply with the SJVAPCD's Regulation VIII, which would require implementation of fugitive dust controls such as watering exposed soils and soils being transported offsite, as well as watering and maintaining speed limits on dirt roads. Compliance with Regulation VIII would dampen and secure loose soils that turn into fugitive dust when caught in the wind, effectively limiting emissions of fugitive dust from construction activities associated with the Program and proposed Project components.

Localized Pollutant Analysis

Emissions occurring at or near the proposed Project sites have the potential to create localized impacts, also referred to as an air pollutant hotspots. Localized emissions are considered significant if when combined with background emissions, they would result in exceedance of any health-based air quality standard. The impact from localized pollutants is based on the impact to the nearest sensitive receptor.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that would need detailed analysis for localized impacts. Projects with onsite emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM_{10}, $PM_{2.5}$, NO_X, and CO. There are no localized emission standards for ROG, and most types of ROG are not toxic and have no health-based standard; however, ROG was included for informational purposes only.

An ambient air quality analysis screening was prepared for the Program consistent with SJVAPCD guidance. The daily emissions are shown in Table 3.3-9. As shown in the table, the individual proposed Projects and projects combined would not exceed the SJVAPCD screening thresholds, and as such, a violation of an ambient air quality analysis would not occur, and the impact would be less than significant.

Table 3.3-9: Daily Air Pollutant Emissions During Construction

Year	Project Component	Pollutants (lbs/day)				
		ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
2022	Northern Trunk Sewer	1.55	14.96	17.52	2.23	1.15
	Southern Trunk Sewer	0.79	7.17	9.83	2.25	1.17
	WWTRF 4 to 5 Mgal/d	0.87	7.66	10.49	3.03	1.58
	Total	3.21	29.79	37.84	7.51	3.90
	SJVAPCD Screening Thresholds	-	100	100	100	100
	Individually Exceed Threshold	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No
2023	Northern Trunk Sewer	1.37	14.47	15.65	1.44	0.71
	Southern Trunk Sewer	0.70	7.02	8.12	0.79	0.37
	WWTRF 4 to 5 Mgal/d	0.67	7.13	6.91	0.02	0.65
	Total	2.74	28.61	30.68	2.26	1.73
	SJVAPCD Screening Thresholds	-	100	100	100	100
	Individually Exceed Threshold	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No
2024	Northern Trunk Sewer	0.96	10.58	9.78	1.00	0.48
	Total	0.96	10.58	9.78	1.00	0.48
	SJVAPCD Screening Thresholds	-	100	100	100	100
	Individually Exceed Threshold	No	No	No	No	No
	Exceed Threshold when Combined	No	No	No	No	No

Notes:
CO = carbon monoxide
lbs/day = pounds per day
Mgal/d = million gallons per day
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District
WWTRF = Wastewater Treatment and Reclamation Facility

Operational emissions are shown in Table 3.3-10. As shown in the table, the operational emissions would not exceed the SJVAPCD screening thresholds. Localized air quality impacts would be less than significant.

Table 3.3-10: Unmitigated Proposed Program Operational Emissions Estimates

Component	Pollutants (lbs/day)				
	ROG	CO	NO_X	PM_{10}	$PM_{2.5}$
Mobile Sources	0.008	0.0544	0.2629	0.00045	0.00043
Stationary Sources (Generator)	23.63	60.25	50.98	3.47	3.47
SJVAPCD Screening Thresholds	-	100	100	100	100
Individually Exceed Threshold	No	No	No	No	No
Exceed Threshold when Combined	No	No	Yes	No	No

Notes:
The SJVAPCD considers stationary sources separately for significance determination.
CO = carbon monoxide
lbs/day = pounds per day
NO_X = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 2.5 microns in diameter
ROG = reactive organic gas
SJVAPCD = San Joaquin Valley Air Pollution Control District

Valley Fever

Construction of the Program has the potential to generate substantial amounts of fugitive dust that may suspend Coccidioides spores and expose sensitive receptors. The Program Study Area is located in an area with elevated Valley Fever activity (California Department of Public Health 2016).

Given the endemic nature of the disease and the amount of earth-moving activities in the Program Study Area related to agriculture activities, as well as grading and excavation for new residential, commercial, and industrial development, it is not possible to attribute a specific case of Valley Fever to a specific earth-moving activity. Ground-disturbing activities represent a continual source of spores that contribute to the number of Valley Fever cases reported each year. Construction activities associated with the Program and proposed Projects identified would have additional localized ground-disturbing activities to those that occur continually within the Program Study Area, posing similar risks. This could be a potentially significant impact.

Fugitive dust control measures required by Regulation VIII, such as wetting the soil, would reduce fugitive dust minimizing exposure of Coccidioides spores to workers and receptors. It is important to educate construction personnel and provide awareness of potential exposure, symptoms, and control measures. MM AIR-1, Pre-Construction Worker Environmental Awareness Program (Air Quality), would be implemented to properly train construction workers about the symptoms of Valley Fever and to show steps that should be taken to prevent exposure and its spread while on the work site. MM AIR-1 would be required to educate construction personnel of

exposure, symptoms, and avoidance measures for earth-moving activities that would occur during implementation of the Program. Therefore, with the implementation of MM AIR-1, impacts related to Valley Fever from the Program would be less than significant.

Asbestos

As described in Section 3.3.3.2, Air Pollutants of Concern, the Program Study Area is not located in an area mapped as having or otherwise known to have ultramafic rock, serpentine, or naturally occurring asbestos. The nearest mapped unit is approximately 35 miles southwest of the Program Study Area (USGS 2011). Therefore, the statewide Asbestos Airborne Toxic Control Measures would not apply unless ultramafic rock or serpentine is discovered during grading or excavation of any of the Program. In the unexpected event that ultramafic rock or serpentine is discovered, a potentially significant impact prior to mitigation could occur. The SJVAPCD must be notified no later than the following business day, and Program implementation must comply with MM AIR-2, which includes compliance with the State of California Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations. Additionally, although not anticipated, asbestos-cement pipelines could also be discovered during demolition of any of the old wastewater collection system, particularly in the older portions of the Program Study Area. Therefore, MM AIR-2 would also be implemented in these areas and would require a qualified geologist or geotechnical engineer to review historical documents and perform database searches to discover the likelihood of Program construction activities encountering, or requiring removal of, asbestos-containing materials. If the professional geologist or geotechnical engineer determines that no further analysis is warranted, then construction may proceed; however, if they determine that further investigation would be required, then geologic testing for asbestos would be performed in accordance with MM AIR-2 and regulatory requirements. It is important that construction personnel are provided awareness of potential exposure and control measures are educate them, increase the effectiveness of MM AIR-1 application, and minimize risk of exposure. MM AIR-1, Pre-Construction Worker Environmental Awareness Program (Air Quality), would be implemented to properly train construction workers about the long-term impacts associated with asbestos exposure and ways to prevent such exposure.

These MMs would be required for implementation of any of the Program components that would require earth movement to ensure that initial exposure would be reduced and long-term health impacts from exposure to asbestos would be avoided. Therefore, impacts associated with asbestos from construction of the Program would be less than significant with mitigation incorporated.

Toxic Air Contaminants

TACs, from the Program and proposed Projects are generally associated with construction impacts from implementation of activities including additional operational emissions from the expansions of the WWTRF and new pump stations. TACs can result in health risks associated with exposure to DPMs from diesel vehicles and generators, as well as operational emissions from substances such as chloroform, formaldehyde, benzene, ammonia, and metals. These exposure risks from general implementation of the Program could result in a potentially significant impact. These exposure risks are discussed in further detail below.

CARB has identified DPM from diesel-fueled engines as a TAC, which is typically concentrated around high-volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic, which have the highest associated health risks. Health risks from TACs are a function of both the concentration of emissions and the

duration of exposure. Construction activities have the potential to generate DPM emissions from construction equipment required for activities involving off-road and heavy-duty diesel equipment used for site grading, paving, and activities that are required during construction. Generally, construction of each Program component would be temporary, intermittent, and would occur over a relatively short duration in comparison to the operational lifetime of the wastewater collection system, limiting the potential long-term exposure of receptors to DPM or other TACs. In addition, only select portions of the Program Study Area would be disturbed at any one time, also limiting the potential long-term or repetitive exposure of sensitive receptors. Operation of construction equipment is also regulated by federal, state, and local regulations, including SJVAPCD rules and regulations, which limit the emissions of DPM and TACs in general. However, because the Program has the potential to release TACs, a potentially significant impact could occur prior to mitigation. As such, MM AIR-1 would be required and would implement numerous best management practices (BMPs) reducing potential emissions of DPM and TACs, such as limiting engine idling times, identifying low-emitting equipment, and minimizing equipment use, which would reduce impacts to a less than significant level.

Construction of the new trunk sewer infrastructure would occur linearly, spanning from south Merced to north Merced and from west Merced to east Merced, which would disperse the concentration of any potential emissions, limiting exposure of a sensitive receptor in a specific location for a short period of time (estimated to be a couple weeks maximum in any given location along the pipelines). Notably, the OEHHA provided a recommendation in its 2015 Hotspot Program Guidance not to model construction health risks for construction lasting less than 2 months. Construction of stationary sites such as the pump station associated with the northern trunk sewer and WWTRF lasting for a more than 2 year period on the selected sites could significantly affect nearby receptors. To this point, a small number of rural residential receptors are located adjacent to the Northern Trunk Sewer pump station site and a within the vicinity of the WWTRF site. These receptors could experience health risks associated with emissions of DPM or other TACs generated during construction or operations of the facilities (discussed in more detail below) resulting in a potentially significant impact. MM AIR-3 would require the use of cleaner than average construction equipment at sites requiring longer than 2 months (like the pump station), which would minimize exposure to DPM and would result in a less than significant impact. Therefore, because the construction activities would be temporary, would not be concentrated in any one location, would comply with SJVAPCD rules and regulations as well as federal and state regulations, and would implement MM AIR-3, there would be a less than significant impact of exposing sensitive receptors to TACs with mitigation incorporated.

TACs typical of wastewater treatment facilities can include but are not limited to chloroform from the chlorine disinfection system; DPM from diesel back-up generators and biosolid haul trucks (if required); and VOCs (such as formaldehyde, benzene, ammonia, and metals) from the flare, digester gas boilers, and the headworks. The 2006 Wastewater Treatment Plant Expansion Project DEIR (2006 WWTRF DEIR) for the 20 Mgal/day WWTRF expansion assessed incremental risk of TACs to obtain an estimated total incremental carcinogenic health risk (City of Merced 2006). Using the toxic potency unit risk factor as established by OEHHA, the 2006 WWTRF DEIR determined the maximum carcinogenic risk of the 20 Mgal/day expansion over a 70-year lifetime of exposure to be less than seven cancer cases in a million (City of Merced 2006). This level of risk was (and still is) less that the SJVAPCD's significance threshold of 20 cancer cases per million for a 70-year exposure, and potential impacts resulting from the expansion were anticipated to be less than significant. Since 2006, the WWTRF has been undergoing upgrades to modernize and retrofit treatment processes and equipment as identified in the 2006 WWTRF DEIR, such as replacing the chlorine disinfection system with an ultra-violet light disinfection system to eliminate chloroform emissions;

updating of the candle flare with a sulfur treatment system and match stack controls for greater VOC control efficiency; and construction of an enclosure for the new headworks for decreased release of VOCs with the greatest risk of TAC generation (City of Merced 2006). The WWTRF expansions could introduce new equipment or processes with the potential to exceed the SJVAPCD's significance threshold or the incremental risk of TAC emissions resulting in a potentially significant impact if not properly controlled and designed. In order to ensure that similar VOC-reduction design features are included in the WWTRF expansions, and to reduce the impact to less than significant, MM AIR-4, Design Considerations for Future WWTRF Improvements, would be required. MM AIR-4 would ensure that future design uses Best Available Control Technologies and improvements described above to limit additional TAC emissions to less than significant levels.

Other operational exposure to TACs could occur from DPM at the pump stations and WWTRF associated with back-up diesel generators and biosolids haul trips (if needed). DPM emissions from back-up diesel generators are not anticipated to generate significant DPM emissions due to the back-up nature and limited, intermittent, and short duration uses. Similar to the DPM construction discussion above, the likelihood that any one sensitive receptor would be exposed to high concentrations of DPM for any extended period of time resulting from these haul trips would be low due to the low concentration of vehicles and limited duration of vehicles in any given location. Additionally, as described in the 2006 WWTRF DEIR, improved regulations anticipated 85 percent reductions in DPM emissions associated with diesel engines (City of Merced 2006), which would further limit potential impacts required from any necessary additional trips. Therefore, operational TAC emissions would be less than significant.

With the implementation of MM AIR-3 and MM AIR-4, construction and operation of the Program components and future activities under the Program would result in a less than significant impact from generation of TACs with mitigation incorporated.

Localized CO Emissions

Localized concentrations of CO are related to the levels of traffic and congestion along streets and at intersections. Implementation of the Program could temporarily increase traffic volumes on streets within the Program Study Area; and therefore, could increase local CO concentrations. Concentrations of CO approaching the ambient air quality standards are only expected where background levels, traffic volumes, and congestion levels are high, which is not anticipated within the footprints of Program components, but is possible for unspecified future construction within the Program. While construction-related traffic on the local roadways within the Program Study Area would occur during active construction, the net increase of construction workers' vehicle trips to the existing daily traffic volumes in the local roadways would be relatively small and would not result in substantial localized CO emissions. Additionally, the construction-related vehicle trips would only occur during active construction periods and would cease once construction activities have been completed. During operation, a negligible amount of emissions from vehicle trips by worker staff for periodic inspection and maintenance purposes would occur. Therefore, since construction-related traffic from workers and trucks would be minimal and would not substantially increase CO concentrations in the Program Plan Area, and because the CO concentrations associated with the Program would be below SJVAPCD thresholds, localized CO emissions impacts to sensitive receptors would be less than significant.

The placement of pipelines and associated appurtenances for the new trunk sewer infrastructure would largely occur linearly and would not be concentrated in any one location for more than a week. The net increase of construction workers vehicle trips to the existing daily traffic volumes in the local roadways would be relatively small and would not

result in substantial CO emissions, as shown on Table 3.3-6. Operational trips would result in a negligible increase in CO concentrations because these trips would only occur periodically (10 to 20 trips annually) in standard City staff vehicles. Therefore, since construction-related traffic from workers and trucks would be minimal and would not substantially increase CO concentrations in the vicinity of the new trunk sewer infrastructure area, localized CO emissions impacts to sensitive receptors would be less than significant.

Localized concentrations of CO associated with the expansion of the WWTRF would occur during active construction. As shown in Table 3.3-6, CO concentrations for the WWTRF would be below the SJVAPCD thresholds of significance. Additionally, unlike the construction of the pipelines associated with the new trunk sewer infrastructure, the expansion of the WWTRF would consist of construction within the existing property of the WWTRF, and therefore, would have a lower possibility of substantially affecting sensitive receptors surrounding the WWTRF property. Therefore, construction emissions for localized CO would be considered a less than significant impact. Operations at the WWTRF would be similar to existing conditions, with trunks entering and exiting the WWTRF property daily. These operational trips would not constitute a substantial increase in localized CO emissions, and therefore, would result in a less than significant impact.

Conclusion

As discussed above, with implementation of MM AIR-3, and MM AIR-4, the Program and proposed Projects would not cause sensitive receptors to be exposed to substantial pollutant concentrations, including localized CO, TACs, or fugitive dust. Therefore, exposure of sensitive receptors to substantial pollutant concentrations would not occur, and the impact would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AIR-1, MM AIR-2, MM AIR-3, and MM AIR-4

Level of Significance After Mitigation: Less than Significant with Mitigation

Impact AIR-3 Findings

Impact AIR-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact AIR-3 Mitigation Required: MM AIR-1, MM AIR-2, MM AIR-3, and MM AIR-4

Impact AIR-3 Overall Level of Significance After Mitigation: Less than Significant with Mitigation

Impact AIR-4	**Potential to result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.**

Impact AIR-4 Analysis

Combined Program/Project Impacts

While offensive odors rarely cause any physical harm, they can still be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the SJVAQMD. The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity

of the source, the design and ability for noxious odors to be generated in the first place, the wind speed and direction, and the sensitivity of the receptor. According to the CARB's Air Quality and Land Use Handbook, some of the most common sources of odor complaints received by local air districts are, among others, sewage treatment plants, waste transfer stations, and biomass operations (CARB 2005). The WWTRF, pipelines, and pump stations associated with the Program and proposed Projects are the most likely to emit offensive noxious odors due to the potential for hydrogen sulfides to form during operation of those facilities. Odors associated with construction of the Program and proposed Projects have the most potential to be related to diesel engine operation, similar to the discussion for Impact AIR-3. Odors associated with operation and implementation of the Program and Projects are mostly likely to be associated with sewer conveyance and treatment systems. The following two subsection describe these potential impacts in further detail.

Construction

Diesel fumes from construction equipment are often found to be objectionable; however, operation of diesel equipment on site is short term and intermittent and construction is temporary. Operation of diesel equipment would comply with federal, State, and local regulations, including compliance with all applicable SJVAQMD rules and regulations as part of the construction specifications, which would limit construction-related odorous emissions. As discussed under Impact AIR-3, implementation of the Program would require use of diesel-based equipment. This equipment could result in objectionable emissions of diesel fumes. Diesel odors from construction may be perceived as objectionable in lower concentrations than are required to cause the health risk described in Impact AIR-3. Diesel odor emissions would be temporary and intermittent throughout construction and would follow federal, state, and local regulations, including applicable SJVAPCD rules and regulations. These potential odors would not be anticipated to result in an adverse effect to a substantial number of people because of the duration, anticipated distance of receptors from construction activities, and regulations and equipment that are designed to limit emissions. Further, construction-related fumes and emissions would be spread out over different areas of construction sites, such as the pipeline alignment and would largely occur in areas away from dense concentrations of sensitive receptors (i.e., near agricultural properties and currently undeveloped lands in north and south Merced). Due to the rate of pipeline placement, sensitive receptors along the new trunk sewer pipelines would not be subject to objectionable odors from construction for more than a week. Additionally, the general distance of the majority of Program activities from sensitive receptors is far enough away that the potential for diesel fumes to impact a substantial number of people is extremely low. Therefore, construction-related odor impacts from construction of the Program and proposed Projects would be less than significant.

Operation

As mentioned in Section 3.3.3.1, and in the introduction to Impact AIR-4, operations of conveyance and treatment of wastewater systems can result in objectionable odors due to anoxic conditions creating hydrogen sulfides (and other mercaptans). The SJVAPCD includes screening levels, which are provided in the GAMAQI, for potential odor sources that would be located within 2 miles of sensitive receptors. As indicated in the GAMAQI, if a project would result in sensitive receptors being closer than the screening level distances of 2 miles for a wastewater treatment facility, the impact is presumed to have a less than significant (SJVAPCD 2015). The closest receptor to the WWTRF is less than 2 miles away, thus the presumption does not apply to the Program or Projects.

Odors associated with the operations of the pipelines (at man holes), pump stations, and appurtenances (air release valves) could potentially emit adverse odors that could affect existing or future sensitive receptors along the proposed trunk sewer Projects and future trunk and collector sewer alignments, however, these existing receptors are in limited in number and design controls for the wastewater system eliminate much of the potential for substantial exposure. Air release valves and other pressure-release features, which would release air from the wastewater pipes, are anticipated to prevent air binding in the pipes and to protect the pipes from collapse as well as generation of noxious odors. The air valves would be outfitted with odor control features like carbon canisters or odor scrubbers that would be replaced on a bi-annual basis to prevent the escape of hydrogen sulfide at air valve locations, which would limit odor emissions. Odor control measures would be maintained (estimated to be replaced pursuant to specifications approximately bi-annually) and would also be consistent with the current operations of the wastewater collection system.

The proposed Northern Trunk Sewer pump station and much of the Program would be designed to be scalable adding capacity only as needed which would prevent anerobic conditions within the wet well that would result in the emission of hydrogen sulfides (and other mercaptans). Similarly, future trunk sewer and collector pipelines would be designed in a way to maintain appropriate flows and limit the potential for creation of hydrogen sulfides (and other mercaptans) that could potentially emit odors through manholes. Therefore, with standard odor control and design techniques implemented for sewer systems, and with regular maintenance of any of these odor control facilities, impacts related to odor from the pipeline operations would be less than significant.

At the WWTRF, the distance and topography from sensitive receptors and design features currently present, have successfully contained odors and no formal odor complaints have been received as of mid-2020. Although the WWTRF is located within 2 miles of sensitive receptors, the WWTRF would continue to factor odor control into design and include further odor control reduction methods as it is expanded. Odor controls such as, improved ventilation and filtering technologies, closed-loop filtration systems, and the land buffers surrounding the WWTRF would further buffer potential odors around the site. The WWTRF expansions would be consistent with the current operations and would not exacerbate odors for any nearby sensitive receptors. Additionally, the operations of the WWTRF currently apply biosolids to the agricultural land adjacent to the WWTRF property. No odor complaints have been received regarding the application of these biosolids due to the digested nature of these materials. If application of additional biosolids would occur at the WWTRF, these additional biosolids would be digested in a similar manner and would not increase the odors at the WWTRF. Therefore, odor impacts from the upgrades to the WWTRF would be considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

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Impact AIR-4 Findings

Impact AIR-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact AIR-4 Mitigation Required: None Required

Impact AIR-4 Overall Level of Significance After Mitigation: Less than Significant

3.3.5 Air Quality Mitigation Measures

Mitigation Measure AIR-1: Pre-Construction Worker Environmental Awareness Program (Air Quality)

The purpose of a Worker Environmental Awareness Program (WEAP) is to educate personnel (i.e., construction workers) about the existing onsite and surrounding resources and the measures required to protect these resources as well as avoidance and potential hazards within these sites. The WEAP, developed by the City, shall include materials and information on potentially sensitive biological and cultural resources, air quality protection measures, potential hazards resulting from construction within the Program Study Area, and applicable precautions personnel should take to reduce potential impacts.

The WEAP presentation shall be given to all personnel who may be exposed to site hazards or may harm sensitive environmental resources as identified within the WEAP mitigation measures (i.e., prolonged exposure to noise levels over 85 decibels [like operation of a bulldozer at 50 feet], exposure to dust generating or ground disturbing activities, work in non-biologically cleared areas, and equipment operators who may encounter sensitive species). The WEAP presentation shall be given prior to the start of construction and as necessary throughout the life of the Program and proposed Projects as new personnel arrive onsite. The City and the contractor are responsible for ensuring that all onsite personnel attend the WEAP presentation, receive a summary handout, and sign a training attendance acknowledgement form to indicate that the contents of the presentation are understood and to provide proof of attendance. Each participant of the WEAP presentation shall be responsible for maintaining their copy of the WEAP reference materials and for making sure that other onsite personnel are complying with the recommended precautions. The contractor shall keep the WEAP sign-in sheet onsite and submit copies of the sign-in sheet to the City's Project Manager, who shall keep it on file at City offices.

For the air quality and hazardous materials portion of the WEAP presentation, the following information and implementation steps shall be prepared, presented, and executed prior to and during construction or earth-moving activities to prevent exposure and raise awareness of potential air quality and hazard impacts:

- Inform personnel about potential hazards within the Program Study Area, including but not limited to both naturally occurring and asbestos-containing materials present within soils as well as Valley Fever spores (*Coccidioides immitis*) and the likelihood of presence within specific project sites. Information given should include the following:
    - Providing context as to where these hazards could occur during construction.
    - Outlining ways to prevent exposure (outlined below).
    - Informing personnel that the appropriate respiratory equipment can be provided upon request to further prevent exposure to dust particles.
    - Informing personnel about the symptoms of exposure to potential hazards, including to asbestos and Valley Fever exposure. Symptoms of Valley Fever exposure could include but are not limited to fever, cough, chills, and night sweats which appear 1 to 3 weeks after exposure. Symptoms of asbestos exposure

(i.e., Asbestosis) occur over a much longer period of time (10 to 40 years after exposure) and could include but are not limited to shortness of breath, tightness in chest, chest pain, and appetite loss.

- Informing personnel about appropriate actions to take if symptoms of exposure occur including regular doctor checkups (i.e., for personnel working regularly within the construction or industrial settings where exposure to asbestos is high) and seeking emergency medical care if symptoms for Valley Fever persist or get worse.

Mitigation Measure AIR-1 Implementation

Responsible Party: The City and contractor

Timing: Prior to construction and throughout construction activities as new personnel arrive on the specific project site

Monitoring and Reporting Program: Development of a WEAP presentation and handout packet in accordance with this mitigation measure and any other resource specific WEAP requirements. A sign-in sheet completed for all workers on the construction site shall be kept on file at the specific project sites, and copies shall be submitted to the City's Project Manager to be kept on file at City offices.

Standards for Success: Limit exposure of personnel to potential air quality hazards during construction through prescribed safety precautions. If exposure cannot be avoided, education of personnel for immediate recognition of health symptoms to act quickly and seek appropriate medical or emergency care to limit long-term harm.

Mitigation Measure AIR-2: Implement Hazardous Materials Measures

The City or chosen contractor shall retain a professional geologist or geotechnical engineer who shall perform historic database searches for both naturally occurring asbestos and likelihood of asbestos-containing materials in the Program Study Area. If the professional geologist or geotechnical engineer determines further site-specific analysis is warranted, they shall conduct additional geologic evaluations of specific project sites to determine the presence or absence of naturally-occurring asbestos or asbestos-containing materials onsite. These evaluations shall include the specific Project sites (i.e., the pipeline alignments and pump station locations) and any additional staging areas that will be used. These evaluations shall be completed and submitted to the San Joaquin Valley Air Pollution Control District (SJVAPCD) at least 60 days prior to the start of construction. If naturally-occurring asbestos or asbestos-containing materials are discovered onsite, the following measures shall be implemented:

- The City or chosen contractor shall prepare an Asbestos Dust Migration Plan pursuant to California Code of Regulations (CCR) Title 17 Section 9035, Asbestos Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations, and shall obtain approval by the SJVAPCD. The Plan shall include all measures required by the State of California and the SJVAPCD.
- If asbestos is found in concentrations greater than 5 percent, the material shall not be used as surface material as stated in CCR Title 17 Section 93106, Asbestos Airborne Toxic Control Measure-Asbestos Containing Serpentine. The material with naturally-occurring asbestos can be reused at the site for subgrade material covered by other non-asbestos-containing material.

Mitigation Measure AIR-2 Implementation

Responsible Party: The City and contractor

Timing: The construction emissions minimization measures shall be included in all construction contracts, and individual contractors shall agree to the required measures and reporting requirements in order to obtain payment for services.

Monitoring and Reporting Program: The individual construction contractors shall prepare monitoring reports at the end of each construction phase and provide those to the City within 10 business days of completion of each phase.

Standards for Success: Construction exhaust emissions impacts are reduced to a less than significant level.

Mitigation Measure AIR-3: Minimize Construction Emissions

The City shall require that construction contracts for the Program and proposed Projects include but not be limited to the following measures to reduce construction emissions:

- Contractor reporting requirements:
    - Contractors shall provide an equipment inventory, which shall include estimates of the construction timeline by phase with descriptions of each piece of off-road equipment required for each phase.
    - Contractors shall use cleaner than average off-road equipment (generally Tier 2 or higher) that will achieve a minimum of 20 percent reduction in nitrogen oxides and 45 percent reduction in exhaust of particulate matter less than 10 microns in diameter.
    - Contractors shall provide reporting for each construction phase within 10 business days of completion of each phase. The report shall include the equipment type, engine model year, equipment horsepower, total hours of operation, fuel type, any control devices, and the quantity of equipment. The report shall be submitted to the City of Merced and may be used for the City's compliance with SJVAPCD Rule 9510.
- Fuel efficiency requirements:
    - Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 3-minutes (5-minute limit is required by the State airborne toxics control measure [Title 13, sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.
    - Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.
    - Train equipment operators in proper use of equipment.
    - Use the proper size of equipment for the job.
    - Use equipment with new technologies (repowered engines, electric drive trains).
    - Encourage and provide carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

- Where construction is anticipated to occur for a period longer than 2 months and is located within 1,000 feet of sensitive receptors, the following clean construction equipment measure shall apply:
    - Use Tier 2 or higher engines and the most effective Verified Diesel Emission Control Strategies (Tier 4 engines automatically meet this requirement) for the engine type as certified by the California Air Resources Board for equipment 100 horsepower or greater and used more than 20 hours for the duration of construction.

Mitigation Measure AIR-3 Implementation

Responsible Party: The City and contractor

Timing: The construction emissions minimization measures shall be included in all construction contracts, and individual contractors shall agree to the required measures and reporting requirements to obtain payment for services.

Monitoring and Reporting Program: The individual construction contractors shall prepare monitoring reports at the end of each construction phase and shall provide those to the City within 10 business days of completion of each phase.

Standards for Success: Limit emissions of DPM from construction.

Mitigation Measure AIR-4: Design Considerations for Future WWTRF Improvements

Future expansions at the Wastewater Treatment and Reclamation Facility (WWTRF) shall be designed to incorporate toxic air contaminant (TAC)-reducing technologies to reduce emissions from TAC sources such as chloroform and volatile organic compounds (VOCs). This could include the use of Best Available Control Technologies at the time of design or shall incorporate the following to reduce operational TAC emissions at the WWTRF:

- Adding candle flares with an enclosed flare that would result in a taller emission source with a greater VOC control efficiency.
- Incorporating an ultra-violet light disinfection system for any future expansions in place of existing chlorine disinfection systems that would eliminate chloroform emissions.
- Enclose headworks to decrease the release of VOCs.

Mitigation Measure AIR-4 Implementation

Responsible Party: The City

Timing: Incorporation of TAC reduction features shall occur during the design phase of each WWTRF expansion. Implementation of the TAC reduction features shall occur during design of the WWTRF expansions.

Monitoring and Reporting Program: The City shall ensure that the appropriate design features are implemented during the design phase of the WWTRF expansions.

Standards for Success: TAC emissions impacts from the WWTRF expansions shall be reduced below the SJVAPCD's most recent TAC thresholds.

3.3.6 Abbreviations

APCO	Air Pollution Control Officer
AQP	Air Quality Plan
BACT	Best Available Control Technologies
BMP	Best Management Practices
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimate Model
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Merced
CO	Carbon Monoxide
C2H3Cl	Vinyl Chloride
DPM	Diesel Particulate Matter
EIR	Environmental Impact Report
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
H2S	Hydrogen Sulfide
ISR	Indirect Source Review
Mgal/d	Million Gallons Per Day
mg/m3	Milligrams per cubic meter
MMs	Mitigation Measures
NAAQS	National Ambient Air Quality Standards
NO	Nitric Oxide
NOP	Notice of Preparation
NO2	Nitrogen Dioxide
NOx	Nitrogen Oxides
OEHHA	Office of Environmental Health Hazards Assessment
Pb	Lead
PM	Particulate Matter
PPM	Parts Per Million
ROG	Reactive Organic Gases
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SOC	Statement of Overriding Considerations

SO2	Sulfur Dioxide
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
TAC	Toxic Air Contaminant
USEPA	United States Environmental Protection Agency
VDE	Visible Dust Emissions
VOC	Volatile Organic Compounds
WEAP	Worker Environmental Awareness Program
WWTRF	Wastewater Treatment and Reclamation Facility
µg/m3	Microgram per cubic meter
2030 General Plan	Merced Vision 2030 General Plan
°F	Degrees Fahrenheit

3.3.7 References

California Emissions Estimator Model (CalEEMod). Copyright © 2011 South Coast Air Quality Management District Developed by ENVIRON International Corporation in collaboration with SCAQMD and other California Ai Districts. Analysis conducted by a Stantec Air Quality Specialist in 2020.

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3.4 BIOLOGICAL RESOURCES

3.4.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or United States Fish and Wildlife Service (USFWS);
- Have a substantial adverse effect on any riparian habitat or other sensitive natural communities identified in local or regional plans, policies, and regulations or by the CDFW or USFWS;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance or potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance or potential to conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state HCP;
- 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; or
- 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.

The remainder of this section describes the regulatory and environmental baseline setting to support the evaluation of the potential impacts and describes the potential impacts on the existing biological resources that may result from implementation of the Program including mitigation for significant impacts, where feasible.

3.4.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives applicable to biological resources potentially affected by the Program and proposed Projects.

3.4.2.1 Federal

Endangered Species Act of 1973

The federal Endangered Species Act (FESA) was passed by Congress in 1973 to protect and recover imperiled species and the habitat upon which they depend. The FESA is administered by USFWS and the National Oceanic and Atmospheric Administration (NOAA), which includes the National Marine Fisheries Service (NMFS). Under the FESA, protected species are either listed as "endangered," in danger of extinction throughout all or a significant region of the species range; or as "threatened," likely to become endangered within the foreseeable future (16 United States Code [USC] section 1531 et seq.). The FESA also designates "candidate" species as those plants and

animals that USFWS has sufficient data regarding their biological status to propose them to be listed under the FESA. Candidate species do not receive statutory protection under the FESA, but cooperative conservation activities are encouraged (16 USC Section 1531 et seq., USFWS 2017a).

The FESA mandates the protection of federally listed species and the habitats on which they depend (50 Code of Federal Regulations [CFR] 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the Federal Register for proposed species). Specifically, USFWS and NMFS can designate critical habitats (i.e., Designated Critical Habitat [DCH]) that are to be protected from disturbances, essential to conservation, and/or are representative of the historical geographical and ecological distributions of a federally protected species. DCH only affects federal agency actions and federally funded and permitted activities. DCH does not affect activities by private landowners if there is no federal "nexus" (i.e., a link such as federal funding or federally issued permit) to activities by a federal agency (16 USC section 1531 et seq., USFWS 2017b).

Pursuant to the FESA, USFWS and NMFS have authority over projects that may affect the continued existence of a federally listed threatened or endangered species. Section 9 of the FESA and federal regulations prohibit the "take" of federally listed species. "Take" is defined as, "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." In addition, USFWS requires that federal agencies avoid "destruction" and "adverse modification" to any DCH for a species when "prudent and determinable" (USFWS 2017b).

Consultation with the USFWS under Section 7 of the FESA would be necessary if a federal action (such as a federal permit or federal funding) is part of the proposed action and the project is likely to adversely affect federal species or DCH. For projects with no federal nexus, the project proponent may choose to consult with USFWS and obtain incidental "take" authorization under Section 10 of the FESA and possible preparation of an HCP if the project is likely to result in death or injury to a listed species (USFWS defines likely as "reasonably certain to occur"), or if the project would modify critical habitat, and all three of the following conditions are met: 1) The habitat modification must be significant; 2) The modification must impair an essential behavior (such as feeding, breeding, or sheltering); and 3) The behavior impairment must result in the likelihood of an actual injury or death. No Incidental Take Permit (ITP) is required under the FESA for activities that involve habitat modification alone unless all three of these conditions are met (USFWS 2018a).

Migratory Bird Treaty Act of 1918 and the Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (MBTA) (16 USC Section 703-711) and the Bald and Golden Eagle Protection Act (BGEPA) (16 USC Section 668) protect specific species of birds and prohibit intentional take (i.e., harm or harassment) when the purpose of an activity is to take migratory birds, the eggs, or nests (USFWS 2018b, USFWS 2018c). The MBTA protects migratory birds from take through the setting of hunting limits and seasons and protecting occupied nests and eggs. BGEPA prohibits the take or commerce of any part of the bald or golden eagle (USFWS 2018c). The USFWS administers both acts and reviews actions that may affect the species protected.

Clean Water Act Section 401

The U.S. Environmental Protection Agency (USEPA) regulates surface water quality in waters of the United States (WOTUS) under Section 401 of the federal Clean Water Act (CWA). CWA Section 401, Water Quality Certification, provides states and authorized tribes with an effective tool to help protect the physical, chemical, and biological integrity of water quality by providing them an opportunity to address the aquatic resource impacts of federally issued

permits and licenses (33 USC section 1341). CWA Section 401 states that no federal permit or license can be issued if a proposed action may result in a discharge to WOTUS, unless the USEPA, relevant tribe, or the state certifies that the discharge is consistent with standards and other water quality goals or waives certification (33 USC section 1341). Section 401 of the CWA is required for any project that produces a federal action with construction that could have an impact on surface water quality. In California, jurisdictional authority has been delegated to the Regional Water Quality Control Board (RWQCB) (USEPA 2016a). If a project does not require a federal license or permit but does involve activities that may result in a discharge of harmful substances to waters of the state (WOTS), the RWQCB has the option to regulate such activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements (California Water Code Section 13000 et seq., SWRCB 2018).

Clean Water Act Section 404

The U.S. Army Corps of Engineers (USACE) and USEPA regulate the discharge of dredge or fill material into WOTUS under Section 404 of the CWA. The term "fill" is broadly defined in the CWA, and WOTUS include wetlands, lakes, rivers, streams, and their tributaries. Wetlands are defined for regulatory purposes as areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated solid conditions (33 CFR 328.3; 40 CFR 230.3). If a project discharges any fill materials into WOTUS, including wetlands, before and after the project actions, then a permit must be obtained from the USACE (USEPA 2017).

3.4.2.2 State

California Endangered Species Act

The CDFW has jurisdiction over species listed as threatened or endangered under section 2080 of the California Fish and Game Code (FGC). The California Endangered Species Act (CESA), enacted in 1970, prohibits take of state-listed threatened and endangered species. CESA differs from the FESA in that it does not include habitat destruction in its definition of take. The FGC defines take as, "[to] hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill" (FGC Section 86).

With projects where state-listed species are or have the potential to be present, consultation with CDFW ensures that a project or associated actions would not have a negative effect on state-listed species. During consultation, CDFW determines whether take would occur and identifies "reasonable and prudent alternatives" for the project to ensure adequate conservation of special status species. CDFW can authorize take of a state-listed species under Sections 2080.1 and 2081(b) of the FGC in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under Section 2081(b) must be minimized and fully mitigated. An ITP is required to authorize take of a state-listed species that would occur either during construction or over the life of the project. CDFW also maintains lists for candidate species to be listed under CESA. California candidate species are afforded the same level of protection as threatened or endangered species listed under CESA (CDFW 2018a). California also designates species of special concern (SSC), which are species of limited distribution; declining populations; diminishing habitat; or unusual scientific, recreational, or educational values. These species do not have the same legal protection as state-listed species but may be added to official lists in the future (CDFW 2018b).

In the 1960s, prior to the enactment of the CESA, California created a designation to provide protection to rare species. This designation remains today and is referred to as "Fully Protected" species, which "may not be taken or possessed at any time" (CDFW 2018c).

The Native Plant Protection Act: California FGC Section 1900 et seq.

The Native Plant Protection Act (NPPA) (FGC Section 1900 et seq.) was enacted in 1977 and is administered by CDFW. The NPPA prohibits take of endangered, threatened, or rare plant species native to California, with the exception of special criteria identified in the FGC. A "native plant" means a plant growing in a wild uncultivated state which is normally found native to the plant life of the state. Under the FGC, species become endangered, threatened, or rare when the plants' prospects of survival and reproduction are in immediate jeopardy for one or more causes (FGC Section 1900 et seq). "Rare" species can be defined as species that are broadly disturbed but never abundant where found, narrowly disturbed or clumped yet abundant where found, and narrowly disturbed or clumped and not abundant where found. If potential impacts are identified for a proposed project activity, then consultation with CDFW, permitting, and other mitigation may be required. Endangered, threatened, and rare plant species can be identified through the California Native Plant Society's (CNPS) California Rare Plant Rank (CRPR) (CNPS 2018a).

Nesting Migratory Birds and Raptors: California FGC Sections 3503, 3503.5, and 3800

Sections 3503, 3503.5, and 3800 of the FGC prohibit the take, possession, or destruction of birds, their nests, or eggs. Implementation of the take provisions requires that project-related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle. Disturbances that cause nest abandonment, loss of reproductive effort (e.g., killing or abandonment of eggs or young), or the loss of habitat upon which the birds depend is considered taking and is potentially punishable by fines and/or imprisonment (FGC Sections 3503-3503.5).

Lake and Streambed Alteration Agreement: California FGC Sections 1600-1616

To protect, manage, and conserve rivers, streams, lakes, wetlands, etc., CDFW has jurisdictional authority under FGC Sections 1600-1616 to regulate all work under the jurisdiction of the state. Such work includes those actions that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed. In practice, CDFW marks its jurisdictional limit at the top of the stream or lake bank, or the outer edge of the riparian vegetation (where present) and extends its jurisdiction to the edge of the 100-year floodplain (FGC Sections 1600-1616). CDFW authorizes activity within its jurisdictional authority by entering into a Lake and Streambed Alteration Agreement (LSAA) with an applicant and can impose conditions on the agreement to ensure that no net loss of wetland values or acreage would be incurred. The LSAA is not a permit, but a mutual agreement between CDFW and the applicant (CDFW 2018d).

California Environmental Quality Act: CEQA Guidelines Section 15380

The CEQA Guidelines provide protection for federal- and state-listed species, as well as species not listed federally or by the state that may be considered rare, threated, or endangered, if the species can be shown to meet specific criteria outlined in CEQA Guidelines Section 15380(b). Species that meet these criteria can include "candidate species," species "proposed for listing," and Species of Conservation Concern. Plants appearing on CRPR are considered to meet CEQA's Section 15380 criteria. Impacts on these plants would therefore be considered significant and would require mitigation (CDFW 2018e).

Section 15380 was included to address a potential situation in which a public agency is to review a project that may have a significant effect on a "candidate species," for example, which has not yet been listed by the USFWS or CDFW. Therefore, CEQA enables an agency to protect a special status species from significant project impacts until the respective government agencies have had an opportunity to list the species as protected, if warranted (CDFW 2018e).

Porter-Cologne Water Quality Control Act

Waters of the state are regulated by the RWQCB under the State Water Quality Certification Program. The State Water Quality Certification Program regulates discharges of dredged and fill material to WOTUS through the CWA Section 401 process (as described in Section 3.4.2.1, Federal) but also regulates waters of the state defined as required by the Porter-Cologne Water Quality Control Act. Waters of the state are defined as "any surface water or groundwater, including saline waters, within the boundaries of the State." The RWQCB protects all waters in its regulatory scope but has special responsibility for isolated wetlands and headwaters that may not be regulated by other programs, such as Section 404 or 401 of the CWA. Projects that require a Section 404 CWA permit, or fall under other federal jurisdiction, and have the potential to impact waters of the state are required to comply with the terms of the Section 401 Water Quality Certification Program. If a project does not require a federal license or permit but does involve activities that may result in a discharge of harmful substances to waters of the state, the RWQCB has the option to regulate such activities under its state authority in the form of Waste Discharge Requirements or Certification of Waste Discharge Requirements (California Water Code Section 13000 et seq.; SWRCB 2018).

California Oak Woodlands Conservation Act: California FGC Sections 1360-1372, Public Resource Code 21083.4

The California Oak Woodland Conservation Act (COWCA) defines an oak as "any species in the genus *Quercus*" and an oak woodland as "an oak stand with greater than ten percent canopy cover, or that may have historically supported greater than ten percent canopy cover" (FGC Sections 1360-1372). The COWCA is designed to "support and encourage voluntary, long-term private stewardship and conservation of California's oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands over time" (FGC Sections 1360-1372), as mandated by the Wildlife Conservation Board (WCB). WCB has established grant programs, such as the California Oak Woodlands Conservation Program, that are designed to protect and restore oak woodlands using conservation easements, cost sharing and long-term agreements, technical assistance, and public education and outreach (WCB 2018).

CEQA Public Resources Code (PRC) Section 21083.4 requires counties to determine whether projects within their jurisdiction may result in significant impacts on the environment due to the conversion of oak woodlands and requires that counties adopt specified mitigation measures for significant impacts to oak woodlands. The requirement applies to non-commercial native oak trees with a 5 inches or greater diameter at breast height (DBH), approximately 4.5 feet above ground level. Oaks less than 5 inches DBH would still be subject to any conservation measures contained in applicable local ordinances or general plans.

3.4.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to biological resources within the Program Study Area, including the following:

Goal Area OS-1: Open Space for the Preservation of Natural Resources

- **Policy OS-1.1.** Identify and mitigate impacts to wildlife habitats which support rare, endangered, or threatened species.
- **Policy OS-1.2.** Preserve and enhance creeks in their natural state throughout the planning area.
- **Policy OS-1.4.** Improve and expand the City's urban forest.

3.4.3 Environmental Setting

A combination of desktop analysis and reconnaissance-level field studies were performed to identify existing biological resources in the Program Study Area, including existing biological resources within the footprints of the Program and proposed Projects to support the assessment of potential Program and proposed Project impacts. Sensitive biological resources, such as special status plant and wildlife species; sensitive natural communities; jurisdictional wetlands including vernal pools, streams, and drainages; and wildlife corridors, were identified by desktop analysis within the Program Study Area and by site spot-check reconnaissance-level field survey. The methodology for establishing the setting and the results of the setting review are included below.

3.4.3.1 Methodology

Defining Special Status Species

Special status species are defined as follows:

- Species listed, formally proposed, or designated as candidates for listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for listed plants, 50 CFR 17.11 for listed animals, and various notices in the Federal Register for proposed species);
- Species that are listed, formally proposed, or designated as candidates for listing by California as threatened or endangered under the CESA (14 California Code of Regulations [CCR] 670.5);
- Plants listed as rare under the California Native Plant Protection Act of 1977 (FGC Section 1900 et seq.);
- Plants considered by the CNPS to be Rank 1- a) "plants presumed extirpated in California and either rare or extinct elsewhere, or b) "rare, threatened, or endangered in California and elsewhere";
- Plants considered by CNPS to be a Rank 2- a) Plants presumed extirpated in California, but common elsewhere, or b) "rare, threatened, or endangered in California and common elsewhere";
- Bird species designated by USFWS as Birds of Conservation Concern or protected under the MBTA;

- Wildlife species designated as SSC or Fully Protected by CDFW;
- Plant and wildlife species that are designated as "special animals" or "those of greatest conservation need", by CDFW through the California Natural Diversity Database (CNDDB); and
- Species that meet the definition of rare, threatened, or endangered under Section 15380 of the CEQA guidelines.

Establishing the Biological Setting

The following resources were used to identify special status plant species, wildlife species, and associated habitats that occur or have the potential to occur within a biological study area (BSA) defined as a 5-mile search area surrounding the Program Study Area or the nine- U.S. Geological Survey (USGS) 7.5-minute quadrangles (quads) that are within and surround the Program Study Area including Winton, Yosemite Lake, Haystack Mountain, Arena, Atwater, Merced, Planada, Turner Ranch, Sandy Mush, El Nido, and Plainsburg (USGS nine-quad area):

- Fire and Resource Assessment Program (FRAP) land cover classification data to assess the amount and extent of California's forests and rangelands within the BSA (CAL FIRE 2012);
- Classification and Assessment with Landsat of Visible Ecological Groupings (CALVEG) classification system of existing vegetation to preliminarily identify vegetation types within the Program Study Area (USDA 2018);
- CNDDB records search of special status species observations within the BSA (CDFW 2020b);
- CNPS online Inventory of Rare and Endangered Plants of California within the USGS nine-quad area (CNPS 2020);
- USFWS list of federally proposed, candidate, threatened, and endangered species within the BSA (USFWS 2020a);
- USFWS list of Birds of Conservation Concern (BCC) within the BSA (USFWS 2020a);
- USFWS Critical Habitat data for federally threatened and endangered species within the BSA (USFWS 2020b);
- The National Wetland Inventory (NWI) to identify potential wetlands, potential WOTUS, and associated habitats, that may occur within the Program Study Area (USFWS 2020c); and
- Soil data, including hydric soil assessments for wetland habitat, was assessed and mapped using the United States Department of Agriculture (USDA) Web Soil Survey of the Program Study Area (USDA 2017).
- A February 11, 2019 site spot-check reconnaissance-level biological resources field survey ("field survey") of target locations within the Program Study Area and specific proposed Project areas.

Desktop Review

The sources identified above were then used to establish pertinent environmental setting details relevant to assessing potential impacts associated with implementation of the Program and the proposed Projects The desktop information was reviewed to develop a broad understanding of the vegetation types and potential special status species within the BSA. Specifically, to classify the vegetation communities in the BSA, the CALVEG and FRAP systems were used to establish broad vegetation communities and landcover. The broad classifications were then

refined with Program Study Area queries of known communities and special status species databases as well as previous EIRs for completed in the area (Merced 2010; Merced 2012).

General Spot-Check Reconnaissance-Level Biological Resources Field Survey

The refined classifications of the desktop review were then verified by the February 11, 2019, field survey. The February 11, 2019, field survey was conducted by a qualified botanist and wildlife biologist who performed a general spot-check at a reconnaissance level of the biological resources within the immediate area surrounding the Project Areas and made general observations of the Program Study Area. The survey focused on locations with the Program Study Area where Program components are proposed that are likely to contain sensitive areas, such as stream crossings, special status species habitat, wildlife corridors, and other areas where a potentially significant effect on biological resources could occur. The botanist and wildlife biologist confirmed, further characterized, and evaluated the vegetation communities and habitats occurring within the Program Study Area assessing the potential for these areas to support the identified special status plant and wildlife species, habitats, or communities.

Assessing Special Status Species Presence

This the site condition assessment was then used to further assess the potential for each special species to occur within the Program Study Area. The "potential for occur" ratings were defined by the following classifications:

- **High:** The Program Study Area provides ideal habitat conditions for the special status species and/or includes known populations of the species. Or species were observed during site surveys.
- **Moderate:** The Program Study Area provides suitable habitat for the special status species.
- **Low:** The Program Study Area provides limited habitat for the special status species.
- **Very Low to Nonexistent:** The Program Study Area provides limited to no suitable habitat for the special status species and/or is outside the species known range (geographically and/or based on elevation).

3.4.3.2 Results

The overall review of the BSA through field and desktop review is documented in this section. This information forms the basis of the environmental setting and provides the information that is necessary to reasonably assess potential impacts to biological resources within the Program Study Area. (Appendix C).

Land Cover, Habitat, and Vegetation Community Assessment

The Program Study Area lies within the Central Valley and the California Floristic Province, which is characterized by a Mediterranean climate, with cool, wet winters and hot, dry summers. Elevations within this area range from 153 feet above mean sea level (amsl) near the City's Wastewater Treatment and Reclamation Facility (WWTRF) to 208 feet amsl near the junction of State Route (SR) 140 and Kibby Road. The Program Study Area can be classified as a mix of rural residential disturbed areas with predominantly agricultural and disturbed or ruderal land covers made-up of non-native herbaceous vegetation communities (USDA 2018; CAL FIRE 2012; Merced 2006; Merced 2012; February 11, 2019 Field Survey). When not located along paved roads, the Northern Trunk Sewer Project is located on a mix of predominantly agricultural and non-native grassland land covers and lands classified as rural residential – disturbed – ruderal. Similarly, when not located within paved roads the majority of the proposed Southern Trunk

Sewer Project is predominantly located on agricultural lands characterized as rural residential – disturbed lands – ruderal. The WWTRF is classified as predominantly ruderal and disturbed lands with agricultural cover on the southern portion of the property. These land cover types and vegetation communities, located within the Program Study Area and specifically associated hydrologic features, sensitive habitats, special status species, and wildlife movement corridors that may be impacted are discussed under the subheadings below.

Agricultural

Agricultural lands are the dominant land cover type scattered throughout the Program Area outside the City limits. Agricultural land covers are found along the rural roadways and adjacent to rural residential areas within the Program Study Area. Agricultural land cover types typically include lands where farming and other agricultural practices take place. These practices may include orchards, pastures, vineyards, rice fields, row crops, and other unidentified croplands. Agricultural practices observed throughout the Program Study Area include flood-irrigation, cultivation, and spraying, followed by harvesting and discing. After discing, some fields may remain fallow for periods of time, allowing for the establishment of annual and biennial native and non-native annual grasses and broad-leaved plants. Common agricultural commodities that are produced within the Program Study Area include dairy, almonds, poultry, beef, sweet potatoes, tomatoes, corn silage, grapes for wine, alfalfa, and nurseries.

Rural Residential – Disturbed Lands – Ruderal

The second most predominant land cover type common in the Program Study Area as a whole is rural residential – disturbed – ruderal, which is defined as lands influenced by human activity and disturbance, rural and urban residences, and commercial and industrial areas. Developed land covers include commercial, residential, public and industrial buildings, roadways, schools, utilities, and parking lots. There are also a number of undeveloped lots and open spaces throughout the Program Study Area. In areas that may be impacted by the Program, much of the landscape is disturbed, and where vegetation occurs, non-native species as well as naturalized ornamental species and escaped garden cultivars are dominant. Ornamental plantings are largely made up of introduced woody trees, shrubs, and herbaceous species used in general residential, business, and roadside landscaping. Commonly observed species at the time of surveys included almond, cherry, and plum species (*Prunus* spp.); bull thistle (*Cirsium vulgare*); bur chervil (*Anthriscus caucalis*); coastal heron's bill (*Erodium cicutarium*); common mustard (*Brassica rapa*); Italian thistle (*Carduus pycnocephalus*), and oleander (*Nerium oleander*). Some of these introduced ornamental species have become locally naturalized. This land cover type is not classified as a biological vegetation community; however, its presence within the Program Study Area is noteworthy.

Non-Native Annual Grassland

Non-native annual grasslands land cover type is present throughout the Program Study Area. In areas that could be impacted by the Program this land cover type typically occurs within and adjacent to the ROWs of roads and in areas absent of agricultural fields and crops. This land cover type is an invasive herbaceous biological vegetation community dominated by non-native and often invasive annual grass species, particularly in disturbed and ruderal areas. The establishment of these species is usually due to anthropogenic activities, including livestock grazing, recreation, and development. These grasslands often have reduced biodiversity and habitat suitability for native species. Species composition in non-native annual grassland habitats is similar to those exhibited in pastures and row crop composites. Common non-native annual grasses and other herbaceous species observed at the time of field surveys include clover species (*Trifolium* spp.), common mustard, common sowthistle (*Sonchus oleraceus*),

dandelion species (*Agoseris* spp.), fiddleneck species (*Amsinckia* spp.), hairgrass species (*Deschampsia* sp.), prickly lettuce (*Lactuca serriola*), redstem stork's bill, brome grass (*Bromus* spp.), slender oat (*Avena barbata*), and brome grass species.

Riparian Assemblages

Riparian type plant species documented within the Program Study Area are primarily low stature hydrophytic species (rushes [*Juncus* sp.], ferns), including along and within the various MID ditches, canals, and detention ponds. Opportunistic and invasive species such as Himalayan blackberry, that grow in regularly maintained canals are typically not considered a sensitive natural community because they typically occur in disturbed areas and displace native plant species (Cal-IPC 2019). In addition, the regular and ongoing maintenance and operations of MID facilities and the marginal riparian canopy and potentially high velocity flows present in canals and ditches provide extremely limited habitat for non-special status fish, amphibian, and bird species. Further, no amphibian or fish species were documented in the review of various wildlife databases (e.g., CNDDB), nor during the field surveys conducted within the proposed Project areas.

Riparian vegetation within the Program Study Area varies as it is found along the hydrological features such as Fahrens, Bear, Black Rascal, Cottonwood, Miles, and Owens Creeks. Riparian zones generally provide high-value habitat for a variety of plants and animals and are also known to be areas of high productivity (City of Merced 2010). Riparian areas may provide migration corridors, roosting habitat, and valuable reproductive areas, in addition to food and water for both plants and wildlife.

Within the riparian areas found throughout the Program Study Area, willows (*Salix* spp.) and cattails (*Typha latifolia*) are the dominant plant species. Other species include Fremont's cottonwood (*Populus fremontii*) and Himalayan blackberry (*Rubus armeniacus*). Riparian areas tend to be dense, with vegetation communities dominated by shrubs and associated with running water and wet conditions (City of Merced 2010). Blue elderberry (*Sambucus mexicana*), the host plant of the federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) exists along Bear Creek (City of Merced 2010).

Although there are various Merced Irrigation District (MID) ditches, canals, and detention ponds throughout the Program Study Area, most MID features possess a muddy or concrete substrate and lack riparian vegetation, though there are occasional patches of cattails. Water flow and levels are generally seasonal and not consistent, which does not support adequate plant and wildlife habitat year-round; however, it may be beneficial to seasonal or migratory species (City of Merced 2010).

Wetlands and Other Hydrologic Features

The Program Study Area receives water from two primary sources: local rainfall and runoff from the Sierra Nevada mountain range to the east, which impacts both surface and groundwater resources (City of Merced 2012). Bear Creek flows east to west through central Merced. In addition, Black Rascal, Cottonwood, Miles, and Owens Creeks form the main drainage systems that flow through the Program Study Area (City of Merced 2010). Several MID ditches, canals, and detention ponds also exist throughout the Program Study Area. Seasonal wetlands and vernal pools often support special status plants and animals that have evolved to specialize in these habitats. However, due to habitat loss resulting from agricultural and residential development, much of the Central Valley, which was once dominated by seasonal wetlands, has become mostly fragmented (City of Merced 2010). There is DCH associated

with these vernal pool communities within the Program Study Area, and several known special status species occur within these areas. No DCH, seasonal wetlands, or vernal pools were identified within the specific Project areas or are anticipated within much of the area the Program would be implemented. Several MID ditches, canals, and detention ponds also exist throughout the Program Study Area and within the Project Areas. Lastly, there is a lacustrine habitat, Yosemite Lake, located adjacent to the northeastern boundary about 1.5 miles to the northeast of the Program Study Area with a high concentration of seasonal wetlands and vernal pools (City of Merced 2010; USFWS 2020c).

A section of the forcemain associated with the Northern Trunk Project would cross under Fahrens Creek in the approximately 0.2-mile segment of pipeline that spans the overland section of the alignment between West Cardella Road and East Cardella Road and under Bear Creek and Little Rascal Creek in between Santa Fe Drive and Highway 140. The proposed Northern Trunk Sewer Project would also cross under Hartley Slough just prior to reaching the existing WWTRF. In addition, the proposed Northern and Southern Trunk Sewer Projects would be located adjacent to and/or cross existing MID canals.

Special Status Species Habitats and Other Common Species

As described for the individual land cover types, the proposed Project areas are predominantly made up of agricultural and disturbed and ruderal areas, which have a lower potential to support special status or common wildlife species. However, portions of the Program Study Area include habitats that may support special status species and other common wildlife species. Creeks, irrigation canals, seasonal wetlands, and vernal pools occur within the Program Study Area, with a predominant presence of vernal pools and wetlands in the northeast portion of the Program Study Area (City of Merced 2006). These features are generally associated with DCH that provides suitable habitats (for all life-cycle stages: breeding, feeding, nesting, foraging, and migration) for a variety of special status plant and wildlife species. The Program Study Area has the potential to support a variety of these both special status and common species that may use these habitats during all stages of their life-cycles. For example, typical bird species associated with riparian habitat in this region include songbirds such as northern flicker (*Colaptes auratus*), white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Setophaga coronata*), and spotted towhee (*Pipilo erythrophthalmus*). Common mammal species expected to occur in this habitat type include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*) (City of Merced 2010).

No special status species were observed in the Program Study Area, and specifically, none were observed within the proposed Project areas during the February 11, 2019 field survey. However, the common wildlife species that were observed include western scrub-jay (*Aphelocoma californica*), brown-headed cowbird (*Molothrus ater*), red-winged blackbird (*Agelaius phoeniceus*), red-tailed hawk (*Buteo jamaicensis*), and California ground squirrel (*Otospermophilus beecheyi*). Based on vegetative communities and habitat characteristics within the Program Study Area and adjacent areas, special status species that may occur within the Program Study Area include Swainson's hawk (*Buteo swainsoni*) and burrowing owl (*Athene cunicularia*) as well as other common species such as mule deer (*Odocoileus hemionus*), red-shouldered hawk (*Buteo lineatus*), coyote (*Canis latrans*), and Valley gartersnake (*Thamnophis sirtalis fitchi*).

Wildlife Corridors

Wildlife movement corridors have been recognized by USFWS and CDFW as important habitats worthy of conservation. Wildlife corridors provide migration channels seasonally (i.e., between winter and summer habitats); provide non-migratory wildlife the opportunity to move within their home range for food, cover, and reproduction; and allow for dispersal for individuals to colonize new areas (City of Merced 2010). Vegetation communities and biological communities within the Program Study Area have the potential to support wildlife movement. Specifically, the Program Study Area includes or is located adjacent to vegetation communities in association with riparian, wetland and stream channels and may be considered highly favored habitats to a variety of wildlife species. Other contributing factors that are useful for wildlife migration include undisturbed and continuous expanses of land. Although the majority of the Program Study Area is considered rural, it is largely developed for agricultural purposes and is fragmented by human-made features such as fences, canals, busy roadways (i.e., Highway 99, SR 140, and SR 59), residential areas, and other local land uses. According to CDFW's Terrestrial Connectivity dataset accessed through CDFW's Biogeographic Information and Observation System (BIOS), most of the Program Study Area is ranked as having "limited connectivity opportunity" (e.g., land use limits connectivity options and no connectivity importance identified in models). The northwestern and western region of the Program Study Area falls within the categories of having "connections with implementation flexibility" and "conservation planning linkages," which are areas that have connectivity importance or often represent the best connections between natural habitats to maintain habitat connectivity, respectively (CDFW 2020a). However, there are no designated movement corridors located within the borders of the Program Study Area (City of Merced 2010).

Special Status Species Assessment

As described in Section 3.4.3.1, Methodology, known occurrences of special status plant and wildlife species were queried for the BSA. A total of 71 species (counting nesting migratory birds and raptors as one) were identified. All 71 species identified have known occurrences or possibility to occur within the BSA (within 5 miles of the Program Study Area) were considered for their potential to occur within the Program Study Area (Appendix C, Table C.1). These 71 species can be categorized as follows:

- Thirty-three special status plant species;
- Six special status invertebrate species;
- One special status fish species;
- Four special status reptile species;
- Two special status amphibian species;
- Five special status mammal species; and
- Nineteen special status bird species.

The screening of these species for potential to occur in the Program Study Area, identified four species with high or moderate potential to occur and an additional five species as having a high regional profile despite their low potential to occur. As shown in the following subsections and Table 3.4-1, all eight of these species were wildlife species and no special status plant species were identified.

Special Status Plants

The desktop review of special status plant species identified 33 species known to or with potential to occur within the BSA (See Appendix C, Table C.1). Of these 33 species, all were determined to have a low or nonexistent potential to

occur within the Program Study Area. The habitat requirements for the 33 species were assessed and cross referenced with the land cover types, suitable habitats identified within the Program Study Area, site conditions, field survey results, and land use, soil types, and water sources. Limited to no suitable habitat was found for any of the plant species identified, and therefore, the 33 species are considered to have a low or very low to a nonexistent potential to occur within the Program Study Area (Appendix C, Table C.1) and thereby, within the proposed Project areas too. Additionally, no species were observed during the field survey conducted on February 11, 2019, it is noted, however, there are limitations on the field survey results since they were conducted outside the typical bloom period for the identified species which may mean the special status plant species were undetectable at the time of the survey.

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Table 3.4-1: Special Status Plant and Wildlife Species with High Profiles or Determined to Have a Moderate to High Potential to Occur within the Program Study Area

Common name Scientific name	Legal status			Geographic Distribution/ Floristic Province	Preferred Habitat	Identification Period	Level of Potential to Occur Within the Program Study Area
	Federal	State	CNPS				
Amphibians							
California tiger salamander *Ambystoma californiense*	T, X	T, WL	N/A	Central Valley, and additional isolated populations: Gray Lodge NWR, Sonoma County, and Santa Barbara County. 9-3,500 feet (3-1,067 meters)	Upland grassland, oak savanna, edges of mixed woodland and coniferous forest with vernal pools and ephemeral or perennial ponds for breeding.	Year-round, breed December−February	**Low.** Limited to no suitable breeding habitat (i.e., seasonal pools or ponds) within the Program Study Area, and habitat is mostly located to the northeast, in the vicinity of the UC Merced Campus. There are known occurrences of breeding CTS within 5 miles of the Program Study Area (CDFW 2020b); however, occurrences are located farther than their known dispersal distance of up to 1 mile from breeding habitat (USFWS 2017f). No suitable breeding habitat was observed within the proposed Project areas and no CTS were observed during the February 11, 2019 field survey.
Birds							
Burrowing owl *Athene cunicularia*	BCC	SCC	N/A	Year-round in southeastern California and the Central Valley. Also winters in arid coastal and foothill areas and can be found in northeastern California in the summer.	Open, dry annual or perennial grasslands, deserts, and scrublands with by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.	Year-round	**Moderate.** Suitable nesting habitat and foraging habitat for burrowing owl exists in the agricultural fields in the eastern part of Merced County and in areas within and adjacent to the Program Study Area. According to the desktop review, there have been nine occurrences from 2000 through 2017 within 5 miles of the Program Study Area (CDFW 2020b). Four observations from 2006 to 2007 were documented within approximately 1 mile of the Program Study Area, located northeast of the intersection of South Thornton Road and West Dickenson Ferry Road. The February 11 2019 field survey included a habitat assessment for burrowing owl, and although the habitat assessment was conducted outside of the burrowing owl's typical breeding season, no evidence of presence (i.e., tracks, molted feathers, cast pellets, prey remains, egg shell fragments, owl white wash, etc.) was observed within or directly adjacent to the proposed Project areas.
Swainson's hawk *Buteo swainsoni*	BCC	T	N/A	Northwestern and western United States and Canada (breeding)	For nesting, scattered stands of trees near agricultural fields and grasslands.	Breeding (March–September)	**Moderate.** Suitable nesting habitat and foraging habitat for Swainson's hawk exists in the agricultural fields in the eastern part of Merced County and surrounding Program Study Area. According to CNDDB, there have been 16 known occurrences of Swainson's hawk from 1994 to 2016 within 5 miles of the Program Study Area (CDFW 2020b). No Swainson's hawk were observed during the field survey conducted on February 11, 2019; however, Swainson's hawk are migratory and typically inhabit California during breeding season each year (CDFW 2016).
Tricolored blackbird *Agelaius tricolor*	BCC	T, SSC	N/A	Highly colonial species, most numerous in Central Valley and Coastal Range.	Nest in wetlands cattails, willows, agricultural fields, blackberry thickets near stock ponds or irrigated pastures. Forage in cultivated fields and wetlands.	Year-round	**Moderate.** Potential suitable foraging habitat for tricolored blackbird exists in the agricultural fields within the Program Study Area and adjacent to the specific Project areas. There have been seven occurrences from 2005 to 2015 within 5 miles of the Program Study Area (CDFW 2020b); however, none of these are within or in the immediate vicinity of the proposed Project areas. Additionally, no tricolored blackbirds were observed within the Program Study Area or immediately adjacent to the proposed Project areas during the February 11, 2019 field survey.
Other nesting raptors and migratory birds	MBTA	FGC	N/A	Migrants and resident species	Tree, shrub, ground, grassland, and riparian vegetation.	February–August	**High.** Ideal habitat exists within and adjacent to the Program Study Area, providing a high potential of occurrence for birds protected under the MBTA and FGC to nest within the Program Study Area as well as the proposed Project areas. Common migratory bird species that have the potential to nest and forage within or adjacent to the proposed Project areas may include ground nesting species such as killdeer (Charadrius vociferus) and western meadowlark (Sturnella neglecta); shrub or grassland nesting birds such as bushtit (Psaltriparus minimus) and loggerhead shrike (Lanius ludovicianus); and tree/cavity nesters such as western scrub-jay, acorn woodpecker (Melanerpes formicivorus), red tailed hawk, and red-shouldered hawk. A pair of red-tailed hawks were observed practicing nest building behavior within approximately 500 feet of the Northern Trunk Sewer Project during the February 11, 2019 field survey.

Common name Scientific name	Legal status			Geographic Distribution/ Floristic Province	Preferred Habitat	Identification Period	Level of Potential to Occur Within the Program Study Area
	Federal	State	CNPS				
Mammals							
Hoary bat *Lasiurus cinereus*	–	–	N/A	Throughout California from 0−13,200 feet (0−4,125 meters).	Dense foliage, medium to large trees; open habitats or habitat mosaics with access to trees for cover.	Year-round depending on location and temperature	**Low.** Limited suitable habitat within the Program Study Area. There is one known occurrence (from 1918) within 5 miles of the Program Study Area (CDFW 2020b). During the field survey conducted on February 11, 2019, no evidence of special status bat species was observed within or immediately adjacent to the Program Study Area or proposed Project areas. However, limited potential foraging habitat as well as potential roosting habitat such as tree foliage and human-made structures were observed within areas immediately adjacent to the proposed Project areas and within the Program Study Area.
San Joaquin kit fox *Vulpes macrotis mutica*	E	T	N/A	San Joaquin Valley floor and surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi mountains.	Inhabits annual grasslands or grassy open stages with scattered shrubby vegetation.	Year-round	**Low.** Limited suitable habitat within the Program Study Area. However, there are four known occurrences of foraging adults within five miles of the Program Study Area. During the field survey conducted on February 11, 2019, no evidence of the SJKF was observed within or immediately adjacent to the Program Study Area or proposed Project areas. Although potential foraging habitat, as well as limited suitable denning habitat, may exist within the Program Study Area, habitat availability is present to a lesser extent within the proposed Project areas.
Western mastiff bat mastiff bat *Eumops perotis californicus*	–	SSC	N/A	Central Valley, Coastal Range, southern and eastern California	Open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees, and tunnels.	Year-round	**Low.** Limited suitable habitat within the Program Study Area. There is one known occurrence (from 1991) within 5 miles of the Program Study Area (CDFW 2020b). During the field survey conducted on February 11, 2019, no evidence of special status bat species was observed within or immediately adjacent to the Program Study Area or proposed Project areas. However, limited potential foraging habitat as well as potential roosting habitat such as tree foliage and human-made structures were observed within areas immediately adjacent to the proposed Project areas and within the Program Study Area.

Notes:

Federal

T= threatened under federal Endangered Species Act
E = endangered under federal Endangered Species Act
BCC = bird of conservation concern
MBTA = Migratory Bird Treaty Act
X = Extirpated
– = no listing

State

T = threatened under the California Endangered Species Act
SSC = Species of Special Concern
FGC = Fish and Game Code
WL = Watch List
– = no listing
N/A= Not Applicable

CNPS = California Native Plant Society
NWR = National Wildlife Refuge
Source: Cal EPA 2002, CaliforniaHerps 2018, CDFW 2006, CDFW 2018f–2018h, CDFW 2020b−2020c, CNPS 2018b, Cornell 2018, UC Davis 2018, USEPA 2010, USEPA 2016b, USFWS 2017c–2017f, USFWS 2018d, USFWS 2020a, WBWG 2017

Special Status Wildlife

The desktop review of special status wildlife species within the BSA identified 38 species known to or with potential to occur within the Program Study Area (See Appendix C, Table C.1). Of these 38 species identified, burrowing owl, Swainson's hawk, tricolored blackbird, nesting raptors, and other migratory birds were considered to have a moderate or high potential to occur within the Program Study Area (Table 3.4-1 and Appendix C). No FESA or CESA special status wildlife species were observed within or immediately adjacent to the proposed Project areas or within the Program Study Area during the February 11, 2019 field survey. A pair of MBTA and FGC protected red-tailed hawks were observed practicing nest building behavior within approximately 500 feet of the proposed Northern Trunk Sewer Project alignment during the field survey. The burrowing owl is listed by USFWS as a Bird of Conservation Concern (BBC) and is also listed as a SSC, Swainson's hawk is also a BCC and is designated threatened under CESA, and both burrowing owl and Swainson's hawk, like all nesting raptors and migratory birds, are protected under the MBTA and FGC. In addition, tricolored blackbird, California tiger salamander (*Ambystoma californiense,* CTS), San Joaquin kit fox (*Vulpes macrotis mutica,* SJKF), and special status bat species, while having low potential to occur, are listed under FESA and/or CESA in addition to having a high-profile in the Sacramento/San Joaquin Valley, including known occurrences within 5 miles of the Program Study Area and warrant further consideration for potential impacts within the Program Study Area and the proposed Project areas.

3.4.4 Environmental Impacts

This section analyzes the Program and proposed Project's specific potential to result in significant impacts to biological resources. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.4.4.1 Impact Analysis

Impact BIO-1	**Potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.**

Impact BIO-1 Analysis

Generally, the Program and proposed Projects have the potential to impact the special status species identified in Section 3.4.3.2 and Appendix C, if they were determined to be present within the impact area of a Program or Project activity through habitat modification or potentially direct effect to the species themselves if present within the survey area. As described in Section 3.4.3.1 Methodology and Section 3.4.3.2 Results, the February field survey and database queries were used as screening tools to identify the potential for a species to occur. These tools, however, cannot conclusively eliminate the potential for habitat to be present during the long implementation duration of the Program and even the near-term duration of the proposed Projects. While the likelihood of encountering a special status species during Program and Project implementation is low since most activities would be located underground in existing or future roadways or disturbed areas, the presence of the species, could result in a potential substantial direct or indirect effect to the special status species or their habitat and specific mitigation (BIO MM-1 through BIO MM-10) would be required as described in the following subheadings to mitigation that potential impact.

Program Impacts

Construction

Potential Impacts to Special Status Plant Species

As discussed in the Section 3.4.3.2, Results, 33 special status plant species were identified and assessed for potential to occur within the Program Study Area. Following the analysis of potential suitable habitat characteristics (i.e., site conditions and land use, soil types, and water sources), and an assessment of each individual species' potential to occur within the Program Study Area, all these species were determined to have a low or very low to nonexistent potential to occur. The potential impacts to these species from construction and implementation of the Program were then assessed. Program facilities are reasonably anticipated to be located within future or current ROWs and other disturbed lands throughout the Program Study Area. Program activities are designed to avoid sensitive wetland and riparian habitats through the implementation of trenchless construction methods, that would limit potential impacts to sensitive plants within those communities. As such, the potential for impacts to the identified special status plant species as a result of actions under the Program is low. The likelihood of the Program significantly impacting special status plant populations with a low or nonexistent potential to occur is limited, however, limitations in the field survey (it was conducted outside the bloom period and not protocol-level) combined with the uncertainties associated with the timing and location of the specific Program activities, leave the possibility that a unique population of special status plants could be present and significantly impacted if appropriate precautions are not undertaken.

As a result, pre-construction surveys, as described by MM BIO-1, Pre-Construction Botanical Surveys during the mid-bloom period (i.e., April to June, ideally in May), would be required to confirm the absence or prescribe of special status plant species identified in Appendix C, Table C.1 that could have habitat present within a certain activity under the Program. This survey would need to occur prior to the start of ground disturbing activities in accordance with CDFW survey protocols for the associated plant communities (e.g., grassland, agricultural, riparian, etc.) (CDFW 2018i). MM BIO-1 would effectively avoid or relocate special status plant species subject to potential impacts by Program. Additionally, if special status plant species are identified during preconstruction surveys, implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), would be required to implement a pre-construction Worker Environmental Awareness Program (WEAP) training that would educate construction staff on how to identify these special status species, to stop work in the immediate area in the event of identification, and the steps to avoid or relocate special status species encountered. Therefore, with the implementation of MM BIO-1 and MM BIO-2, direct impacts to special status plant species would be less than significant.

Significant indirect impacts to special status plant species could result if construction equipment or workers were to introduce non-native or invasive species that would have the potential to inhibit the success of native species survivorship by increasing competition for resources. To reduce the potential for spread of invasive noxious species and the potential for their impact on any nearby habitats for special status species, MM BIO-3, Reduce the Spread and Introduction of Invasive Noxious Weeds, would be required. MM BIO-3 would require the City to reduce the potential introduction or spread of invasive noxious weeds by requiring best management practices (BMPs) during construction to appropriately clean and inspect construction equipment brought in from other regions. Implementation

of MM BIO-3 would reduce the potential impact to special status place species from the spread of non-native or invasive species to a less than significant level.

With the implementation of MM BIO-1, MM BIO-2, and MM BIO-3, potential impacts to special status plants would be reduced to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-1, MM BIO-2, and MM BIO-3

Level of Significance After Mitigation: Less than Significant

Potential Impacts to California Tiger Salamander

While CTS has a limited potential to occur within the Program Study Area, its designation as a federal and state threatened species makes it a high-profile species warranting further discussion. CTS could be impacted by the activities under the Program if suitable habitat or if the species itself were to occur within areas impacted by Program activities. Construction activities, including trenching and grading, could directly disturb upland or aquatic habitats occupied by CTS, if present. Potentially resulting in a direct impact to individuals while they are above-ground or in underground burrows or an indirect impact by degrading aquatic, upland, or connecting habitats, increasing human presence, or degrading water quality, etc. Because of the proximity to the Program Study Area, known breeding populations of CTS were considered for potential impacts from the Program; however, the potential for impact was considered less than significant because the known occurrences are outside the 1 mile known dispersal distance of CTS, indicating that Program activities would not be likely to encounter a population of CTS (USFWS 2017f). Water features within the Program Study Area are intermittent and have marginal suitable habitat characteristics to support CTS. No CTS were observed within or immediately adjacent to the Project areas during the field survey conducted on February 11, 2019. As such, limited or no suitable habitat exists within the disturbed road ROWs or is anticipated within the disturbed future road ROWs where Program components are proposed to be located. Additionally, Program component design avoids CTS aquatic habitat by implementation of trenchless technologies. Where trenchless technologies are not implemented aquatic and upland breeding habitat has been designed around. Therefore, the potential for impacts to occur to CTS or their habitat as a result of the Program is very low and considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Burrowing Owl

Burrowing owl could be subject to take (including adults, nests, or eggs, and/or the destruction of its burrowing habitat) prohibited by USFWS and CESA based on its listed designations as BCC and SSC. Take or other prohibited impacts could occur directly during construction activities such as grading, discing, cultivation, earth-moving, burrow blockage and crushing, levee maintenance, and flooding or indirectly through activities such as changes in vegetation

management, eradication of host burrowers, the use of pesticides or rodenticides, or the degradation of nesting, foraging, or over-wintering habitats (CDFG 2012).

As described in Section 3.4.3.2, Results, burrowing owl has a moderate potential to occur in the Program Study Area indicating that habitat or the species could be impacted if present within the area surrounding Program activities. The agricultural fields in the eastern portion of Merced County provide suitable nesting and foraging habitat for burrowing owl. There is a potential for Program activities to occur within these areas of habitat which could result in a significant impact to the species if not properly mitigated by following CDFW guidance on mitigation and avoidance as required by MM BIO-4, Avoid Disturbance to Breeding Burrowing Owl (CDFG 2012). This guidance provides the best-known scientific approach to conducting habitat assessments and surveys, as well as general conservation goals and principles for developing effective mitigation for the burrowing owl impacts (CDFG 2012). Consistent with this guidance, MM BIO-4 requires an update to the desktop assessment and a site-specific field suitable nesting habitat assessment of the area within 492 feet (150 meters) of Program activities as they are proposed (CDFG 2012). MM BIO-4 further prescribes conducting and impact assessment and avoidance or mitigation plan in accordance with the CDFW guidance if the species is found or signs of presence are encountered. MM BIO-4 also provides specific methodology for conducting the habitat assessment, breeding season and non-breeding season surveys, as well as conducting the impact assessment consistent with the CDFW guidance document (CDFG 2012).

Additionally, MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), would be required to educate site personnel on identifying burrowing owl including their habitat as well as the proper procedures in the event that there was a positive identification, including stopping work immediately and consulting the appropriate regulatory agency for further guidance. Last, MM BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds, would also be implemented to protect and avoid identified active burrowing owl burrow sites. As a result, no direct or indirect effects are expected to occur to the burrowing owl and impacts would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-4, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Swainson's Hawk

Swainson's hawk could be subject to take (including adults, nests, or eggs, and/or the destruction of its habitat) prohibited by USFWS and CESA based on its listed designations as BCC and threatened. Take or other prohibited impacts could occur directly during construction activities that result in a disturbance to nesting and foraging habitat or indirectly through activities such as changes in degradation of suitable nesting trees, increase in the use of pesticides on crops or a magnification of consumption in birds, or the elimination of foraging habitat (including on agricultural lands, due to development) (CDFW 2018h).

As described in Section 3.4.3.2, Results, Swainson's hawk has a moderate potential to occur in the Program Study Area indicating that habitat or the species could be impacted if present within the area surrounding Program activities and if Program activities were to occur during the species' active period within California (March to September) (CDFW 2016). Swainson's hawk nest sites are generally found in riparian corridor trees or adjacent to agricultural

fields. Swainson's hawks typically feed in agricultural lands or non-native grasslands where rodent and reptile populations may abound (CDFW 2018h). Suitable nesting habitat and foraging habitat for Swainson's hawk exists in the agricultural fields in the eastern part of the Merced County and surrounding Program Study Area. Eucalyptus trees identified within the Program Study Area make suitable nesting habitat and agricultural fields and open lands support small mammals and invertebrates that would support foraging habitat for the species. There is a potential for Program activities to occur within these areas or to impact these habitats which could result in a significant impact to the species if not properly mitigated by following CDFW guidance on mitigation and avoidance as required by MM BIO-5, Avoid Disturbance to Nesting Swainson's Hawk (SHTAC 2000).

MM BIO-5, requires Swainson's hawk surveys be conducted within 0.5 mile of all identified Program construction activities pursuant to the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000), the current protocol approved by CDFW, and if an active nest is detected, MM BIO-5 requires agency consultation be conducted to determine specific avoidance and/or compensation measures should be implemented to sufficiently mitigation the impact. MM BIO-5 requires that, "to meet the minimum level of protection for the species, surveys should be completed for at least the two survey periods immediately prior to a project's initiation," consistent with the current CDFW-approved protocol (SHTAC 2000). The protocol outlined in MM BIO-5 determined survey periods by timing of migration, courtship, and nesting in a "typical" year for the majority of Swainson's hawks within the Central Valley (dates may be adjusted in consideration of early and late nesting seasons and geographic differences). With MM BIO-5, construction of the Program and proposed Projects poses a very low risk of impacting nesting Swainson's hawk nesting and foraging habitat either directly or indirectly.

Additionally, implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds, would provide construction crews training on identification and avoid potential impacts to Swainson's hawk by limiting disturbances. The potential impacts resulting from Program activities would be mitigated for foraging or nesting Swainson's hawk or their habitat since MM BIO-5, MM BIO-2, and MM BIO-7 would provide the successful identification and avoidance of this habitat and species. Therefore, direct and indirect effects related to construction activities associated with Program activities would result in a less than significant impact to Swainson's hawk with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-5, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Tricolored Blackbird

The tricolored blackbird is native to California, requires open water, and therefore is usually found near freshwater marshes, swamps, and wetlands, often close to agricultural areas. Specifically, the species foraging habitat includes a wide area, but adults feeding nestlings typically concentrate foraging efforts on small, highly productive habitats, including shrublands, pasturelands, wetlands, and rice paddies (UC Davis 2018). Potential foraging habitat for tricolored blackbird exists in the unimpacted habitats of the Program Study Area including cultivated fields and wetlands. However, the likelihood of the Program significantly impacting these wetted habitats is limited due to the nature of the Program serving planned developments and the general nature of placing Program infrastructure within

existing or planned road ROWs or other disturbed areas. Program impacts could occur from construction or operation activities directly affecting cultivated field foraging habitat or in indirect ways as degradation of known nesting colony sites by way of water diversions and draining of wetlands, conversion of habitat to agricultural land and urban areas, and the destruction of breeding colonies in grain fields most often adjacent to dairies (UC Davis 2018).No tricolored blackbird were observed within or immediately adjacent to the Program Study Area during the February 2019 field survey; but survey results may be inconclusive since although the species often remains in California during the winter months, they are not typically in the region at this time of year (Shuford and Gardali 2008). It is anticipated that the Program could and would be designed to avoid wetland habitat; however, the potential for direct and indirect impacts, which if they were to occur could be significant, cannot be eliminated.

MM BIO-6, Avoid Disturbance to Breeding Colonies of Tricolored Blackbird, implements the 2015 CDFW *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields* (CDFW 2015) primarily designed with agricultural activities in mind and are a starting point to ensure that take is avoided and provide guidance to determine where CDFW should be consulted if there is a potential that “take” may not be avoided during construction activities associated with Program implementation. Consistent with the guidance, MM BIO-6, requires that a pre-construction survey be conducted in suitable nesting habitat within approximately 300 feet of construction activities. MM BIO-6 also requires that if an active breeding colony is observed, CDFW’s guidance be followed. Pursuant to this staff guidance, if a breeding colony is found to be within or adjacent to a construction area, potential avoidance measures available under MM BIO-6 would include establishing a buffer zone, altering the work period to according to their nesting stage, and hazing (CDFW 2015). Each measure is further described in the guidance document and is referenced within MM BIO-6.

Additionally, implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds, would provide that construction crews are properly trained on potential impacts, avoidance measures, and disturbance to nesting tricolored blackbirds. The potential impacts resulting from Program activities would be mitigated for foraging or nesting tricolored blackbirds or their habitat since MM BIO-6, MM BIO-2, and MM BIO-7 would provide the successful identification and avoidance of this habitat and species. Therefore, direct and indirect effects related to construction activities associated with Program activities would result in a less than significant impact to tricolored blackbirds with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-6, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Nesting Raptors and Other Migratory Birds

Migratory birds and nesting raptors are protected under the MBTA and FGC and have a high potential to occur within and adjacent to the Program Study Area. Common migratory bird species that have the potential to nest and forage within or adjacent to the proposed Project areas may include ground nesting species such as killdeer (*Charadrius vociferus*) and western meadowlark (*Sturnella neglecta*); shrub or grassland nesting birds such as bushtit (*Psaltriparus minimus*) and loggerhead shrike (*Lanius ludovicianus*); and tree/cavity nesters such as western scrub-jay, acorn woodpecker (*Melanerpes formicivorus*), red tailed hawk, and red-shouldered hawk. Although impacts from

construction or operation of Program activities would be incidental, activities during the nesting season (from about February 15 to August 31 for most species within this region) have the potential to cause direct impacts to birds from the loss of habitat and direct fatality, which could directly impact the survivorship of birds, and the removal or disturbance of active nests may result in breeding failure. Birds could be killed, injured, or disturbed by vehicles or equipment from construction activities. Any disturbance resulting in nest abandonment, the loss of eggs, or direct mortality to a nesting bird would be considered a significant impact. However, the implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds would ensure that protected bird species are identified and appropriately avoided by scheduling disturbance activities outside of the nesting season or by implementing other proscribed avoidance measures that would reduce the potential significance of any potential impact. Therefore, no direct effects are expected to occur to raptors and other migratory birds with mitigation incorporated.

Indirect impacts to birds could result from habitat changes that affect sources of food or breeding suitability. Construction disturbance, such as noise, may cause short-term avoidance of the surrounding area of a Program activity by birds. The introduction of non-native or invasive species could alter breeding or foraging habitat suitability, and habitat fragmentation may impact bird dispersal and increase populations of species that prey on special status birds (e.g., raccoons, brown-headed cowbirds). However, no indirect significant impacts to nesting raptors and other migratory birds protected under the MBTA and the FGC, including special status species, are expected to occur because the Projects would not introduce nonnative or invasive species.

With the implementation of MM BIO-2 and MM BIO-7, potential impacts to nesting migratory birds or raptors would be reduced to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2 and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Special Status Bat Species

Two special status bat species were identified as potentially occurring in the Program Study Area: the hoary bat (state rank S4, Apparently Secure) and the western mastiff bat (SSC) with known occurrences within 5 miles of the Program Study Area. However, both species have a low potential to occur within the Program Study Area due to the limited amounts of their preferred roosting habitat, which includes mostly dense foliage, larger trees, and other large structures such as cliff faces and high buildings (WBWG 2017).

Direct impacts to bats by injury or mortality may result from construction activities that destroy roosting habitat (e.g., removing trees, buildings, etc.). Indirect impacts could result from the removal of habitat, including roosting and foraging habitat, which could potentially cause displacement and decrease overall habitat availability. Construction disturbance, such as noise, may cause short-term avoidance of the immediate area surrounding a construction area. Program activities would generally be located in existing or planned roads or other disturbed areas, not likely to require removal of roosting or foraging habitat, and also not likely to require the removal of trees. Further, construction activities would generally take place during the daytime hours and would not impact the potential

foraging of bats in the Project areas or the general Program Study Area that would likely occur during dusk and nighttime hours. However, if it were required, there could be a potentially significant impact.

Implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-8, Avoid Disturbance to Roosting Bat Species, would ensure that roosting habitat for bats is identified and appropriately avoided if colonies or habitat are present during Program implementation. Therefore, impacts related to roosting special status bat species during construction of the Program would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2 and MM BIO-8

Level of Significance After Mitigation: Less than Significant

Potential Impacts to San Joaquin Kit Fox

Direct impacts to the SJKF could include injury or mortality as a result of construction activities. Common impacts related to construction and facility operation include grading, disking, cultivation, earth-moving, burrow blockage and crushing, levee maintenance, and flooding. Indirect impacts typically include the conversion of native grassland habitats to agricultural or other development, changes in vegetation management, the eradication of host burrowers and prey such as California ground squirrel, the use of pesticides or rodenticides, or the degradation of nesting, foraging, or over-wintering habitats (CDFG 2012).

The desktop review for SJKF identified four observations of non-breeding adults from 1999 to 2001 within 5 miles of the Program Study Area (CDFW 2020b). However, the February 2019 field survey did not identify evidence (i.e., species observations; active den sites, tracks, scat, and prey remains) of SJKF. Although potential foraging habitat exists within the Program Study Area, fragmented development within the region has resulted in the limited availability of suitable denning habitat making the possibility for SJKF occurrence within the Program Study Area low.

Because of the lack of potential denning habitat and signs of SJKF during the field survey, combined with the majority of Project components being in-road or in disturbed areas, proposed Projects pose a low risk of contact with breeding and foraging kit fox. In addition, in recent years successful dispersal of juvenile kit foxes has shown a decrease from their core habitat areas (i.e., western Kern County and Carrizo Plain National Monument), which shows that movement of kit foxes from those core areas is becoming less likely. Although it is unlikely that there would be impacts to the SJKF as a result of Program implementation, habitat assessment and survey would need to be conducted during individual project planning to the conditions of the project site for SJKF foraging or denning habitat. Without being able to eliminate the possibility of occurrence, there could be a potentially significant impact if habitat were to occur within the impact area of a Program activity. Therefore, MM BIO-9, Avoid Disturbance to Breeding San Joaquin Kit Fox, is required to conduct surveys and assessment in accordance with the *USFWS San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999). MM BIO-9 would identify potential SJKF habitat, determine if habitat would be impacted by the Program activity, and identify protection and avoidance measures in accordance with the USFWS protocol as well as in accordance with USFWS consultation and guidance. If USFWS determines that the Program activity would not result in direct impacts (i.e., take), the City may proceed with the activity. However, if USFWS determines that take would occur as a result of the Program activity, the City shall consult with

the USFWS to determine the appropriate measures to avoid impacts to the kit fox. Measures taken could include project modifications; avoidance and minimization measures; and restoration, preservation, or compensatory actions (USFWS 1999). Specific methods and descriptions for conducting the habitat assessment, both breeding season and non-breeding season surveys, and an impact assessment are described further within the guidance document and outlined in MM BIO-9 (USFWS 2011). Implementation of MM BIO-9 would sufficiently mitigate for the risk of SJKF presence and would reduce potential significant impacts to habitat or the species.

To properly implement these measures and reduce all potential for impact, MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), would need to be implemented to educate construction personnel on identification and avoidance of SJKF. Therefore, the potential for direct or indirect effects would be mitigated to a less than significant level, and impacts would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-9

Level of Significance After Mitigation: Less than Significant

Operation

Potential Impacts to Special Status Plants and Wildlife

Once construction is complete, regular operation of the constructed facilities would be restricted to previously disturbed areas and existing roads with no potential habitat or species present not previously identified or mitigated for, therefore, it is generally anticipated that no substantial adverse effects would occur to identified special status species as described in Section 3.4.5, Environmental Setting. However, nesting birds could potentially nest within areas of Program or Project operation, however, it would be assumed that the nesting birds are habituated to those pre-existing operation activities. Yet, in order to avoid take, regular maintenance and operations may require the avoidance of active bird nests if encountered within direct footprints of active operation activities such as maintenance of pipelines or pump stations or daily treatment activities at the WWTRF. Similar to the discussion of nesting birds for construction, impacts to nesting raptors or other migratory bird species could be potentially significant if the nests were physically disturbed or moved resulting in the likelihood of nest abandonment or harm. MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, would provide steps to install exclusion fencing around the nest to prevent accidental impact by City staff or contractors. If an active nest cannot be avoided, the assessment, consultation, and compensation measures of MM BIO-7 would be required to reduce the potential for substantial adverse effect. Therefore, with the implementation of MM BIO-7 and MM BIO-10 this impact would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-7 and MM BIO-10

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Potential impacts from the installation of the proposed Trunk Sewer Projects would be similar to the impacts described for the Program. However, the location and approximate footprints of proposed Trunk Sewer Project infrastructure is known, so additional assessment or exclusion of potential impacts is provided where applicable. Like the impacts and setting described for the Program, the proposed trunk sewer infrastructure has the potential for localized site impacts to sensitive species if species and their habitat exist. With the implementation of the MM BIO-1 through MM BIO-10, these impacts would be less than significant as described for the Program and supplemented by the following subsections:

Potential Impacts to Special Status Plant Species

The proposed Trunk Sewer Projects would be located within previously disturbed areas and existing roads where limited to no suitable habitat exists for special status plants as identified through the desktop screening and February field survey. However, as mentioned in the Program discussion, the field survey was not protocol-level and was conducted outside the typical bloom period for special status plant species listed in Appendix C, therefore, there may be the potential for a unique population of special status plants to be present and significantly impacted. As a result, MM BIO-1 would require preconstruction surveys to mitigate potential impacts as described for the Program. MM BIO-1 would identify and appropriately avoid or relocation previously unidentified special status plant species within the proposed Project areas in accordance with CDFW guidelines mitigating any significant effects. In addition to MM BIO-1, MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-3, Reduce the Spread and Introduction of Invasive Noxious Weeds, would also be implemented. The implementation of MM BIO-2 would ensure that construction personnel are educated on how to identify special status plant species, how to stop work in the immediate area in the event of identification, and how to avoid or mitigate to appropriate standards any encountered special status species. MM BIO-3 would require the City to reduce the potential introduction or spread of invasive noxious weeds by requiring BMPs during construction to appropriately clean and inspect construction equipment brought in from other regions. Therefore, with the implementation of MM BIO-1, BIO-2, and BIO-3, impacts to special status plant species would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-1, MM BIO-2, and MM BIO-3

Level of Significance After Mitigation: Less than Significant

Potential Impacts to California Tiger Salamander

The New Trunk Sewer Projects have been designed to avoid potential impacts to potential CTS habitat, including both aquatic and upland habitats. Similar to the Program, the proposed Trunk Sewer Projects are located outside the dispersal area for the known occurrences of CTS, indicating that Project activities would not be likely to encounter a population of CTS (USFWS 2017f). Water features within the proposed Project areas are intermittent and have marginal suitable habitat characteristics to support CTS. No CTS were observed within or immediately adjacent to the Project areas during the February 2019 field survey. Like the Program, the placement of the new trunk sewer

infrastructure would not interfere with suitable habitat due to the location and installation methods of the Projects. Therefore, the potential for impacts to occur to CTS or their habitat as a result of the Program is very low and considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Burrowing Owl

Potential impacts to burrowing owl from the proposed Trunk Sewer Projects would be similar to the impacts described for the Program. No evidence (i.e., tracks, molted feathers, cast pellets, prey remains, eggshell fragments, owl white wash, etc.) of burrowing owl presence was observed within or directly adjacent to the proposed Project areas during the February 2019 field survey. However, the desktop review identified nine occurrences from 2000 to 2017 within 5 miles of the Program Study Area, four of which from 2006 to 2007 were within 1 mile northeast of the intersection of South Thornton Road and West Dickenson Ferry Road (CDFW 2020b).

While the lack of potential burrow sites and signs of burrowing owl found during the field survey and proposed Project's location within mostly disturbed areas and current or future road ROWs indicate a low risk of impact, the proximity of known occurrences coupled with nearby suitable nesting habitat and foraging habitat in agricultural fields could result in burrowing owl establishment or presence within the Project areas. This potential presence while limited could result in a potentially significant impact. The MMs prescribed for the Program would also apply to the proposed Trunk Sewer Projects. MM BIO-4 would require a survey of the area within 492 feet of the proposed alignments to confirm absence of burrowing owl. If burrowing owl were to be identified, MM BIO-4, MM BIO-2, and MM BIO-7 would be implemented similar to the way described for the Program to effectively identify, mitigate, and protect burrowing owl from potential significant impacts. With the implementation of these measures, the potential impact would be reduced to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-4, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Swainson's Hawk

Potential impacts to Swainson's hawk from the proposed Trunk Sewer Projects would be similar to the impacts described for the Program. No species or evidence of active or inactive nests indicating Swainson's hawk presence was observed within or directly adjacent to the proposed Project areas during the February 2019 field survey. However, the survey was conducted slightly outside the migratory window of March through September and the desktop review identified 16 occurrences from 1994 to 2016 within 5 miles of the Program Study Area (CDFW 2016; CDFW 2020b). None of these recorded occurrences documented nesting Swainson's hawk within or immediately adjacent the proposed Project areas; however, these areas are immediately adjacent to suitable foraging habitat and nesting habitat such as eucalyptus, a common nesting tree species for breeding Swainson's hawk in the Central

Valley. In addition, the nearby agricultural lands and open fields may be used for foraging for small mammals and invertebrates. Similar to the Program, potential suitable nesting and foraging habitat exists adjacent to the Project areas, which could result in a potentially significant impact. MM BIO-2 would be required to educate construction personnel of potential sensitive resources and habitats, MM BIO-5 would be required to avoid disturbance to nesting Swainson's hawk, and MM BIO-7 would be required to avoid potential removal of nesting Swainson's hawk. Therefore, with the implementation of MM BIO-2, MM BIO-5, and MM BIO-7, impacts to Swainson's hawk would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-5, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Tricolored Blackbird

No suitable breeding habitat or foraging habitat was observed within 300 feet of the proposed Project areas during the February 2019 field survey. However, there have been seven occurrences from 2005 to 2015 within 5 miles of the Program Study Area (CDFW 2020b) and the timing of the field survey does not preclude existence within the Project areas. With no potential (inactive) breeding colony sites observed within or directly adjacent to the proposed Project areas during the field survey, and with no wetlands, riparian, or foraging habitat observed that would require removal, impacts resulting from the proposed Trunk Sewer Projects are not anticipated, and impacts are expected to be less than significant. Habitat within the proposed Trunk Sewer Project areas is limited and it is anticipated that any potential habitat such as wetlands and riparian areas would be avoided by trenchless construction methods. However, to be extra protective and to confirm that no breeding habitat would be present within 300 feet of any construction activities, the implementation of MM BIO-6 would ensure that neither the tricolor blackbird nor its breeding habitat shall be impacted as a result of a Project through conducting a pre-construction survey and implementing appropriate avoidance and mitigations, if necessary. Additionally, MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), would educate construction personnel on how to avoid impacts and provide that they are properly trained on the identification and potential impacts to tricolored blackbird and their habitat.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-6, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Nesting Raptors and Other Migratory Birds

As described for the Program, suitable nesting habitat also exists within the proposed Project areas, and therefore, the construction of the proposed Projects has the potential to cause direct and/or indirect impacts to nesting raptors and other migratory birds. Further, a pair of red-tailed hawks were observed practicing nest building behavior within approximately 500 feet of the Northern Trunk Sewer Project alignment during the February 2019 field survey. Similar to the Program, direct or indirect impacts to nesting raptors or migratory birds would be a potentially significant impact. However, the location and installation methods of the proposed Trunk Sewer Projects, limits the potential for

nesting raptors and migratory birds. MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), MM BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds, and MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas impacts would be required to reduce the potential for impacts to a less than significant level. MM BIO-2 and MM BIO-7 would ensure that protected bird species are identified and appropriately avoided by scheduling disturbance activities during non-nesting season or implementing other proscribed avoidance measures that would reduce the potential significance of any potential impact including training construction personnel for how to avoid species. In addition, MM BIO-10 would ensure that active bird nests are adequately marked and avoided during Project implementation. Therefore, with the implementation of MM BIO-2, MM BIO-7, and MM BIO-10, potential impacts to nesting raptors and other migratory birds would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-7, and MM BIO-10

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Special Status Bat Species

No human-made suitable roosting habitat was observed within the proposed Project areas (i.e., culverts) during the February 2019 field survey. Making the likelihood of this potential impact low because the potential for roosting and foraging habitat within and immediately adjacent to the proposed Project areas where construction activities would take place is limited. Additionally, no tree removal is anticipated as a part of the proposed Projects, alleviating the potential for disturbing roosting bats. Further, construction activities would generally take place during the daytime hours and would not impact the potential foraging of bats in the Project areas that would likely occur during dusk and nighttime hours. However, similar to the impacts described for the Program, the timing and extent of the surveys do not exclude the potential for the species to occur entirely and a significant impact could occur from construction activities impacting roosting habitat. With the implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), and MM BIO-8, Avoid Disturbance to Roosting Bat Species impacts to special status bat species are less than significant. MM BIO-2and MM BIO-8 would ensure that construction crews are properly trained on the identification of suitable bat roosting habitat and potential impacts to special status bat species. Therefore, with the implementation of MM BIO-2, and MM BIO-8, impacts to special status bat species are less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2 and MM BIO-8

Level of Significance After Mitigation: Less than Significant

Potential Impacts to San Joaquin Kit Fox

No evidence of SJKF presence was observed within or directly adjacent to the proposed Trunk Sewer Project areas during the February 2019 field survey. This lack of potential den sites or signs of SJKF combined with an examination of the proposed Trunk Sewer Projects' potential for impact, indicate that impacts area unlikely because the Projects will be largely located in highly disturbed areas in existing road ROWs, future road ROWs, or in disturbed habitats.

However, potential suitable foraging habitat may exist in the grassland habitats and agricultural fields adjacent to the Project areas, which also may inhabit an occasional dispersing SJKF. This could result in a potentially significant impact. However, with the implementation of MM BIO-9, Avoid Disturbance to Breeding San Joaquin Kit Fox, and MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), impacts to the SJKF would be less than significant. MM BIO-9 would require a desktop field habitat assessment, and an effects analysis should be conducted prior to the proposed Projects (USFWS 1999), and results shall be submitted to USFWS for evaluation and further guidance. MM BIO-9 would ensure that active SJKF denning sites would be identified and appropriately avoided. Therefore, with the implementation of MM BIO-2 and MM BIO-9, potential impacts to SJKF would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-9

Level of Significance After Mitigation: Less than Significant

Operation

Potential Impacts to Special Status Plants and Wildlife

Similar to the Program description above, there is the potential for migratory birds or nesting raptors to establish nests that conflict with operations of the northern trunk sewer pump station. If a nest is found during operations, MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, would be required to protect the nest until hatchlings fledge. If an active nest cannot be avoided, the assessment, consultation, and compensation measures of MM BIO-7 would be required to reduce the potential for substantial adverse effect. Therefore, with the implementation of MM BIO-7 and MM BIO-10 this impact would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-7 and MM BIO-10

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction

Similar to the Program, the proposed expansions of the WWTRF would have the potential for localized site impacts to sensitive species if species or habitat are found onsite; however, the WWTRF site is comprised of disturbed developed areas and agricultural fields with limited suitable habitat for special status species. Mitigation measures and impacts would apply to the WWTRF Projects as determined by habitat suitability for special status species and species presence as described below.

Potential Impacts to Special Status Plant Species

The proposed WWTRF Expansions Projects would occur within a previously a disturbed region of the WWTRF site where suitable habitat was not found to be present for special status plant species. Therefore, impacts will be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Burrowing Owl

The proposed WWTRF Expansions would occur within a previously a disturbed region of the WWTRF site where suitable nesting habitat for burrowing owl was not found to be present. Therefore, impacts are expected to be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to California Tiger Salamander

The proposed WWTRF Expansions would occur within a previously disturbed region of the WWTRF site where suitable aquatic and uplands habitat for CTS was not found to be present or meet the criteria for this species. Therefore, impacts are expected to be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Swainson's Hawk

The proposed WWTRF Expansions would occur within a previously a disturbed region of the WWTRF site, where suitable nesting and foraging habitat for Swainson's hawk is not present. However, suitable nesting habitat exists (i.e., eucalyptus trees) adjacent to the WWTRF site. As described for the Program, this could result in a potentially significant impact. MM BIO-2 would be required to educate construction personnel of potential sensitive resources and habitats, MM BIO-5 would be required to avoid disturbance to nesting Swainson's hawk, and MM BIO-7 would be required to avoid potential removal of nesting Swainson's hawk. Therefore, with the implementation of MM BIO-2, MM BIO-5, and MM BIO-7, impacts to Swainson's hawk would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-5, and MM BIO-7

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Tricolored blackbird

The proposed WWTRF Expansions would occur within the previously disturbed portions of the WWTRF site, where suitable nesting habitat for tricolored blackbird is not present. Therefore, impacts are expected to be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Nesting Raptors and Other Migratory Birds

The proposed WWTRF Expansions would occur within a previously the disturbed areas of the WWTRF site, but there is suitable nesting habitat adjacent to the WWTRF site as well as within the WWTRF boundary (i.e., for shorebirds, ground-nesting birds, etc.). Similar to the impacts described for the Program, this could result in a potentially significant impact. Therefore, as described for the Program, with the implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), BIO-7, Avoid Disturbance to Nesting Raptors and Other Migratory Birds, and BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, impacts would be reduced to less than significant. With the implementation of MM BIO-2, MM BIO-7, and MM BIO-10, potential impacts to nesting raptors and other migratory birds would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-7, and MM BIO-10

Level of Significance After Mitigation: Less than Significant

Potential Impacts to Special Status Bat Species

The proposed WWTRF Expansions would occur within a previously the disturbed areas of the WWTRF site. Human-made structures exist within the WWTRF boundary and may provide suitable habitat for special status roosting bat species. This could result in a potentially significant impact. Similar to the Program, with the implementation of MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), construction crews would be properly trained on the identification of suitable bat roosting habitat and potential impacts to special status bat species. In addition, MM BIO-8, Avoid Disturbance to Roosting Bat Species, would require a pre-construction habitat assessment on a Project-specific basis. Therefore, with the implementation of MM BIO-2 and MM BIO-8, impacts to special status bat species would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2 and MM BIO-8

Level of Significance After Mitigation: Less than Significant

Potential Impacts to San Joaquin Kit Fox

The proposed WWTRF Expansions would occur within the previously a disturbed areas of the WWTRF site, where no suitable denning habitat and limited to no suitable foraging habitat for the SJKF was found to be present. Therefore, impacts will be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Operation

Similar to the Program description above, there is the potential for migratory birds or nesting raptors to establish nests that conflict with operations of the WWTRF expansions. If a nest is found during operations, MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, would be required to protect the nest until hatchlings fledge. If an active nest cannot be avoided, the assessment, consultation, and compensation measures of MM BIO-7 would be required to reduce the potential for substantial adverse effect. Therefore, with the implementation of MM BIO-7 and MM BIO-10 this impact would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-7 and MM BIO-10

Level of Significance After Mitigation: Less than Significant

Impact BIO-1 Findings

Impact BIO-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact BIO-1 Overall Mitigation Required: MM BIO-1 through MM BIO-10

Impact BIO-1 Overall Level of Significance After Mitigation: Less than Significant

Impact BIO-2	**Potential to 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 Wildlife or U.S. Fish and Wildlife Service.**

Impact BIO-2 Analysis
Program Impacts

Construction and Operation

The Program Study Area is predominantly made up of agricultural and rural residential – disturbed – ruderal lands; however, as described in Section 3.4.3, Environmental Setting, various creeks, irrigation canals, are present and seasonal wetlands and vernal pools are present and scattered to the north of the Program Study Area (City of Merced 2006). These potentially sensitive biological areas exist mainly outside of or not in conflict with, the Program Study Area or areas anticipated to have the majority of Program development. However, if the Program were required to construct facilities within a riparian or other sensitive natural community such as vernal pools, there would be a potentially significant impact. Generally, the Program has been designed with controls to prevent impacts such as implementation of trenchless technologies to avoid streams, water crossings, and sensitive communities, among other things. Wetland plant species documented within the Program Study Area were identified as primarily low stature hydrophytic and upland vegetation along and within the various MID ditches, canals, and detention ponds. Invasive species, such as Himalayan blackberry, that grow in regularly maintained canals, are typically not considered a sensitive natural community because they typically occur in disturbed areas and displace native plant species (Cal-IPC 2019).

Because of the potential for significant impact, the City would implement the following MMs to limit that impact to a less than significant level and prevent significant harm to that sensitive community. MM BIO-2, Pre-Construction Worker Environmental Awareness Program would train construction personnel to identify and avoid riparian and sensitive habitats if they were to encounter previously unmapped communities. BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, includes the requirements to install exclusion fencing for sensitive communities that may be identified. MM BIO-11, Avoid and Reduce Disturbance and Impacts to Riparian Habitat and/or Sensitive Natural Communities, would survey Program activity footprints and limit disturbance (by provisions such as scheduling construction timing in non-wet periods) should riparian areas be identified by inclusion of avoidance procedures and permitting and consultation requirements that meet the requirements for riparian habitat or other sensitive natural communities identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. MM GEO-1, Prepare an Erosion Control and Stormwater Pollution Prevention Plan (as discussed in Section 3.6, Geology and Soils, and Section 3.9, Hydrology and Water Quality) would be implemented to ensure that sediment control BMPs would be in place in any area where construction activities would approach a canal, ditch, or other hydrological feature.

Therefore, with the incorporation of MM BIO-2, MM BIO-10, MM BIO-11, and MM GEO-1, Program construction impacts would be reduced to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-10, MM BIO-11, and MM GEO-1.

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Similar to the impacts described for the Program, the proposed Trunk Sewer Projects have the potential to impact riparian or other sensitive natural communities if construction were to interfere with those areas. Potential impacts from the installation of new trunk sewer infrastructure would generally be the same as described for the Program; however, riparian vegetation was not identified as present within the impact areas of the proposed Projects. Outside and adjacent to the proposed Project areas, riparian vegetation is present along hydrological features such as Fahrens, Bear, Black Rascal, Cottonwood, Miles, and Owens Creeks. However, these areas are outside the proposed Project areas and would not be directly impacted by construction activities. These various creeks and MID canal crossings would, as discussed in Section 2.4.1.2, Pipeline and/or Facility Construction, use trenchless technologies to avoid riparian habitats by tunneling underneath them. Tunneling is a generally sufficient way to avoid impacts to streams and riparian habitats; however, frac outs or other potential impacts can arise during construction that have the potential to be significant if they were to result in degradation of water quality or sensitive habitats were to occur. Impacts would be avoided by compliance with existing water quality laws and regulations, which require preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP) and associated BMPs, as required by MM GEO-1, and thus, would not have a substantial adverse effect to riparian communities. MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), would be required to educate construction personnel of potential impacts and MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas would be required to protect any riparian vegetation that may present changed conditions from the February 2019 survey. Finally, MM BIO-11 would provide specific measures for the assessment and mitigation of the riparian or sensitive habitat community to avoid or provide measures to limit the significance of the potential effect. Therefore, impacts associated with New Trunk Sewer Project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-10, MM BIO-11, and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction and Operation

Expansion of the existing WWTRF would occur within the existing WWTRF property which would result in impacts occurring to previously disturbed areas with no waters or riparian habitats. Given that the expansions would occur in these previously disturbed areas, impacts associated with expansion of the existing WWTRF would not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS and are expected to be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact BIO-2 Findings

Impact BIO-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact BIO-2 Mitigation Required: MM BIO-2, MM BIO-10, and MM GEO-1

Impact BIO-2 Overall Level of Significance After Mitigation: Less than Significant

Impact BIO-3	**Potential to conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance or potential to conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.**

Impact BIO-3 Analysis
Program Impacts and Proposed Projects

Construction and Operation

Potential to Conflict with the City of Merced 2030 General Plan

The Program nor the proposed Projects do not conflict with the City of Merced General Plan Open Space, Conservation, and Recreation Element. Specifically, the Program and proposed Projects are in compliance with Goal Area OS-1: Open Space for the Preservation of Natural Resources and Policies OS-1.1, OS-1.2, and OS-1.4, because during Program and Project development, the City reviewed the wildlife and vegetation resources present within the Program Study Area to identify and protect resources with potentially significant biological, ecological, and recreational value. Habitat classifications, assessments, and field surveys were conducted for special status plant and wildlife species as well has sensitive habitats, allowing for impacts to be avoided, as discussed above.

Specific to Policy OS-1.1: Identify and mitigate impacts to wildlife habitats which support rare, endangered, or threatened species, the Program and proposed Projects have the potential to significantly impact rare, endangered, or threatened, species and their habitats. With the implementation of the MMs defined above, these impacts would be less than significant. A complete impact assessment is included in Impact BIO-1.

In addition, in accordance with General Plan Policy OS-1.2: Preserve and enhance creeks in their natural state throughout the planning area, and as discussed in Impact BIO-2, the Program and proposed Projects would not significantly impact riparian habitat or other natural communities. The Program Study Area is predominantly made up of agricultural and disturbed and ruderal areas and does not include the removal or impacts to trees, including oaks, oak woodlands, and trees along the streets of the City. Therefore, construction and operation of the Program and proposed Projects would result in a less than significant impact related to Policy OS-1.4: Improve and expand the City's urban forest.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-1 through MM BIO-10

Level of Significance After Mitigation: Less than Significant

Potential to Conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or Other Approved Local, Regional, or State Policies and Ordinances

There are no HCPs, NCCPs, or any other approved local, regional, or state HCPs within the vicinity of the Program Study Area (CDFW 2017). The Program Study Area is predominantly made up of agricultural and disturbed and ruderal areas and does not include the removal or impacts to trees, including oaks and oak woodlands, and therefore does not conflict with the COWCA. As such, the Program nor the proposed Projects would have no potential to conflict with HCPs, NCCPs, the COWCA, or other approved local, regional, or state HCPs, ordinances, or policies. Therefore, this impact would be less than significant.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact BIO-3 Findings

Impact BIO-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact BIO-3 Overall Mitigation Required: MM BIO-1 through MM BIO-10

Impact BIO-3 Overall Level of Significance After Mitigation: Less than Significant

Impact BIO-4	**Potential to 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.**

Impact BIO-4 Analysis

Program Impacts

Construction and Operation

According to the City's 2030 General Plan, the surface water system of the region is vulnerable to discharge containing contaminants, and pollution into the surface water is largely from direct stormwater and irrigation water discharges (City of Merced 2012). As described in Section 3.4.3, Environmental Setting, there is a high concentration of wetted areas including vernal pools and wetlands in northeastern portion of the Program Study Area while the remainder of the Program Study Area is predominantly made up of agricultural and disturbed and ruderal areas with the exception of the denoted creeks and MID canals traversing the Program Study Area (USFWS 2020c). Wetland plant species documented within the Program Study Area were identified as primarily low stature hydrophytic and upland vegetation along and within the various MID ditches, canals, and detention ponds.

The Program has been designed to reduce impacts to and avoid federally protected wetlands and federally and state-protected waters by designing to avoid these features by component placement in previously disturbed areas, in existing or planned roadway ROWs and trenchless techniques underneath riparian areas. Therefore, no permanent or direct impacts are expected to occur, and the potential for the Program to have a substantial adverse effect on federally and state-protected wetlands through direct removal, filling, hydrological interruption, or other means is low. However, if a frac out from trenchless technologies were to occur in the stream area or trenchless technologies where to not be feasible there could be direct or indirect significant impacts to a federally or state protected wetland, either directly or indirectly, impacts would be temporary and decreased to a less than significant level with the implementation of MM BIO-12, Avoid and Reduce Disturbance to Waters of the U.S. Other Waters, and Waters of the State. If impacts cannot be avoided, MM BIO-12 requires the City apply for a CWA Section 404 Nationwide Permit through the USACE Sacramento District, and CWA Section 401 Water Quality Certification through the Central Valley Regional Water Quality Control Board (RWQCB) for the permanent and/or temporary impacts (e.g., dredge or fill) of jurisdictional waters. The City shall also be in compliance with existing water quality laws and regulations which require preparation and implementation of a SWPPP and associated BMPs. MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, and MM GEO-1, Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan (as discussed in Section 3.6, Geology and Soils, and Section 3.9, Hydrology and Water Quality) would also be implemented. Therefore, with the incorporation of MM BIO-2, MM BIO-10, MM BIO-12 and MM GEO-1, Program impacts would be reduced to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-10, MM BIO-12, and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Potential impacts from the installation of new trunk sewer infrastructure would be expected to be similar to those described for the Program. New Trunk Sewer Infrastructure Project activities have been designed to avoid wetlands and waters by implementation of trenchless technologies that would avoid impacts. However, if proposed Project activities were not able to avoid the wetland areas there would be a potentially significant impact to federally or state-protected wetland. This impact would be reduced to less than significant with the implementation of MM BIO-12, Avoid and Reduce Disturbance to Waters of the U.S. Other Waters, and Waters of the State. If impacts cannot be avoided, MM BIO-12 would require that the City apply for a CWA Section 404 Nationwide Permit through the USACE Sacramento District, and CWA Section 401 Water Quality Certification through the Central Valley RWQCB for the permanent and temporary impacts (e.g., dredge or fill) of jurisdictional waters. In addition, MM BIO-2, Pre-Construction Worker Environmental Awareness Program Training (Biological Resources), MM BIO-10, Install Exclusion Fencing for Environmentally Sensitive Areas, and MM GEO-1, Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan, would be implemented. Therefore, impacts associated with new trunk sewer infrastructure would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 and Section 401 of the CWA with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM BIO-2, MM BIO-10, MM BIO-12, and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction and Operation

Expansion of the WWTRF would occur within the existing WWTRF boundaries where there are no federally or state protected wetlands. Therefore, expansion of the existing WWTRF expansion would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA, and no mitigation would be required.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact BIO-4 Findings

Impact BIO-4 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact BIO-4 Overall Mitigation Required: MM BIO-2, MM BIO-10, MM BIO-12, MM GEO-1

Impact BIO-4 Overall Level of Significance After Mitigation: Less than Significant

Impact BIO-5	**Potential to 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.**

Impact BIO-5 Analysis

Program Impacts

Construction and Operation

Wildlife movement may include behaviors such as migration (typically one direction per season), interpopulation movement or dispersal (long-term genetic exchange), and small-distance travel (daily movement) within an animal's territory or home range. The linkages between habitat types that allow for wildlife movement can extend for miles between key habitat areas and may occur on a large scale. Though small travel corridors generally facilitate movement for daily activities within a home range (e.g., foraging and avoiding predators), these corridors also provide connection between other populations, allowing gene flow between populations and resulting in a healthier and more heterogeneous population of a particular species.

The Program Study Area is predominantly made up of agricultural and disturbed and ruderal areas and includes features such as irrigation canals. Areas adjacent to the Program Study Area include habitats such as various creeks

and irrigation canals scattered to the north of the Program Study Area (City of Merced 2006), which may provide corridors to facilitate movement of wildlife species within the local region. The presence and or normal velocities of flowing water within these features would remain the same with the construction and operation the Program and would continue to receive and convey the same capacity of stormwater flows.

Although the Program Study Area includes or is located adjacent to natural communities that provide habitat that may be considered highly favored by a variety of wildlife species in regards to allowing them to move from one place to another, it is also largely developed for agricultural purposes and fragmented by human-made features such as fences, busy roadways (i.e., Highway 99, SR 140, and SR 59), residential areas, and other local land use practices. In addition, the Program Study Area does not intersect significant habitats that would increase wildlife movements, and there are no designated movement corridors located within the borders of the Program Study Area (City of Merced 2010).

Therefore, the potential for Program construction or operation activities to interfere substantially with the movement of any native resident or migratory fish or wildlife species, with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, is unlikely. Therefore, impacts to wildlife movement would less than significant, and no mitigation would be required.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Potential impacts from the new trunk sewer infrastructure are expected to be the same as described within the Program impacts above and would result in a less than significant impact. Therefore, construction and operation of the New Trunk Sewer Infrastructure Project would result in a less than significant impact to the movement of any native resident or migratory fish or wildlife species, with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction and Operation

Given that the expansion of the WWTRF would occur within the existing WWTRF property boundaries, impacts associated with the expansions would not interfere substantially with the movement of any native resident or

migratory fish or wildlife species, would impact established native resident or migratory wildlife corridors, or would impede the use of native wildlife nursery sites. Therefore, there would be no impact.

Level of Significance prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact BIO-5 Findings

Impact BIO-5 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact BIO-5 Overall Mitigation Required: None Required

Impact BIO-5 Overall Level of Significance After Mitigation: Less than Significant

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3.4.5 Biological Resources Mitigation

Mitigation Measure GEO-1: Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan

See MM GEO-1, Section 3.6.

Mitigation Measure BIO-1: Pre-Construction Botanical Surveys

A qualified botanist or biologist shall conduct special status botanical surveys prior to construction activities in a given work area. Surveys shall follow protocols designated by the U.S. Fish and Wildlife Service (USFWS) (1996), California Department of Fish and Wildlife (CDFW) (2018j) and California Native Plant Society (CNPS) (2001) and shall occur during the appropriate floristic bloom periods for the special status species identified as having a potential to occur in the Program Study Area (Appendix C, Table C.1). The majority of special status species with a potential to occur in the Program Study Area have an overlapping bloom period such that if surveys are conducted between April and June (i.e., ideally mid-bloom period in May), target special status species are most likely to be identifiable.

Given that Program activities would largely be conducted within disturbed areas, the probability of impacting a special status plant species is low. If special status plants are not detected during pre-construction botanical surveys, no further mitigation is required. However, if special status plant species are identified within the Program Study Area, their locations shall be mapped, and the City shall require the implementation of the following measures:

1. If feasible, construction activities shall avoid special status plants by installing an exclusion area with fencing and signage located at least 10 feet from special status plant populations.

2. If avoidance is not feasible, the City shall consult with the appropriate regulatory agency (i.e., USFWS for federally listed species and CDFW for state- and CNPS-listed species) to identify appropriate procedures and measures capable of reducing impacts to a less than significant level. Recommended measures to mitigate impacts to special status species may include those found in the *Policy on Mitigation Guidelines Regarding Impacts to Rare, Threatened, and Endangered Plants* (CNPS 1991). Other measures may include compensation for any impacts to special status plants via replacement (e.g., seed collection and replanting or transplanting of

plants) or substitute resources (e.g., mitigation fees) as defined by regulatory agencies. The City shall implement all measures recommended by the appropriate regulatory agencies.

Mitigation Measure BIO-1 Implementation

Responsible Party: The City

Timing: Pre-construction botanical surveys for special status species shall be conducted by a qualified botanist or biologist between April and June (i.e., ideally during the mid-bloom period in May), or as otherwise deemed appropriate by a qualified botanist.

Monitoring and Reporting Program: The survey shall be conducted by a qualified botanist, and a brief Botanical Survey Results Report shall be completed and kept on file with the City. If special status species are encountered, the Pre-Construction Botanical Survey Report shall be submitted to the appropriate regulatory agencies (i.e., CDFW and/or USFWS).

Standards for Success: The presence or absence of special status plant species shall be documented and, if observed, shall be handled and mitigated according to the performance standards outlined above and developed with the appropriate regulatory agencies.

Mitigation Measure BIO-2: Pre-Construction Worker Environmental Awareness Program (Biological Resources)

The purpose of a Worker Environmental Awareness Program (WEAP) training is to educate personnel (i.e., construction workers) about the existing onsite and surrounding resources and the measures required to protect these resources as well as avoidance and potential hazards within these sites to or from these resources. The WEAP, developed by the City, shall include materials and information on potentially sensitive biological and the resources identified as mitigation in other sections of this EIR that require protection, procedures, or identification during construction. The WEAP training shall educate personnel about the applicable precautions that personnel should take to reduce potential impacts.

The WEAP training shall be given to all personnel who may be responsible for causing a significant impact as identified within the Section 3.4.4 of the Draft EIR and below. The WEAP training shall be given on a Project-specific level prior to the start of construction of each Program activity and as necessary throughout the life of construction as new personnel arrive onsite. The City and the contractor are responsible for ensuring that all onsite personnel attend the WEAP training, receive a summary handout, and sign a training attendance acknowledgement form to indicate that the contents of the WEAP are understood and to provide proof of attendance. Each participant of the WEAP training shall be responsible for maintaining their copy of the WEAP reference materials and making sure that other onsite personnel are complying with the recommended precautions. The contractor shall keep the sign-in sheet onsite and shall submit copies of the WEAP sign-in sheet to the City's Project Manager, who shall keep it on file at City offices.

For the biological resources portion of the WEAP training, the following information and implementation steps shall be prepared and presented to aid in the prevention of and to raise awareness of the potential impacts to biological resources:

- How to identify the special status species identified to potentially occur within the project limits consistent with other biological mitigation measures. An overview of species identified with potential to occur in the Program Study Area (as identified in Appendix C of the Draft EIR) shall be given with an emphasis on those species identified or with a medium to high potential to occur within the project limits (identified in Table 3.4-1 of the Draft EIR and subsequently by surveys required during implementation of other mitigation measures). A review of the avoidance measures and best management practices (BMPs) incorporated to prevent impacts to those species and regulations as well as applicable civil and criminal penalties associated with violations shall also be provided;

- If special status species are encountered in the work area, construction shall cease within the species habitat range, and the City and a qualified environmental representative shall be notified for guidance on appropriate MMs to be implemented before any construction activities are resumed. Depending on the federal or state listing status, the observed species, and its persistence in the area, the City shall consult with the USFWS and CDFW for guidance;

- Remove litter and other debris that might attract animals from the construction site daily and store it in enclosed containers; and

- Exclude pets from the Program site, including access roads and staging areas.

WEAP materials shall be provided by the City and kept onsite for use by an environmentally trained foreman for training new Program personnel in the absence of the City representative. If special status species are encountered in the Project work area, construction shall cease, and the City, as well as a qualified environmental representative shall be notified for guidance on appropriate MMs, to be implemented before any construction activities are resumed. Depending on the listing of the observed special status species and its persistence in the area, the City shall consult with the USFWS and/or CDFW for guidance.

Mitigation Measure BIO-2 Implementation

Responsible Party: The City and the contractor

Timing: The WEAP training shall be conducted on a project-specific level prior to construction of each Project and throughout construction activities as new personnel arrive on the Program site. Avoidance or buffer zones will be marked before construction begins.

Monitoring and Reporting Program: Development of a WEAP and handout packet in accordance with this mitigation measure and any other resource-specific WEAP requirements. A sign-in sheet for each Project shall be completed for all workers on the construction site and shall be kept at the Program site, and copies shall be submitted to the City's Project Manager to be kept on file at City offices.

Standards for Success: The prevention of biological resources from being disturbed or destroyed by Program activities. Ensure that construction personnel are trained in the key characteristics for identifying and avoiding impacts to special status species and sensitive habitats.

Mitigation Measure BIO-3: Reduce the Spread and Introduction of Invasive Noxious Weeds

Invasive and noxious weeds have the potential to directly and indirectly impact plant communities at or near the Program Study Area. To reduce the spread and introduction of invasive and noxious weeds, the following measures shall be implemented:

1. All Program-related equipment and vehicles shall be decontaminated and inspected for soils or other evidence of materials containing invasive or noxious weed seeds prior to entering the Project region and prior to initiation of work on the Program;

2. Invasive plants and noxious weeds shall be abated by discing, mowing, or rototilling. All weeds shall be disposed of offsite at an appropriate bio-waste disposal location; and

3. Any topsoil, mulch, and seed used in Program-related activities (e.g., restoration, reseeding, erosion control, and soil stabilization) shall be certified weed-free through visual inspection and/or a signed affidavit from the contractor.

Mitigation Measure BIO-3 Implementation

Responsible Party: The City

Timing: Prior to the initiation of construction with each new piece of equipment and other materials.

Monitoring and Reporting Program: The City shall verify that all equipment and other materials brought onsite are certified weed-free through visual inspection and/or a signed affidavit from the contractor.

Standards for Success: Minimize the potential for introduction and/or spread of invasive and noxious weed species into the Program Study Area through visual inspection of equipment and other materials and/or signed affidavits from the contractor of weed free certification.

Mitigation Measure BIO-4: Avoid Disturbance to Breeding Burrowing Owl

For Program and proposed Project activities, this MM requires an update to the desktop screenings and a field suitable nesting habitat assessment of the areas within 492 feet (150 meters) of the proposed activity in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). If burrowing owl, evidence of their presence, and/or their habitat is identified during the desktop screening and field survey the CDFW guidance shall be followed to incorporate the general conservation goals and principals prescribed for developing effective mitigation for the burrowing owl impacts (CDFG 2012). If the species is identified as present, the City shall consult with CDFW and follow the specific methodology and mitigation prescribed in the guidance (CDFG 2012). Methods for conducting the habitat assessment, breeding season and non-breeding season surveys, as well as conducting the impact assessment shall be consistent with the CDFW guidance document (CDFG 2012).

Mitigation Measure BIO-4 Implementation

Responsible Party: The City

Timing: Field habitat assessment, field surveys, and/or impact assessment shall be conducted prior to construction activities in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

Monitoring and Reporting Program: Surveys and data collection shall be conducted by a qualified biologist, and reporting shall be completed in accordance with the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Results of habitat assessment, field surveys, and/or impact assessment conducted shall be compiled in a brief Burrowing Owl Survey Results Report and kept on file with the City. In addition, all mitigation methods developed and implemented by the City shall be documented and kept on file by the City.

Standards for Success: Burrowing owls would not be significantly impacted by the Program activities, and therefore the Project would help meet the conservation goals for the burrowing owl in California as stated in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).

Mitigation Measure BIO-5: Avoid Disturbance to Nesting Swainson's Hawk

In accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000), surveys shall be conducted within 0.5 mile of all Program activities. Surveys shall be completed for the two survey periods immediately prior to a Project's initiation, as defined within the protocol above. The defined survey periods are determined by timing of migration, courtship, and nesting in a typical year for the majority of Swainson's hawks within California's Central Valley. Dates may be adjusted in consideration of early and late nesting seasons, and geographic differences. If an active nest is detected, the City shall follow recommendations included within CDFW's *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsoni) in the Central Valley of California* (CDFW 1994) as well as consult with CDFW to determine the most appropriate mitigation methods for a specific Project.

Mitigation Measure BIO-5 Implementation

Responsible Party: The City

Timing: Prior to the initiation of construction per suggested survey timing within the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000).

Monitoring and Reporting Program: The survey shall be conducted by a qualified biologist, and results of surveys conducted will be compiled in a brief Swainson's Hawk Survey Results Report and kept on file with the City, in addition to any reporting requirements as stipulated by CDFW in the event that active Swainson's hawk nests are within 0.5 mile of the a Project area. If an active Swainson's hawk nest is observed, the City shall submit occurrence data via CDFW's online California Natural Diversity Database submission form.

Standards for Success: Nesting Swainson's hawk will not be impacted by the Program.

Mitigation Measure BIO-6: Avoid Disturbance to Breeding Colonies of Tricolored Blackbird

Prior to Program implementation, a pre-construction survey shall be conducted in accordance with the *Staff Guidance Regarding Avoidance of Impacts to Tricolored Blackbird Breeding Colonies on Agricultural Fields* (CDFW 2015). The survey shall be conducted in suitable nesting habitat within approximately 300 feet of Program activities. If an active

breeding colony is observed, CDFW's guidance should be followed (i.e., if a breeding colony is within or adjacent to the Program Study Area, potential avoidance measures include establishing a buffer zone, altering work period to according to their nesting stage, hazing, etc.). Please note that the measures described within this document were developed primarily with agricultural activities in mind and are a starting point to ensure that "take" (to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") is avoided. Therefore, if there is additional concern that take may not be avoided due to Program activities, CDFW shall be consulted for guidance so additional and the most appropriate avoidance measures will be developed and implemented from the specific Project.

Mitigation Measure BIO-6 Implementation

Responsible Party: The City

Timing: Pre-construction survey and applicable avoidance measures shall be conducted prior to the initiation of Project construction.

Monitoring and Reporting Program: The survey shall be conducted by a qualified biologist and results of surveys conducted will be compiled in a brief Tricolored Blackbird Survey Results Report and kept on file with the City in addition to any reporting requirements as stipulated by CDFW in the event that active breeding colonies of tricolored blackbird may be directly impacted as a result of Project activities.

Standards for Success: Breeding colonies of the tricolored blackbird will not be impacted by the Project.

Mitigation Measure BIO-7: Avoid Disturbance to Nesting Raptors and Other Migratory Birds

To the extent feasible, vegetation removal activities shall be conducted during the non-nesting season (i.e., about from September 1 to February 14). If construction, such as tree removal, trench excavation, pipe installation, etc., have the potential to disturb nesting birds occurs during the nesting season, then a qualified biologist shall conduct a pre-construction nesting bird survey prior to vegetation removal or ground disturbing activities in a given area with the following criteria:

- Surveys shall be conducted within the Program Study Area and all potential nesting habitat for passerine species within approximately 100 feet of this area, and raptor species within approximately 500 feet of this area.
- The surveys should be conducted within one week before initiation of construction activities at any time between February 15 and August 31. If no active nests are detected, then no additional mitigation is required.
- If surveys indicate the presence of nesting birds within the survey area, the biologist shall establish an exclusion buffer (consistent with MM BIO-10) around the nest in which no work would be allowed until the young have successfully fledged or the nest has been abandoned. The size of the exclusion zone shall be determined by a qualified biologist and shall depend on the status of the species present, the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, other topographical or artificial barriers, and the sensitivity of the nesting bird to the disturbance. In general, exclusion zones of up to 500 feet for raptors and approximately 150 feet for passerines are sufficient to prevent substantial disturbance to nesting birds. However, these buffers may be increased or decreased at the discretion of the biologist, as appropriate. Active nest sites shall be monitored periodically throughout the nesting season to identify any sign of disturbance.

- If nesting birds are documented to have established themselves in a given location within the Program Study Area during pre-existing construction activities, then it shall be assumed that the nesting birds are habituated to the construction activities. Under this scenario, the active nest shall be monitored by a qualified biologist periodically until the young have successfully fledged, or the nest has been abandoned, as described above.
- If active nests are identified on or immediately adjacent to the Program Study Area, then all non-essential construction activities (e.g., equipment storage and meetings) should be avoided in the immediate vicinity of the nest site, but the remainder of construction activities may proceed.

Mitigation Measure BIO-7 Implementation

Responsible Party: The City.

Timing: A pre-construction nesting survey shall be conducted by a qualified biologist within one week prior to construction in any given area of the Program, should the Program be initiated between February 15 and August 31.

Monitoring and Reporting Program: The survey(s) shall be conducted by a qualified biologist, and a brief Nesting Raptor and Migratory Bird Survey Results Report shall be documented and kept on file with the City.

Standards for Success: Special status species and nesting birds covered under the Migratory Bird Treaty Act shall not be disturbed during the Program construction activities; exclusion buffers will be installed and monitored, as necessary.

Mitigation Measure BIO-8: Avoid Disturbance to Roosting Bat Species

Special status bat species that occur in the Program Study Area may roost in human-made structures or trees within or directly adjacent to the Program Study Area. Special status bat species may be found foraging in nearby open areas, agricultural, or grasslands within the vicinity of the Program Study Area. The City shall conduct a pre-construction habitat assessment on a Project-specific basis. If a Project area includes suitable roosting habitat such as large diameter trees, snags, or human-made structures such as buildings, bridges and culverts, and that this habitat cannot be avoided, the City must conduct a pre-construction bat roosting survey at least 45 days prior to construction. If roosting habitat is identified, removal of that potential roost habitat identified during the assessment shall be avoided, and no further mitigation is required. If removal of potential roost habitat is found to be necessary, and additional pre-construction inspections for bats within the potential roosting habitat shall be conducted using an appropriate method (e.g., camera inspection, exit survey with night optics, or acoustic survey). If bats are observed during the roost habitat survey, then appropriate methods, including timing (i.e., removal of an active maternity roost shall not occur), shall be determined by a qualified biologist in communication by CDFW. Additionally, if bats are observed during the roost habitat survey, construction hours shall be limited to 6:00 a.m. and 6:00 p.m. If an active roost or maternity roost is identified within the Program Study Area, but not subject to removal, exclusion fencing shall be installed in accordance with MM BIO-10.

Mitigation Measure BIO-8 Implementation

Responsible Party: The City

Timing: Prior to the construction of a proposed Project, a habitat assessment shall be completed for the presence of bat roosting habitat. If bat roosting habitat is present within the project area and cannot be avoided, the City shall conduct a pre-construction bat roosting survey shall be conducted by a qualified biologist within 45 days prior to of commencement of construction, including vegetation removal to determine the presence or absence of roosting bats. If roosting bats are observed in the Project area and cannot be avoided, CDFW shall be consulted for further guidance to define the appropriate avoidance measures to move forward. Construction may not commence prior to the removal of the roost habitat according to a method determined by a qualified biologist in communication with CDFW.

Monitoring and Reporting Program: Each Project-specific habitat assessment and bat roost survey shall be conducted by a qualified biologist familiar with California bat species. If removal of bat roosting habitat is necessary, methods shall be determined by a qualified bat biologist in communication with CDFW. Following all required surveys and roosting habitat removal, all results shall be documented in a brief Special Status Bat Survey Results Memo that shall be kept on file with the City.

Standards for Success: Special status roosting bat species shall not be directly impacted as a result of Program activities.

Mitigation Measure BIO-9: Avoid Disturbance to Breeding San Joaquin Kit Fox

In accordance with the *USFWS San Joaquin Kit Fox Survey Protocol for the Northern Range* (USFWS 1999), a desktop, field habitat assessment, and effects analysis shall be conducted, and the results shall be submitted to the USFWS so that they may evaluate the assessment to determine the presence, quality, and value of kit fox habitat. If USFWS determines that the Project will not result in direct impacts (i.e., take), the City may proceed with the Project. However, if the USFWS determines that take will occur as a result of the Project, the City shall work with USFWS to determine the appropriate measures to avoid impacts to the kit fox. This may include project modifications; avoidance and minimization measures; and restoration, preservation, or compensatory actions (USFWS 1999). Specific and typical recommendations for measures for the protection of SJKF may also be found in the *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior To or During Ground Disturbance* (USFWS 2011).

Mitigation Measure BIO-9 Implementation

Responsible Party: The City

Timing: A desktop field habitat assessment and effects analysis shall be conducted prior to Program construction activities, results submitted to USFWS at least 30 days prior to construction of the proposed Project activities. In accordance with the *USFWS San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS*).

Monitoring and Reporting Program: Surveys and data collection shall be conducted by a qualified biologist and reporting shall be completed in accordance with the *USFWS San Joaquin Kit Fox Survey Protocol for the Northern Range (USFWS)*. Results of habitat assessments, field surveys, and impact assessments conducted will be submitted to USFWS and kept on file with the City. In addition, all mitigation methods developed and implemented by the City shall be documented and kept on file with the City.

Standards for Success: SJKF will not be impacted by the Program.

Mitigation Measure BIO-10: Install Exclusion Fencing for Environmentally Sensitive Areas

Where necessary, the City shall install exclusionary fencing around environmentally sensitive areas prior to construction or during operation. The fencing shall delineate environmentally sensitive area buffers to assist the Program personnel avoid impacts to environmentally sensitive areas (e.g., special status plant occurrences, active bird nests, riparian habitat, sensitive biological communities, and waters of the U.S. [WOTUS]) by staying within the Program construction footprint or avoiding sensitive areas within operational areas (i.e., active bird nest). During the construction phase of a Project, these avoidance areas will be identified prior to initiating construction activities, will be included within construction plans as appropriate, and will be protected by the installation of appropriate exclusion zone fencing. Sensitive areas observed during the operational phase of a project (i.e., active bird nests) will be addressed as needed.

Mitigation Measure BIO-10 Implementation

Responsible Party: The City

Timing: During the construction phase, a qualified biologist shall delineate biologically sensitive areas prior to construction via flagging, and the contractor shall then install exclusion fencing, also prior to Program construction. Sensitive areas observed during regular operation will be addressed as needed.

Monitoring and Reporting Program: The City shall verify the exclusion area fencing is properly installed and maintained throughout Program activities.

Standards of Success: No impacts shall occur to environmentally sensitive areas.

Mitigation Measure BIO-11: Avoid and Reduce Disturbance and Impacts to Riparian Habitat and/or Sensitive Natural Communities

The City plans to avoid and reduce potential impacts to riparian habitat and/or sensitive natural communities. If avoidance is not feasible, the City shall apply and obtain a Lake and Streambed Alteration Agreement (LSAA) through CDFW prior to Program activities.

Work including those actions that would substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed shall be addressed within the approved LSAA, including temporary impacts to riparian vegetation. To avoid and reduce disturbance and impacts to riparian habitat and sensitive natural communities, the following shall be implemented:

1. If riparian habitat or any other natural communities are present within the Program Study Area, then they shall be identified and flagged and/or mapped by a qualified biologist prior to construction activities. Specifically, when working within 100 feet of a water feature (e.g., creeks, irrigation canals, seasonal wetlands, and vernal pools) exclusion fencing shall be installed that delineates the area to be avoided.

2. All riparian vegetation disturbance shall be avoided during Program implementation. Activities shall be confined to the defined Program work areas, including access routes and staging areas. Active work shall not occur in areas designated as exclusionary by the qualified biologist.

3. If riparian habitat or other sensitive natural communities are present within and/or adjacent to the Program Study Area, all onsite personnel shall be instructed on the importance of avoiding and reducing disturbance in these areas if present within the Program Study Area.

4. If impacts to riparian habitat cannot be avoided, the City shall obtain a LSAA from CDFW prior to Program activities.

Mitigation Measure BIO-11 Implementation

Responsible Party: The City shall ensure that a qualified biologist conducts pre-construction sensitive area and habitat delineation of environmentally sensitive areas, and where appropriate, flag where exclusion fencing shall be installed to show what areas shall be avoided. If Program activities cannot avoid riparian habitat or sensitive communities, the City shall obtain an LSAA from CDFW.

Timing: Exclusion fencing and buffer distances shall be established prior to any work, including staging or ground-disturbing activities within the Program Study Area, including staging and access areas. If necessary, a LSAA must be obtained prior to the commencement of Program activities.

Monitoring and Reporting Program: Following the pre-construction sensitive area/habitat delineation and flagging of exclusion areas within the Program Study Area, a brief technical memorandum shall be completed and kept on file with the City. If a LSAA is required for the Program, the City shall complete required reporting per LSAA permit stipulations.

Standards for Success: Impacts to riparian habitat and other sensitive natural communities shall be avoided and minimized to the greatest extent feasible.

Mitigation Measure BIO-12: Avoid and Reduce Disturbance to Waters of the United States, Other Waters, and Waters of the State

The City plans to avoid potential impacts to WOTUS, other waters, and waters of the state (WOTS) to the extent feasible. If avoidance is not feasible, the City shall apply for a Clean Water Act (CWA) Section 404 Nationwide Permit through the U.S. Army Corps of Engineers Sacramento District, and CWA Section 401 Water Quality Certification through the Central Valley RWQCB for the permanent and/or temporary impacts (e.g., dredge or fill) of jurisdictional waters. Temporary impacts to jurisdictional waters shall be addressed with first, on-site restoration, if possible, then if not possible through compensatory mitigation, for impacts from Program activities.

Mitigation Measure BIO-12 Implementation

Responsible Party: The City is responsible for applying for all permits and acquiring the appropriate approvals needed for temporary and/or permanent impacts to WOTUS, other waters, and WOTS within the proposed Program Study Area.

Timing: Permits shall be obtained prior to construction.

Monitoring and Reporting Program: The City shall ensure that all permits are obtained prior to construction and the appropriate fees paid, including any for compensatory mitigation, as needed. The City

shall comply with Program permit stipulations. The City shall prepare a brief technical memorandum on the compliance with this mitigation measure for City files and the permitting agencies, as needed.

Standards for Success: No permanent impacts to WOTUS, other waters, and/or WOTS.

3.4.6 Abbreviations

amsl	Above Mean Sea Level
BGEPA	Bald and Golden Eagle Protection Act
BCC	Birds of Conservation Concern
BMP	Best Management Practice
BSA	Biological Study Area
CAL FIRE	California Department of Forestry and Fire Protection
CALVEG	Classification and Assessment with Landsat of Visible Ecological Groupings
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Merced
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
County	Merced County
COWCA	California Oak Woodland Conservation Act
CRPR	California Rare Plant Rank
CTS	California Tiger Salamander
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
DCH	Designated Critical Habitat
EIR	Environmental Impact Report
ESA	Endangered Species Act
FGC	California Fish and Game Code
FRAP	Fire and Resources Assessment Program
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
LSAA	Lake and Streambed Alternation Agreement
MBTA	Migratory Bird Treaty Act
MCV	Manual of California Vegetation
Mgal/d	Million Gallons Per Day
MID	Merced Irrigation District
MM	Mitigation Measure
NCCP	Natural Community Conservation Plan

NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOP	Notice of Preparation
NPPA	Native Plant Protection Act
NVC	National Vegetation Classification
NWI	National Wetland Inventory
PRC	Public Resources Code
ROW	Right-of-Way
RWQCB	Central Valley Regional Water Quality Control Board
SJKF	San Joaquin Kit Fox
SR	State Route
SSC	Species of Special Concern
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
U.S.	United States
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WEAP	Worker Environmental Awareness Program
WOTS	Waters of the State
WOTUS	Waters of the United States
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

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3.5 CULTURAL RESOURCES AND TRIBAL CULTURAL RESOURCES

3.5.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5.
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- Disturb any human remains, including those interred outside of formal cemeteries?
- 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, or object with cultural value to the California Native American tribe, and that is 1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historic resources as defined in Public Resource Code section 5020.1(k); or 2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to cultural resources of tribal cultural resources that may result from implementation of the Program, identifying mitigation for significant impacts, where feasible.

3.5.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives that relate to cultural resources or tribal cultural resources and are relevant to the Program.

3.5.2.1 Federal

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966 requires federal agencies or those they fund or permit to consider the effects of their actions on historic properties. This Program does not involve a federal undertaking or federal funding.

3.5.2.2 State

California Environmental Quality Act

CEQA consists of statutory provisions in the Public Resource Code (PRC) and Guidelines promulgated by the Office of Planning and Research. CEQA requires public agencies to evaluate the implications of their project(s) on the

environment and includes significant historical resources as part of the environment. A project that causes a substantial adverse change in the significance of an historical resource would have a significant effect on the environment (California Code of Regulations [CCR] 14 Section 15064.5; California PRC Section 21098.1). CEQA defines a substantial adverse change as follows.

- 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 (CCR 14 Section 15064.5[b][1]).

The CEQA Guidelines determine that the significance of an historical resource would be materially impaired when a project results in the following:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources (CRHR); or

- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to PRC Section 5020.1(k) or its identification in an historical resources survey meeting the requirements of PRC Section 5024.1(g), unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a Lead Agency for purposes of CEQA (CCR 14 Section 15064.5[b][2]).

California Register of Historical Resources: Public Resources Code Section 5024

The term historical resource includes but is not limited to any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of the PRC (PRC Section 5020.1[j]).

Historical resources may be designated as such through three different processes:

1. Official designation or recognition by a local government pursuant to local ordinance or resolution (PRC Section 5020.1[k]);

2. A local survey conducted pursuant to PRC Section 5024.1(g); or

3. The property is listed in or eligible for listing in the National Register of Historic Places (NRHP) (PRC Section 5024.1[d][1]).

The process for identifying historical resources is typically accomplished by applying the criteria for listing in the CRHR, which states that a historical resource must be significant at the local, state, or national level under one or more of the following four criteria.

It is associated with events that have made a significant contribution to the broad patterns of:

1. California's history and cultural heritage;

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

3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or

4. It has yielded, or may be likely to yield, information important in prehistory or history (CCR 14 Section 4852).

To be considered a historical resource under CEQA, the resource must also have integrity, which is the authenticity of a resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance. Therefore, resources must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the criteria under which a resource is eligible for listing in the CRHR (CCR 14 Section 4852[c]).

CEQA also identifies "unique archaeological resources" (PRC Section 21083.2 (g)). The term means an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized, important prehistoric or historic event or person.

Assembly Bill 52 (PRC Section 21084.2)

Assembly Bill (AB) 52 changed sections of the PRC (Section 5097.94) to add consideration of Native American tribal cultural resources to CEQA (Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2, and 21084.3). The goal of AB 52 is to promote the involvement of California Native American tribes in the decision-making process when it comes to identifying and developing mitigation for impacts to resources of importance to their culture. To reach this goal, the bill establishes a formal role for tribes in the CEQA process. CEQA lead agencies are required to consult with tribes about potential tribal cultural resources in a project area, the potential significance of project impacts, the development of project alternatives, and the type of environmental document that should be prepared. AB 52 specifically states that a project that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.

Discovery of Human Remains

Section 7050.5 of the California Health and Safety Code states the following regarding the discovery of human remains:

a. Every person who knowingly mutilates or disinters, wantonly disturbs, or willfully removes any human remains in or from any location other than a dedicated cemetery without authority of law is guilty of a misdemeanor, except as provided in Section 5097.99 of the [PRC]. The provisions of this subdivision shall not apply to any person carrying out an agreement developed pursuant to subdivision (l) of Section 5097.94 of the [PRC] or to any person authorized to implement Section 5097.98 of the [PRC].

b. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the California Government Code [CGC], that the remains are not subject to the provisions of Section 27491 of the CGC or any other related provisions of law concerning investigation of the circumstances, manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the PRC. The coroner shall make his or her determination within two working days from the time the person responsible for the excavation, or his or her authorized representative, notifies the coroner of the discovery or recognition of the human remains.

c. If the coroner determines that the remains are not subject to his or her authority and 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 Native American Heritage Commission (NAHC) (California Health and Safety Code Section 7050.5).

Of particular note to cultural resources is subsection (c), which requires the coroner to contact the NAHC within 24 hours if discovered human remains are determined to be Native American in origin. After notification, NAHC will follow the procedures outlined in PRC Section 5097.98, which include notification of most likely descendant (MLD), if possible, and recommendations for treatment of the remains. The MLD will have 24 hours after notification by the NAHC to make their recommendation (PRC Section 5097.98). In addition, knowing or willful possession of Native American human remains or artifacts taken from a grave or cairn is a felony under state law (PRC Section 5097.99).

3.5.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to cultural resources and tribal cultural resources, including the following:

Goal Area SD-2: Cultural Resources

- **Policy SD-2.1.** Identify and preserve the City's archaeological resources.
- **Policy SD-2.2.** Identify and preserve the City's historic and cultural resources.

Historic Preservation Commission

The purpose of the Planning Commission is to hold public hearings to periodically update the City's General Plan and to review applications for discretionary development within the City, including recommendations for projects requiring final City Council action. The Planning Commission also acts as the Design Review Commission and Historic Preservation Commission. The Design Review/Historic Preservation Commission performs comprehensive site plan and architectural review within the downtown area to promote orderly development of the City and stability of land values and investments. The Historic Preservation Commission was established to promote the protection,

enhancement, perpetuation, and use of structures, sites, and areas that are reminders of past eras, events, and persons important to local, state, or national history.

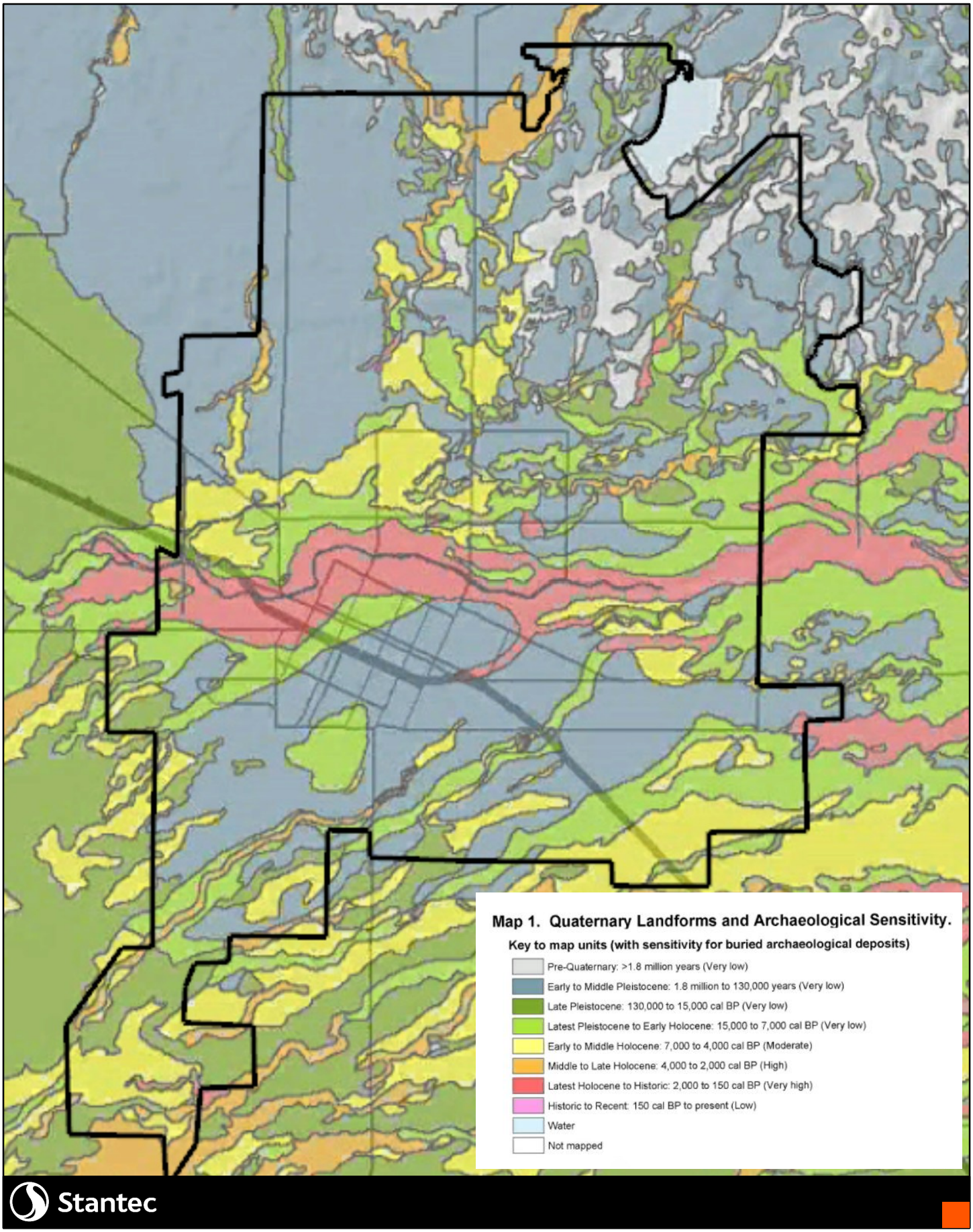
3.5.3 Environmental Setting

This environmental setting provides a brief overview of the natural environment, prehistoric, ethnographic, and historic setting of the Program Study Area. This information is provided as context within which to interpret cultural resources identified in the Program Study Area. The summary of prehistory, Native American ethnography, and history of the Program Study Area is excerpted from the 2030 General Plan Draft Program EIR.

3.5.3.1 Natural Setting

A brief overview of the natural environment setting for the Program Study Area is provided in Section 3.4.3, Environmental Setting. The information presented in Section 3.4.3 is sufficient to provide a context for the discussion of cultural resources in the Program Study Area (i.e., areas associated with the Program components including the pipelines, pump stations, and the Wastewater Treatment and Reclamation Facility [WWTRF] expansion) and any discussion of the environment related to cultural resources is based on previously presented information in Section 3.4.3.

Assessing the sensitivity for a project area to contain buried archaeological sites requires a review of the natural environment and takes into consideration the factors that support human occupations, such as access to food resources, fresh water, slope, and the underlying geomorphology, as well as the historical development of an area, including actions such as grading and filling that may obscure landform characteristics, natural soil deposits, and prehistoric or historic archaeological resources. Generally speaking, a large proportion of previously recorded prehistoric archaeological sites are located within 150 meters of a fresh water source and on relatively level ground (slope of less than 5 percent). Portions of a project that occur within these parameters have an increased potential to contain buried cultural resources and buried stable land surfaces that may have been attractive to prehistorical or historical human settlement. In 2004 (Rosenthal and Meyer 2004), the California Department of Transportation (Caltrans) completed a geoarchaeological study of Caltrans District 10, which included the City and the Program Study Area. This study identified potential sensitivity for buried archaeological deposits throughout the City and Program Study Area based on the factors considered and listed above. Figure 3.5-1 depicts this potential sensitivity for buried archaeological deposits within the Program Study Area. As shown on Figure 3.5-1, gray, dark blue, dark green, and light green all indicate very low sensitivity for buried archaeological deposits. Pink indicates a low sensitivity for buried archaeological deposits. Yellow indicates a moderate sensitivity for buried archaeological deposits. Orange indicates a high sensitivity for buried archaeological deposits. Red indicates a high sensitivity for buried archaeological deposits. Light blue represents water and white are unmapped areas for sensitivity for buried archaeological deposits.



Stantec

Compiled from Soil Survey Geographic Database coverages produced by the Natural Resources Conservation Service. For a detailed explanation of how this map was produced, please see the accompanying document: Rosenthal, J. and J. Meyer (2004). Landscape Evolution and the Archaeological Record of Central California. Far Western Anthropological Research Group, Inc., Davis, California.

Figure 3.5-1
Potential Sensitivity for Buried Archaeological Deposits
City of Merced - Draft Environmental Impact Report

3.5.3.2 Prehistory and Native American Ethnography

The Program Study Area is within the boundary of the ethnographic territory of the Yokuts people. The Yokuts were members of the Penutian language family, this territory includes the southern portion of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Yokuts held portions of the San Joaquin Valley from the Tehachapis in the south to Stockton in the north. On the north they were bordered by the Plains Miwok, on the west by the Saclan or Bay Miwok and Costanoan peoples. Although neighbors were often from distinct language families, differences between the people appear to have been more influenced by environmental factors as opposed to linguistic affinities. Thus, the Plains Miwok were more similar to the nearby Yokuts than to foothill members of their own language group. Similarities in cultural inventory co-varied with distance from other groups and proximity to culturally diverse people. The material culture of the southern San Joaquin Valley Yokuts was more closely related to that of their non-Yokuts neighbors than to that of Delta members of their own language group.

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from tribes with access to obsidian sources in northern California. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs that formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925), with most constructed from the readily available tules found in the extensive marshes of the low-lying valley areas. House pit depressions ranged in diameter from 3 to 18 meters (City of Merced 2010).

3.5.3.3 Historic Period

Merced County was first explored by Gabriel Moraga in 1806, when he named the Merced River, "El Rio de Nuestra Señora de la Merced." Moraga's explorations were designed to locate appropriate sites for an inland chain of missions. Moraga explored the region again in 1808 and 1810.

Fur traders began working the streams of the San Joaquin Valley in 1828. Beaver skins may have been gathered by Hudson's Bay Company trappers in the Merced region.

John C. Fremont, on his way to leaving California in 1844, proceeded southward from Sutter's Fort, passing through what is now Merced County. His party crossed the Merced River in a boat that they constructed, camping on the south bank near the Merced River's junction with the San Joaquin River. The expedition stopped and camped on Bear Creek, 5 miles from its mouth. They then crossed the Creek and traveled on into Madera County.

Merced County was carved out of Mariposa County in 1855. The construction of the Southern Pacific Railroad in 1872 brought major changes to the region. The City was laid out in January of that year when the railroad reached the spot. Merced became the county seat in December of 1872 (Hoover et al. 1990; Gudde 1969: 198-199).

The development of the railroads through the region allowed for the establishment of the communities. The small communities grew up as service centers for the surrounding areas, providing a means of marketing farm products to remote destinations and providing supplies to the local residents. Freighting to the communities in the foothills became an important industry.

Formed in 1919, the Merced Irrigation District (MID) infrastructure is located throughout the Program Study Area. According to MID's website, it owns, operates, and maintains ditches, canals, laterals, wells, pumping plants, the New Exchequer and McSwain Dams, reservoirs, and hydroelectric facilities. These serve farmers and domestic water users (MID 2019).

The completion of the Crocker-Huffman canal system led to the colonization of the territory around the Program Study Area and resulted in a rapid expansion of the population. The City is located in both the center of the state and the valley and serves as the gateway to Yosemite Park (City of Merced 2010).

3.5.3.4 Known Cultural Resources

A records search that encompassed 0.25 miles surrounding the Program Study Area was conducted at the Central California Information Center (CCIC) on December 19, 2018 (included in the confidential Appendix D) (CCIC 2018). The records search identified 12 cultural resources (all historic-era) within this search area. All previously recoded resources within the Program Study Area were previously found not eligible to the NRHP and CRHR, with the exception of the MID historic district (P-24-001909), which was previously recommended for revaluation for the CRHR and may become eligible for the CRHR with restoration or if it meets other specific conditions for eligibility. The records search also identified 33 previously recorded cultural resources (32 historic-era, 1 prehistoric-era) and 91 previous studies within the Program Study Area and the 0.25-mile search area. Table 3.5.1 provides relevant information on twelve previously recorded cultural resources within the Program Study Area.

As part of the records search, Stantec reviewed the following inventories for cultural resources in and/or adjacent to the Program Study Area:

- Previous City environmental documents (City of Merced 2018)
- California Inventory of Historic Resources
- California Historical Landmarks
- California Points of Historical Interest
- NRHP and CRHR databases
- Caltrans Historic Bridge Inventory
- General Land Office Maps

Table 3.5-1: Previously Recorded Cultural Resources within the Program Study Area

Primary Number	Resource Type	Description	Eligibility Status	Associated Program Component
P-24-000577	Historic	El Capitan Canal	Previously determined not eligible to the NRHP or CRHR (Caltrans 1998)	New Trunk Sewer Infrastructure Projects
P-24-000653	Historic	Bridge #39-67	Previously determined not eligible to the NRHP or CRHR (Caltrans 2018)	New Trunk Sewer Infrastructure Projects (including the new pump station associated with the Northern Trunk Sewer)
P-24-000654	Historic	Bridge #39-68	Previously determined not eligible to the NRHP or CRHR (Caltrans 2018)	New Trunk Sewer Infrastructure Projects (including the new pump station associated with the Northern Trunk Sewer)
P-24-000656	Historic	Bridge #39-97	Previously determined not eligible to the NRHP or CRHR (Caltrans 2018)	New Trunk Sewer Infrastructure Projects
P-24-001771	Historic	Bellevue Ranch Canal System	Previously determined not eligible to the CRHR (William Self Associates 2003)	New Trunk Sewer Infrastructure Projects
P-24-001773	Historic	Bellevue Ranch	Previously determined not eligible to the CRHR (William Self Associates 2004)	New Trunk Sewer Infrastructure Projects
P-24-001881	Historic	Burlington Northern Santa Fe Railroad	Previously determined not eligible to the NRHP or CRHR (Smallwood 2009)	New Trunk Sewer Infrastructure Projects
P-24-001909	Historic District	Merced Irrigation District	Needs to be re-evaluated-may become eligible for the NRHP with restoration or when meets other specific conditions. (Loftus 2011)	Within the Program Study Area and all proposed Project components
P-24-001918	Historic	Transmission Tower 5/39	Previously determined not eligible to the NRHP or CRHR (URS Corporation 2011)	New Trunk Sewer Infrastructure Projects
P-24-002047	Historic	Black Rascal Creek and Canal	Previously determined not eligible to the NRHP or CRHR (Caltrans 2002)	New Trunk Sewer Infrastructure Projects (including the new pump station associated with the Northern Trunk Sewer)
P-24-002106	Historic	Highway, State Route 59	Previously determined not eligible to the NRHP or CRHR (Caltrans 2002)	New Trunk Sewer Infrastructure Projects (including the new pump station associated with the Northern Trunk Sewer)

Primary Number	Resource Type	Description	Eligibility Status	Associated Program Component
P-24-002108	Historic	Irrigation system siphons and a former railroad berm	Previously determined not eligible to the NRHP or CRHR (Caltrans 2002)	New Trunk Sewer Infrastructure Projects (including the new pump station associated with the Northern Trunk Sewer)

Notes:
CRHR = California Register of Historical Resources
NRHP = National Register of Historic Places

3.5.3.5 Assembly Bill 52 Native American Outreach

To date, no tribes have contacted the City requesting to be consulted on City projects under AB 52. The records search and previous surveys have not identified tribal cultural resources within the Program Study Area. No additional tribal outreach was conducted.

3.5.3.6 Survey

A large portion of the Program Study Area has been previously surveyed for cultural resources; however, there are portions of the that have not been surveyed. Much of the Program Study Area is within existing roadways and disturbed sites. As described in Section 3.4.2, environmental scientists and biologists conducted a survey of the Program Study Area on February 11, 2019, making general site observations about ground cover and visibility that a qualified archaeologist use to determine the need for additional cultural resource surveys. Based on a review of the natural setting described in Section 3.5.3.1, no additional detailed cultural resource surveys were conducted within the Program Study Area.

3.5.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to cultural and tribal cultural resources. When an impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.5.4.1 Impact Analysis

Impact CUL-1 Potential to cause a substantial adverse change in the significance of a historical resource[1] as defined in section 15064.5.

Impact CUL-1 Analysis
Program Impacts

Construction

There are several historical resources within the Program Study Area (Table 3.5-1). Therefore, the construction of the Program could have the potential to cause a substantial adverse change in the significance of any of these historical resource, as well as any previously undiscovered resources, if the resource was present within the construction footprint and if the construction activities could not avoid or mitigate impacts to that resource. The cultural setting of the Program Study Area has largely been surveyed and identified for its sensitivity for the presence of historical resources and potential historical resources through individual project surveys and a Caltrans District 10 geoarchaeological study (Rosenthal and Meyer 2004) (Figure 3.5-1). It is anticipated that areas identified as high sensitivity (Figure 3.5-1) would have a greater probability for the presence of buried potential historical resources than those of lower sensitivities; however, a low sensitivity does not rule out the possibility of encountering a potential historical resource. Consequently, once specific activities are defined under the Program, the City would need to complete a cultural resource study to identify any resources within the specific project footprint to identify any resources and to determine the eligibility of those resources for inclusion on the CRHR as required by MM CUL-1, CEQA-Level Cultural Resource Study for Proposed Projects, and MM CUL-2, Evaluation of Cultural Resources and Treatment of Cultural Resources if Found Eligible for the California Register of Historical Resources.

Additionally, it is likely that Program components would cross, be adjacent to, or require encroachment into MID facilities since they occur throughout areas within the Program Study Area (Table 3.5-1). To avoid or mitigate impacts to the known MID historic district (P-24-001909), these Program components would also be subject to MM CUL-2 to assess the extent of a potential impact and implement avoidance and treatment measures to limit the extent of any impacts to historical resources to a less than significant level. Specifically, MM CUL-2 includes treatment of any resources in accordance with the Secretary of the Interior's Standards, documentation of the resource, and restoration of the disturbed area, as deemed necessary from the qualified archaeologist's evaluation. Therefore, impacts to these known historic resources would be less than significant with MM CUL-2 incorporated.

Further, because the Program would include earthmoving activities such as trenching and excavations, there is also the potential for unintentional discoveries of potential historical resources during construction. To avoid significant impacts to undiscovered resources MM CUL-3, Proper Handling of Inadvertent Discovery of Cultural and Tribal Cultural Resources, would be required for any activities under the Program involving ground disturbance. MM CUL-3 would provide proper handling procedures for the City's contractor to follow in the event a cultural resource is encountered during project construction. MM CUL- 2 would then be implemented to treat the resources in accordance with the Secretary of the Interior's Standards, document the resource, and restore the disturbed area, as deemed necessary from the qualified archaeologist's evaluation. Therefore, the potential impact of disturbing or destroying

[1] The term is described in Section 3.5.2.2

previously undiscovered resources during construction activities would be less than significant with mitigation incorporated.

In areas with high sensitivity for the presence of buried cultural resources (Figure 3.5-1), MM CUL-5 would be implemented. MM CUL-5, Worker Environmental Awareness Program (WEAP) (Cultural Resources), involves a preconstruction training session conducted by a qualified archaeologist for all construction personnel and staff performing excavation activities at Program component sites. The training will cover how to identify a cultural resource, how to respond to the discovery of a potential resource, and how to maintain proper discovery records and adhere to appropriate protocols during construction. The goal of MM CUL-5 is to educate workers regarding the potential to inadvertently uncover cultural resources and to limit the potential impacts to those resources.

With the implementation of MM CUL-1, CUL-2, CUL-3, and CUL-5, any potentially significant impacts to historical resources pursuant to CCR 14 Section 15064.5 associated with construction of the Program would be reduced to a less than significant level.

Operation

Once constructed, the Program would have no ongoing impacts to cultural resources. Therefore, there would be no operational impacts related to cultural resources.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-1, MM CUL-2, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

Proposed Projects: New Trunk Sewer Infrastructure and WWTRF Expansion Impacts

Construction

The records search identified 12 cultural resources (all historic-era) within proposed Project sites, including areas associated with the Northern Trunk Sewer, Southern Trunk Sewer, and the new pump station associated with the Northern Trunk Sewer. No historic-era cultural resources were identified within the WWTRF footprint. All previously recorded resources within the proposed Project sites were found not eligible to the NRHP and CRHR, with the exception of the MID historic district (P-24-001909), which needs to be re-evaluated since it may meet the eligibility requirements for the CRHR, particularly if any restoration activities are implemented. Similar to the discussion for the Program above, proposed Projects, including the Northern Trunk Sewer and Southern Trunk Sewer, would cross or encroach on MID historic district infrastructure and would therefore be subject to MM CUL-2. Specifically, a MID canal runs adjacent to the majority of the Northern Trunk Sewer and portions of the Southern Trunk Sewer. Additionally, both the Northern Trunk Sewer Project and the Southern Trunk Sewer Project include several undercrossings of MID facilities; however, these would be avoided by trenchless installation methods. Final design would determine the exact footprint of these pipelines; however, the feasibility of encroachment into the MID canals is unlikely. In the event that encroachment is required, the treatments and specifications identified in MM CUL-2 would limit the potential for a significant impact. MM CUL-2 would require any MID Historic District infrastructure within the direct or indirect footprint to be evaluated by a qualified archaeologist, architectural historian, or historian who would recommend the infrastructure either eligible or not eligible for the CRHR. If a resource is deemed not eligible for the CRHR, the

resource would require no further consideration and any impact resulting from the project would be less than significant. However, if a resource is deemed eligible, every effort would be made to avoid it through design re-routes, trenchless technologies, or other low-impact construction methodologies. If avoidance of the resource is infeasible, the stipulations in MM CUL-2 shall be implemented, which include treatment of the resource in accordance with the Secretary of the Interior's Standards, documentation of the resource, and restoration of the disturbed area, as deemed necessary from the qualified archaeologist's evaluation. Therefore, potential impact to the historic resources would be reduced to a less than significant level.

Additionally, similar to the Program impacts discussed above, the proposed construction activities at Project sites would have the potential for unintentional discoveries of potential historical resources, including all trenching and other earthwork activities associated with the new pipelines, pump station, and the WWTRF. To avoid significant impacts to undiscovered resources, MM CUL-3, Proper Handling of Inadvertent Discovery of Cultural Resources and Tribal Cultural Resources, would be required for any proposed Project activities involving ground disturbance. MM CUL-3 would provide proper handling procedures for the City's contractor to follow in the event that a cultural resource is encountered during construction. MM CUL- 2 would then be required to properly evaluate, document, and treat the resources in accordance with the Secretary of the Interior's Standards, thus reducing the potential impact to a less than significant level.

In areas with high sensitivity for the presence of buried cultural resources such as along creek crossings (Figure 3.5-1), it is anticipated that trenchless technologies would be used to install pipelines. However, if the area cannot be completely avoided, MM CUL-5 would be implemented. MM CUL-5, Worker Environmental Awareness Program (Cultural Resources), involves a pre-construction training session conducted by a qualified archaeologist for all construction personnel and staff performing excavation activities on a proposed Project site. The training would cover how to identify a cultural resource, how to respond to the discovery of a potential resource, and how to maintain proper discovery records and adhere to appropriate protocols during construction. The goal of MM CUL-5 is to educate workers regarding the potential to inadvertently uncover cultural resources and how to limit potential impacts to those resources.

With the implementation of MM CUL-2, CUL-3, and CUL-5, any potentially significant impacts to a historical resource pursuant to CCR 14 Section 15064.5 associated with proposed Projects (i.e., New Trunk Sewer Infrastructure and WWTRF Expansion Projects) would be reduced to a less than significant level.

Operation

Once constructed, the proposed Projects would have no ongoing impacts to cultural resources. Therefore, there would be no operational impacts related to cultural resources.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-2, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

Impact CUL-1 Findings

Impact CUL-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact CUL-1 Mitigation Required: MM CUL-1, MM CUL-2, MM CUL-3, and MM CUL-5

Impact CUL-1 Overall Level of Significance After Mitigation: Less than Significant

Impact CUL-2 Potential to cause a substantial adverse change in the significance of an archaeological resource[2] pursuant to section 15064.5.

Impact CUL-2 Analysis

Program Impacts

Construction

As shown and discussed in Section 3.5.3.4, Known Cultural Resources and Table 3.5-1, there are no currently identified archaeological resources within the Program Study Area. Potential impacts resulting from implementation of the Program to archaeological resources pursuant to CCR 14 Section 15064.5 would therefore be related to previous undiscovered resources during construction activities and would be similar to those described for Impact CUL-1. The presence of unknown archaeological resources would need to be identified and evaluated on a site-specific basis for Program component undertakings as required by MM CUL-1 and MM CUL-2. Unanticipated discoveries may occur, and MM CUL-3 and MM CUL-5 would be required for construction areas with high sensitivity for the presence of buried archaeological resources. With the implementation of MM CUL-1, CUL-2, CUL-3, and CUL-5, any potentially significant impacts to an archaeological resource associated with the Program pursuant to CCR 14 Section 15064.5 would be reduced to a less than significant level through identification of previously undiscovered resources, proper handling and treatment of such resources in accordance with federal and state regulations, and education of workers on the regulations governing the treatment and handling of the resources. Therefore, impacts treated to previously undiscovered archaeological resources during construction of Program components would be less than significant.

Operation

Once constructed, the Program would have no ongoing impacts to archaeological resources. Therefore, there would be no operational impacts related to archaeological resources.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-1, MM CUL-2, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

Proposed Projects: New Trunk Sewer Infrastructure and WWTRF Expansion Impacts

Construction

As shown and discussed in Section 3.5.3.4, Known Cultural Resources, and Table 3.5-1, there are no currently identified archaeological resources within the Program Study Area, including within any of the proposed Project site. Therefore, potential impacts resulting from implementation of the proposed Projects, including the Northern Trunk Sewer, Southern Trunk Sewer, pump station associated with the Northern Trunk Sewer, and the WWTRF expansion,

[2] The term is described in Section 3.5.2.2

would be limited to unintentional discovery of previously unidentified archaeological resources during construction activities that would involve trenching, excavation, or other earthwork. Unanticipated discoveries may occur and MM CUL-2, MM CUL-3 and MM CUL-5 would be required for construction activities that would involve earthwork to properly evaluate, document, and treat the resources in accordance with the Secretary of the Interior's Standards. With the implementation of MM CUL-2, MM CUL-3, and MM CUL-5, any potentially significant impacts to any archaeological resources associated with the proposed Projects pursuant to CCR 14 Section 15064.5 would be reduced to a less than significant level.

Operation

Once constructed, the proposed Projects would have no ongoing impacts to archaeological resources. Therefore, there would be no operational impacts related to archaeological resources.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-2, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

Impact CUL-2 Findings

Impact CUL-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact CUL-2 Mitigation Required: MM CUL-1, MM CUL-2, MM CUL-3, and MM CUL-5

Impact CUL-2 Overall Level of Significance After Mitigation: Less than Significant

Impact CUL-3 Potential to disturb human remains, including those interred outside of formal cemeteries.

Impact CUL-3 Analysis

Combined Program/Proposed Project Impacts

Construction

Previous and current archaeological research within the City has not identified any evidence to suggest that there is potential to disturb any human remains during implementation of construction activities associated with the Program, including any of the proposed Projects. However, there is always the potential for the inadvertent discovery of human remains during construction activities that involve earthwork, trenching, and excavations. As such, MM CUL-4 would be implemented to reduce any potentially significant impacts to inadvertently discovered human remains to a less than significant level. MM CUL-4 would require that work halt near a discovery of human remains until the Coroner and an archaeologist are notified and evaluate the remains. The human remains and any associated grave goods would be treated in accordance with PRC Section 5097.98. Consequently, with the implementation of MM CUL-4, any potential impacts to human remains would be less than significant.

Operation

Once constructed, the Program components would have no ongoing impacts to related to human remains. Therefore, there would be no operational impacts related to disturbance of human remains.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-4

Level of Significance After Mitigation: Less than Significant

Impact CUL-3 Findings

Impact CUL-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact CUL-3 Mitigation Required: MM CUL-4

Impact CUL-3 Overall Level of Significance After Mitigation: Less than Significant

Impact CUL-4	**Potential to 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 1) 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 2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.**

Impact CUL-4 Analysis
Program Impacts

Construction

The Program would include installation of pipelines, pump stations, and expansion of the WWTRF expansion, as well as general wastewater collection system maintenance activities. It is anticipated that the majority of Program components would be constructed within roadways or previously disturbed areas (specifically the pipelines and WWTRF expansion). To date, no tribes have contacted the City of Merced requesting to be consulted on City projects under AB 52, and the records search did not identify any tribal cultural resources. However, this does not discount the potential for tribal cultural resources to be found within the construction disturbance area of a Program component. Therefore, since some of the specific Program components have yet to be identified. Prior to the implementation of each separate Program components, the City intends to comply with AB 52 by inviting Native American tribes as appropriate to consult on future Program components and its potential impacts, including impacts to previously unidentified tribal cultural resources. The identification of a tribal cultural resources may require implementation of MM CUL-1, MM CUL-3, and MM CUL-5 to facilitate verification and protection of the resource.

With the implementation of MM CUL-1, MM CUL-3, and MM CUL-5, and following guidance at PRC Sections 21074, 21082.3, 21080.3.2, and 21084.2, any potentially significant impacts to a tribal cultural resource as defined under PRC Code Sections 21074, 5020.1(k), or 5024.1, associated with implementation of the Program would be reduced to a less than significant level through proper identification of previously undiscovered tribal cultural resources, proper handling and treatment of such resources in accordance with federal and state regulations, and education of workers on the regulations governing the treatment and handling of the resources. Therefore, impacts treated to previously undiscovered tribal cultural resources during construction of proposed Projects would be less than significant.

Operation

Once constructed, the Program components would consist of stationary objects and structures that would not result in any ongoing impacts related to tribal cultural resources. Therefore, there would be no operational impacts related to tribal cultural resources.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-1, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

Proposed Projects: New Trunk Sewer Infrastructure and WWTRF Expansion Impacts

Construction

To date, no tribes have contacted the City of Merced requesting to be consulted on City projects under AB 52 and the records search did not identify any tribal cultural resources. However, this does not discount the potential for tribal cultural resources to be found within the disturbance area associated with a Project site. If the City were to be made aware of a tribal cultural resource prior to or during construction activities, it would take appropriate measures to invite Native American tribes to consult and discuss potential impacts as required by MM CUL-1, MM CUL-3, and MM CUL-5, to facilitate verification and protection of the resource, and to train workers on the identification of resources.

With the implementation of MM CUL-1, MM CUL-3, MM CUL-5, and following guidance at PRC Sections 21074, 21082.3, 21080.3.2, and 21084.2, any potentially significant impacts to a tribal cultural resource as defined under PRC Code Sections 21074, 5020.1(k), or 5024.1 associated with implementation at any Project site would be reduced to a less than significant level through proper identification of previously undiscovered tribal cultural resources, proper handling and treatment of such resources in accordance with federal and state regulations, and education of workers on the regulations governing the treatment and handling of the resources. Therefore, impacts treated to previously undiscovered tribal cultural resources during construction at a Project site would be less than significant.

Operation

Once constructed, the Project components would consist of stationary objects and structures that would not result in any ongoing impacts related to tribal cultural resources. Therefore, there would be no operational tribal cultural resource impacts.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM CUL-1, MM CUL-3, and MM CUL-5

Level of Significance After Mitigation: Less than Significant

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Impact CUL-4 Findings

Impact CUL-4 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact CUL-4 Mitigation Required: MM CUL-1, MM CUL-3, and MM CUL-5

Impact CUL-4 Overall Level of Significance After Mitigation: Less than Significant

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3.5.5 Cultural and Tribal Cultural Resources Mitigation

Mitigation Measure CUL-1: California Environmental Quality Act-Level Cultural Resource Study for Proposed Projects

A California Environmental Quality Act (CEQA)-level cultural resource study shall be completed as Project sites within the Program Study Area are identified in the future. At a minimum, the study shall include the following: A project-specific records search at the Central California Information Center (CCIC), Assembly Bill 52 outreach (if applicable) / identification of tribal cultural resources, and a pedestrian cultural resource survey of the Project site. If a cultural resource is identified within the Project site, the resource should be avoided through redesign. If avoidance is not possible, a California Register of Historical Resources (CRHR) evaluation of the resource shall take place. If the resource is found not eligible to the CRHR, the resource is not considered a historical resource for the purposes of CEQA, and no further consideration of the resource is required. If the resource is found eligible to the CRHR, any potentially significant impacts to the resource must be addressed and mitigated following guidance at California Code of Regulations 15064.5 and Public Resources Code 21083.2, which identify specific measures such as preservation, excavation, and capping of sites. The findings of the project CEQA-level cultural resource study shall be included in the CEQA document and once final, submitted to the CCIC.

Mitigation Measure CUL-1 Implementation

Responsible Party: The City

Timing: Prior to construction at future Project sites

Monitoring and Reporting Program: The findings of the project CEQA-level cultural resource study shall be included in the CEQA document and once final, submitted to the CCIC.

Standards for Success: A complete project CEQA-level cultural resource study.

Mitigation Measure CUL-2: Evaluation of Cultural Resources and Treatment of Cultural Resources if Found Eligible for the California Register of Historical Resources

Any infrastructure associated with the Merced Irrigation District (MID) Historic District (P-24-001909) or other identified eligible resources within a project area shall be evaluated for eligibility to the California Register of Historical Resources (CRHR). If a resource is deemed not eligible individually or as a contributing element of the MID Historic District, the resource requires no further consideration for a proposed Project. If the infrastructure is found to be individually eligible or a contributing element of the MID Historic District to the CRHR, the resource shall be avoided though design re-routes or impact avoidance technologies such as trenchless pipe installations. If avoidance is infeasible, treatment of any eligible resource is discussed below and shall follow the Secretary of Interior's Standards. For an inactive earthen ditch, the ditch would be restored to its original state immediately after construction. An active canal would either be tunneled under, or the canal water would be temporarily diverted during construction of the pipeline. Immediately after construction, the canal would be restored to its original state including contours and materials (i.e., gunite or earthen bottom). A report shall be prepared by a qualified archaeologist or historian according to current professional standards for any eligible resource and submitted to the CCIC.

Mitigation Measure CUL-2 Implementation

Responsible Party: The City would ensure that a qualified archaeologist or historian conducts the work necessary for any resources found to be eligible for the CRHR.

Timing: Prior to proposed Project construction

Monitoring and Reporting Program: A qualified archaeologist or historian shall prepare and submit for the City's approval a report that provides the history of the eligible cultural resource and the surrounding area. The report shall include information on research methods, fieldwork conducted (may use eligibility evaluation fieldwork if appropriate), and a research design with research questions that shall be addressed and answered in the report. After City approval, the report shall be submitted to the CCIC.

Standards of Success: The proper treatment and recordation of any eligible cultural resource.

Mitigation Measure CUL-3: Proper Handling of Inadvertent Discovery of Cultural and Tribal Cultural Resources

If cultural or tribal cultural resources are encountered during construction, compliance with federal and state regulations and guidelines regarding the treatment of cultural resources shall be required (See MM CUL-2). If concentrations of cultural or tribal resources are encountered during ground disturbing work, work within 100 feet of the discovery shall be halted until a qualified archaeologist can evaluate the significance of the find. If the archaeologist determines that the resource may be considered a tribal resource, then the City shall consult with tribal representatives. If the find is determined to be significant, the City will determine the appropriate avoidance measures or other appropriate mitigation in consultation with a qualified archaeologist and any tribes, as necessary.

Mitigation Measure CUL-3 Implementation

Responsible Party: The City, representatives, and contractor

Timing: During all ground disturbing activities

Monitoring and Reporting Program: If any find is determined to be significant, representatives of the City shall document consultation with the archaeologist and determination of recommended protection and avoidance measures or other appropriate mitigation. The City shall prepare a memorandum incorporating notes and records from the contractor and qualified archaeologist to document steps taken to comply with the avoidance measures or other appropriate mitigation. The memorandum shall be saved as a file copy and submitted to the CCIC.

Standards for Success: The evaluation and recording of any newly identified cultural or tribal cultural resources and treatment by avoidance, protection, or documentation of any discovered resources that qualify as historically, archaeologically, or significant as a tribal cultural resource.

Mitigation Measure CUL-4: Proper Handling of Inadvertent Discovery of Human Remains

Section 7050 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. If human remains are encountered during activity related to the proposed Project, construction workers shall do the following:

- Stop work within 100 feet
- Immediately contact the City of Merced, who will then notify the county coroner
- Secure location but not touch or remove remains and associated artifacts
- Not remove associated spoils or pick through them
- Record the location and keep notes of calls and events
- Treat the find as confidential and not publicly disclose the location

Further:

- If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of such identification. The most likely descendant will work with the City to develop a program for re-interment or other disposition of the human remains and associated artifacts.
- No additional work shall take place within the immediate vicinity of the find until the appropriate actions have been implemented.

Mitigation Measure CUL-4 Implementation

Responsible Party: The City, representatives, and contractor

Timing: During all ground disturbing activities

Monitoring and Reporting Program: The City shall immediately report the discovery to the County Coroner. The recording and evaluation of any newly identified human remains shall be conducted by qualified professional archaeologist in conjunction with the County Coroner and a report detailing the recording, location, evaluation, and treatment of human remains, shall be kept on file at the City and submitted to the Central California Information Center.

Standards for Success: The proper recording, evaluation, and treatment of any newly identified human remains.

Mitigation Measure CUL-5: Worker Environmental Awareness Program (Cultural Resources)

The purpose of a Worker Environmental Awareness Program (WEAP) is to educate personnel (i.e., construction workers) about the existing onsite and surrounding resources and the measures required to protect these resources as well as avoidance and potential hazards within these sites. The WEAP, developed by the City, shall include materials and information on potentially sensitive biological and cultural resources, air quality protection measures, and potential hazards resulting from construction within the proposed Project area and applicable precautions that personnel should take to reduce potential impacts.

The WEAP presentation shall be given to all personnel who may be exposed to site hazards or may harm sensitive environmental resources as identified within the WEAP mitigation measures (i.e., prolonged exposure to noise levels over 85 decibels [like the operation of a bulldozer at 50 feet], exposure to dust-generating or ground-disturbing activities, work in non-biologically cleared areas, and equipment operators who may encounter sensitive species). The WEAP presentation shall be given prior to the start of construction and as necessary throughout the life of the proposed Project as new personnel arrive onsite. The City and the contractor are responsible for ensuring that all onsite personnel attend the WEAP presentation, receive a summary handout, and sign a training attendance acknowledgement form to indicate that the contents of the program are understood and to provide proof of attendance. Each attendant of the WEAP presentation shall be responsible for maintaining their copy of the WEAP reference materials and making sure that other onsite personnel are complying with the recommended precautions. The contractor shall keep the sign-in sheet onsite and shall submit copies of the WEAP sign-in sheet to the City's Project Manager, who shall keep it on file at City offices.

For the cultural resources portion of the WEAP presentation, the following information and implementation steps shall be prepared, presented, and executed prior to and during construction to prevent cultural resources from being disturbed or destroyed by proposed Project construction without proper documentation and recordation:

- In areas with high sensitivity for buried cultural resources (Figure 3.5-1 of the Draft EIR), a preconstruction training session conducted by a qualified archaeologist shall be held for all construction personnel and staff performing excavation activities on the Project site. Training materials shall address procedures to be followed and appropriate conduct to be adhered to if unanticipated cultural resources or human remains are encountered during the Project work. All construction personnel involved in earth-moving activities shall attend pre-construction training in person prior to the start of construction. Training should include how to identify archaeological resources (including tribal cultural resources), how to respond to the discovery of a potential resource, and how to maintain proper discovery records and adhere to professional protocols during construction.

Mitigation Measure CUL-5 Implementation

Responsible Party: The City and contractor

Timing: Prior to the initiation of construction and as new personnel arrive on the Project site in areas with high sensitivity for buried cultural resources (Figure 3.5-1)

Monitoring and Reporting Program: Development of a WEAP presentation and handout packet in accordance with this mitigation measure and any other resource-specific WEAP requirements. A sign-in sheet completed for all workers on the construction site shall be kept on file at the Project site, and copies shall be submitted to the City's Project Manager to be kept on file at City offices.

Standards for Success: The prevention of resources from being disturbed/destroyed by Project construction without proper documentation and recordation.

3.5.6 Abbreviations

AB	Assembly Bill
Caltrans	California Department of Transportation
CCIC	Central California Information Center
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CGC	California Government Code
City	City of Merced
CRHR	California Register of Historical Resources
EIR	Environmental Impact Report
MID	Merced Irrigation District
MLD	Most Likely Descendant
MM	Mitigation Measure
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NOP	Notice of Preparation
NRHP	National Register of Historic Places
PRC	Public Resources Code
WEAP	Worker Environmental Awareness Program
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.5.7 References

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3.6 GEOLOGY, SOILS, AND MINERAL RESOURCES

3.6.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving the following:
    - 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 or strong seismic ground shaking;
    - Seismic-related ground failure, including liquefaction;
    - Landslides;
- Result in substantial soil erosion or the loss of topsoil;
- 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 offsite landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 3.6-1 from the Uniform Building Code (UBC) (1994), creating substantial direct or indirect risks to life or property;
- 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;
- Directly or indirectly destroy a unique paleontological resource, site, or geologic feature;
- 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; or
- 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.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to geology, soils, and mineral resources that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible.

3.6.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives that are related to geology, soils, and mineral resources and are relevant to the Program.

3.6.2.1 Federal

Clean Water Act

The Clean Water Act (CWA, 33 United States Code [USC] 1344) primarily focuses on waters of the United States (WOTUS) and is more thoroughly described in Section 3.4, Biological Resources, and Section 3.9, Hydrology and Water Quality. However, the CWA focuses on sediment control in three aspects. First, the United States Army Corps of Engineers (USACE) administers CWA Section 404, which regulates the discharge of fill into WOTUS. Secondly, the State Water Resources Control Board (SWRCB) administers CWA Section 401, which applies to stormwater discharges where erosion control is an integral part of achieving permit compliance. Third, under direction from the SWRCB, the Regional Water Quality Control Board (RWQCB) administers CWA Section 402, which regulates point and non-point source discharges requiring a general or individual permit based on discharge type and size through the National Pollutant Discharge Elimination System (NPDES) program.

Earthquake Hazards Reduction Act of 1977

The Earthquake Hazards Reduction Act of 1977 established the National Earthquake Hazards Reduction Program (NEHRP) "to reduce the risks of life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program." The four principal goals of the NEHRP are as follows:

- Develop effective practices and policies for earthquake loss reduction and accelerate their implementation;
- Improve techniques for reducing earthquake vulnerabilities of facilities and systems;
- Improve earthquake hazards identification and risk assessment methods, and their use; and
- Improve the understanding of earthquakes and their effects.

Many of the tools used to assess, as well as mitigate, earthquake hazards and impacts were developed under the NEHRP (FEMA 1977).

Uniform Building Code Chapter 18, Division 1 Section 1803.2 and 1804.5

The UBC 1994, Chapter 18. Division 1 Section 1803.2 mandates that special foundation design consideration be employed if the soil expansion index is 20 or greater, in accordance with Table 3.6-1. The methodology and scope for a geotechnical investigation are described in UBC Section 1803 and requires an assessment of a variety of factors, such as slope stability, soil strength, adequacy of load-bearing soils, the presence of compressible or expansive soils, and the potential for liquefaction. The required content of the geotechnical report includes recommendations for foundation type and design criteria. These recommendations can include foundation design provisions that are intended to mitigate the effects of expansive soils, liquefaction, and differential settlement. In general, mitigation can be accomplished through a combination of ground modification techniques (i.e., stone columns, reinforcing nail and anchors, deep soil mixing, etc.), selection of an appropriate foundation type and configuration, and use of appropriate building and foundation structural systems. UBC Section 1804.5, Excavation, Grading, and Fill, requires the preparation of a geotechnical report where a building would be constructed on compacted fill (UBC 1994).

The International Building Code (IBC) replaced earlier regional building codes (including the UBC) in 2000 and established consistent construction guidelines for the nation. In 2006, the IBC was incorporated into the 2007 California Building Standards Code (CBC) (Section 3.6.2.2, State), and currently applies to all structures being

constructed in California. Therefore, the national model codes are incorporated by reference into the building codes of local municipalities. The CBC includes building design and construction criteria that take into consideration the state's seismic conditions.

Table 3.6-1: Classification of Potential Expansion of Soils Using Expansion Index

Expansion Index	Potential Expansion
0-20	Very Low
21-50	Low
51-90	Medium
91-30	High
Above 130	Very High

Source: ASTM 2011; UBC 1994

Occupational Safety and Health Administration

The Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration (OSHA), which is responsible for protecting the health of workers in events that could cause injury to workers. OSHA has created regulations to set federal standards of workplace safety including hazardous materials exposure limits, mandatory workplace training, accident and injury reporting, and safety procedures. These regulations are recorded in the Code of Federal Regulations (CFR) Title 29. Regulations specific to safety of trench work include: 29 CFR 1926.620, 29 CFR 1926.651, and 29 CFR 1926.652.

3.6.2.2 State

Alquist-Priolo Fault Zoning Act

The Alquist-Priolo Fault Zoning Act (AP Act), administered by the California Geological Survey (CGS), provides a mechanism for reducing losses from surface fault ruptures on a statewide basis. The AP Act requires the mapping of zones around active faults in California, in an effort to prohibit the construction of structures for human occupancy on active faults and minimize damage due to rupture of a fault. Active faults are those that have ruptured within the past 11,000 years. Where the AP Act identifies an Earthquake Fault Zone, a geologic investigation and report is necessary to prevent siting of buildings on active fault traces (CGS 2019a).

California Department of Transportation, Highway Design Manual Section110.6

California Department of Transportation (Caltrans) has developed roadway design standards, including those for seismic safety. Consideration of seismic risks and hazards in roadway design is detailed in the Caltrans Highway Design Manual Section 110.6, Earthquake Consideration. Construction within local highways and roads (including removing and replacement of existing roadways) would be required to adhere to Caltrans' engineering standards to minimize settlement (Caltrans 2018).

California Standard Building Code

Title 24, Part 2 of the CBC of the California Code of Regulations (CCR) contains specific requirements for construction with respect to earthquakes and seismic hazards intended to be protective of public health. Chapter 16 Section 1613, Earthquake Loads, of the 2016 CBC (effective January 1, 2017) deals with structural design and requires that every structure and portion thereof, including nonstructural components that are permanently attached to structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions (Caltrans 2018). For pipelines and other Program infrastructure, structural stability is guided by ASCE-7, Minimum Design Loads for Buildings and Other Structures, which is produced by the American Society for Civil Engineers and adopted into CBC design standards. ASCE-7 sets standards for above-ground facilities such as pump stations and WWTRF facilities.

Government Code Section 65302(g)

Government Code Section 65302(g) discusses the elements of safety for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence; liquefaction; and other seismic hazards identified pursuant to Chapter 7.8, Division 2 of the Public Resources Code (PRC); as well as other geologic hazards known to the legislative body. This code requires mapping of known seismic areas and other geologic hazards. It also addresses evacuation routes, military installations, water supply requirements, and minimum road widths and clearances around structures as those items relate to identified geologic hazards (California Government Code, Title 7, Division 1, Chapter 3, Article 5, Local Planning [65100-65763]).

Paleontological Resources

CEQA includes in its definition of historical resources “any object [or] site …that has yielded or may be likely to yield information important in prehistory” (14 CCR 15064.5[3]), which is typically interpreted as including fossil materials and other paleontological resources. More specifically, destruction of a “unique paleontological resource or site or unique geologic feature” constitutes a significant impact under CEQA per CEQA Guidelines Appendix G. Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in the project; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant impacts, which may include monitoring combined with data recovery excavation and/or avoidance.

Seismic Hazard Mapping Act

The Seismic Hazard Mapping Act of 1990 governs the responsibilities of city, county, and state agencies in identifying and mapping seismic hazard zones and mitigation seismic hazards to protect public health and safety in accordance with the provision of the California PRC, Division 2, Chapter 7.8, Geology, Mines and Mining, Seismic Hazards Mapping. The publication delineates zones where earthquakes could cause hazardous ground shaking and ground failure, including liquefaction and landslides (CGS 2019b). Currently, zones near the San Andreas Fault in the urban centers of the greater San Francisco Bay Area and Los Angeles have been delineated. Local cities and counties within these zones regulate construction to minimize loss associated with these seismic hazards.

Surface Mining and Reclamation Act

The California Surface Mining and Reclamation Act of 1975 (SMARA) was enacted in response to land use conflicts between urban growth and essential mineral production. SMARA (PRC Section 2710 et seq., subsequently amended) is the primary regulation for onshore surface mining in the state. SMARA mandated that aggregate resources throughout the state be identified, mapped, and classified by the state geologist so that local governments could make land use decisions in light of the presence of aggregate resources and the need to preserve access to those resources. Local jurisdictions are required to enact specific plan procedures to guide mineral conservation and extraction at particular sites and to incorporate mineral resource management policies into their general plans. The State Mining and Geology Board has prepared Mineral Land Classification Maps for aggregate resources. The Mineral Land Classification Maps designate four different types of resource sensitivities. The four Mineral Resource Zone (MRZ) sensitivity types are as follows:

- **MRZ-1:** Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood for their presence exists;
- **MRZ-2:** Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists;
- **MRZ-3:** Areas containing mineral deposits the significance of which cannot be evaluated from available data; and
- **MRZ-4:** Areas where available information is inadequate for assignment of any other MRZ zone.

3.6.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to geology, soils, and mineral resources, including the following:

Goal Area OS-5: Conservation of Resources

- **Policy OS-5.2.** Protect soil resources from the erosive forces of wind and water.

Goal Area S-2: Seismic Safety

- **Policy S-2.1.** Reduce the potential danger from earthquake and seismic-related activity from existing buildings where necessary.
- **Policy S-2.2.** Encourage the improvement of all public facilities and infrastructure such as natural gas, fuel, sewer, water, electricity, and railroad lines and equipment with up-to-date seismic safety features.
- **Policy 2.3-** Restrict urban development in all areas with potential for ground failure characteristics.

City of Merced Municipal Code

Title 15, Division III-Storm Water System, Chapter 15.50.120 (B) Storm Water Management and Discharge Control Code states that:

> *"Any person performing construction activities in the City shall prevent pollutants from entering the storm water conveyance system and comply with all the applicable Federal, State, and local laws, ordinances, or*

> *regulations, including, but not limited to, the current California NPDES General permit for storm water discharges associates with construction activities (Construction General Permit) and the City Storm Water Management and Discharge Control Chapter. All construction projects, regardless of size, having soil disturbance or activities exposed to storm water must, at a minimum, implement BMPs for erosion and sediment controls, soil stabilization, dewatering, source controls, pollution prevention measures, and prohibited discharges. Any person subject to a construction activities NPDES storm water discharge permit shall comply with all provisions of such permit"*

City of Merced Standard Designs of Common Engineering Structures

The City's Engineering Department has developed standard design requirements for common engineering structures that are frequently installed as part of improvements in the City. The standards include requirements for the design of streets, driveways, sidewalks, trenching, storm drains, water systems, bikeways, refuse facilities, landscaping grading, traffic control, fences, and sewer systems. Sewer system design standards are included in sheets S-1, through S-18 of the standards and include specifications for stability of pipelines, manhole requirements, and testing of newly installed sewer systems (City of Merced 2020).

3.6.3 Environmental Setting

3.6.3.1 Regional Geology

The Program Study Area is located approximately 115 miles southeast of the City of Sacramento along the west side of the southern portion of the Great Valley Geomorphic Province, more commonly referred to as the San Joaquin Valley. The Great Valley is a broad interior lowland (i.e., flat area in central part of the State of California), that is bounded by the Sierra Nevada mountain range to the east and the Coastal Ranges to the west (City of Merced 2010), and as such, is a basin valley formed between mountain ranges (San Joaquin Valley Geology 2015). This region's geology dates to the Pliocene-Pleistocene Period transition, and into the more recent Quaternary Period. The region is comprised primarily of sedimentary and metasedimentary rock substrates, including Great Valley Fan and Basin Deposits, and other non-marine deposits.

3.6.3.2 Local Geology

The Program Study Area is located within the U.S. Geological Survey (USGS) Merced 7.5-Minute Quadrangle. Site topography is nearly flat, with elevations within the Program Study Area ranging from 153 feet above mean sea level (amsl) near the City's Wastewater Treatment and Reclamation Facility (WWTRF), to 208 feet amsl near the junction of State Route (SR) 140 and Kibby Road.

A review of the geologic maps indicate that the vicinity of the Program Study Area is primarily underlain by Laguna, Mehrten, Modesto, and Riverbank Formations. The Laguna Formation was developed during the Pliocene. The Laguna Formation is a heterogeneous mixture of interbedded alluvial gravel, fine sand, silt, and clay of granitic and metamorphic origin. The Mehrten Formation was developed during the Miocene and Pliocene. The Mehrten formation is made up of sandstone, laminated siltstone, conglomerate, and tuff breccia that is composed almost entirely of andesitic material, with only small amounts of igneous and metamorphic rock fragments (Arkley 2016; Burrow et. al. 2004). The Modesto and Riverbank Formations developed during the Pleistocene and Holocene, with alluvium from drainages being deposited (i.e., floodplain deposits, unconsolidated soils, and sediment). The Modesto and

Riverbank Formation deposits are specifically characterized by sand and silt alluvium derived from weathering of rocks, which generally forms a thin layer of sedimentary materials over bedrock unit's underneath (City of Merced 2010; San Joaquin Valley Geology 2015).

3.6.3.3 Program Area Soils

Based on the United States Department of Agriculture's (USDA's) Natural Resources Conservation Service (NRCS) Web Soil Survey, there are 24 different soils series present within the Program Study Area (USDA 2019a; NRCS 2019). A complete summary of the soil series that occur in the Program Study Area are outlined in Table 3.6-2.

The soils in this region generally consist of poorly sorted gravel, sand, silt, and clay and are acidic with low fertility. The soils have a moderate shrink-swell potential, with a granular, clayey, and relatively consolidated and cemented nature, and as such the soils in the Program Study Area are regarded as moderately expansive, with low to moderate erosion potential (City of Merced 2010).

Table 3.6-2: Program Study Area Soils Summary

Soil Series Name	Typical Program Study Area Pedon	Slope (%)	Drainage	Permeability	Runoff
Alamo	Clay	0–1	Poor	Very slow	Ponded - Very slow
Anderson	Gravel	0–3	Excessive	Moderate – Rapid	Slow - Medium
Bear Creek	Clay, Loam	0–3	Poor - Moderate	–	Low - Very low
Burchell	Silt, Clay, Loam, Saline-Alkali	0–1	Poor	Slow – Moderately slow	Slow - Medium
Corning	Gravel, Loam, Sand	0–8	Well - Moderate	Very slow – Slow	Very high
Greenfield	Sand, Loam	0–3	Well	Moderate – Rapid	Slow - Medium
Honcut	Silt, Clay, Loam	0–1	Well	Moderate – Rapid	Slow - Medium
Hopeton	Gravel, Clay, Loam	0–8	–	–	–
Keyes	Gravel, Clay, Loam	0–8	Well - Moderate	Very slow	Slow - Medium
Landlow	Silt, Clay, Loam, Alkali	0–1	Poor	Slow	Slow
Lewis	Silt, Clay, Loam, Saline-Alkali	0–1	Well	Slow	Medium - High
Marguerite	Silt, Clay, Loam	0–1	–	–	–
Montpellier	Sand, Loam	0–8	Well - Moderate	Slow – Moderate	Slow - Medium
Pentz	Gravel, Clay, Loam	0–30	Well drained	–	–
Peters	Clay	0–8	Well drained	–	–
Porterville	Clay	0–3	Well drained	Slow	Very slow - Rapid
Raynor	Clay, Cobbly	0–8	–	–	–
Redding	Gravel, Loam	0–30	Well - Moderate	Very slow – Slow	Very low - High
Rocklin	Loam, Sand	0–8	Well drained	Very slow – Slow	Very slow - Medium
Ryer	Clay, Loam	0–8	Well drained	Slow	Very slow - Medium

Soil Series Name	Typical Program Study Area Pedon	Slope (%)	Drainage	Permeability	Runoff
San Joaquin	Loam, Sand	0–8	Well - Moderate	Very slow	Medium - Very high
Whitney	Sand, Loam	0–8	Good	Moderate – Rapid	Slow - Medium
Wyman	Clay, Loam	0–3	Well drained	Slow – Moderate	Slow - Medium
Yokohl	Clay, Loam	0–3	Well drained	Very slow – Slow	Very slow - Rapid

Note:
- = No data for soil series
Source: USDA 2019b, NRCS 2019

3.6.3.4 Mineral Resources

Mineral resources are generally finite and occur in sporadic deposits, which often create a relative scarcity and a need to protect access to supplies. Many mineral resources are important to global, national, state, and local economies. In 2015, California had approximately 717 active mines, which are responsible for approximately 4.2 percent of the United States non-fuel mineral production (CGS 2015). The largest component of this production was derived from sand and gravel mining.

Primary mineral resources within the region of the City generally include antimony, diatomite, copper, gold, gravel, gypsum, magnesium, manganese, mercury, sand, and stone. A desktop review of Mineral Land Classifications and Historic Mines and Prospects was conducted for the Program Study Area. Approximately five historic mines were identified within the vicinity (i.e., within approximately 10 miles) of the City. This includes sand and gravel pits known as Borrow, Sunset, George, Jordan, and Bear Creek near Atwater and Planada. Approximately five permitted mines were also identified within the vicinity of the City, including Hailey Pit, Olive Avenue Pit, WCR Mine, Central Pit, and Sunset Pit. Specifically, the States Mining and Geology Board found no areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists (i.e., MRZ-2), no active mining sites, and no Aggregate Resources Areas within the City (Clinkenbeard 1999).

3.6.3.5 Environmental Hazards

Seismic Activity

Seismic activity originates as movement or slippage occurring along an active fault. A fault is fracture along which the blocks of crust move relative to one another parallel to the fracture. These movements generate shock waves that result in ground shaking (i.e., seismic activity, earthquakes) (USGS 2019). Seismic activity is generally measured by type, frequency, and duration. It is assumed that those faults that have been recently active are the most likely to be active in the future, although even inactive faults may not be “dead.” “Potentially Active” faults are those that have been active during the past two million years, or during the Quaternary Period. “Active” faults are those that have been active within the past 11,000 years (City of Merced 2010). Seismic activity is considered the first of “primary” hazards, in that it is caused by the direct interaction of seismic wave energy with the ground (Branz 2019).

Based on a desktop evaluation of fault activity maps of the Merced region, there are 13 known faults within approximately 60 miles of the City (CGS 2010). No AP Act earthquake fault zones were identified within the Program Study Area (CGS 2019c). Table 3.6-3 summarizes the regional "active" faults within approximately 60 miles of the Program Study Area.

Table 3.6-3: Regional Active Faults within Approximately 60 Miles of the Program Study Area

Fault Name	Fault Type	Average Fault Age	Approximate Distance From Program Study Area (miles)
Black Butte Fault	Certain (ball and bar)	Quaternary (age undifferentiated)	60
Bowie Flat Fault	Certain	Late-Quaternary	50
Clovis Fault	Concealed	Pre-Quaternary	60
Green Springs Run Fault	Certain (ball and bar)	Late-Quaternary	50
Kings Canyon Lineament	Concealed	Pre-Quaternary	20
Melones Fault Zone	Certain	Pre-Quaternary	40
Midway Fault	Approximate	Late-Quaternary (fault displacement)	60
Negro Jack Point Fault	Approximate	Late-Quaternary	50
Panoche Hills Fault	Concealed	Quaternary (age undifferentiated)	60
O'Neill Fault	Concealed	Late-Quaternary (fault displacement)	50
Ortigalita Fault	Certain	Holocene (fault displacement)	60
San Joaquin Fault	Concealed	Holocene (fault displacement)	40
Vernalis Fault	Concealed	Quaternary (age undifferentiated)	40

Fault Type

Approximate = General location with uncertainty.

Ball and Bar = Downthrown side of fault.

Certain = Location of fault with no uncertainty.

Concealed = Buried under many layers of younger rock/ sedimentary materials and/or hydrologic feature (e.g., lake or bay).

Average Fault Age

Pre-Quaternary = Prior to 1.6 million years ago.

Quaternary = Faults with undivided Quaternary displacement (last 1.6 million years).

Late Quaternary = Faults with late Quaternary displacement (last 750,000 years).

Source: CGS 2010

The results of the desktop evaluation of fault activity maps for the Merced region indicate that Kings Canyon Lineament and the San Joaquin Fault are the closest sources of potential ground motion (CGS 2010). These fault systems are not considered "active" by the California Division of Mines and Geology; however, in some areas there is

evidence of geomorphic processes that indicate that there has been fault movement as recently as the Pleistocene, and as such, these faults can be considered as "potentially active" (Bartow 1991). Although there are no known faults within the City limits, shaking has occurred within the City in the past associated with earthquakes throughout Central California, the Sierra, and the Bay Area. These shaking events depend on the magnitude and intensity of the surrounding earthquakes. The potential for ground shaking in the event of a major earthquake within the Program along these faults or from other fault areas is possible; however, shaking would not likely be substantial (City of Merced 2010).

USGS ranks the California Central Valley around and in Merced as having a moderate hazard potential on the 2018 Long-term National Seismic Hazard Map. Showing a general earthquake hazard potential from a regional perspective. The earthquake hazard map shows peak ground accelerations having greater than a 2 percent probability of being exceeded in 50 years for a firm rock site. The map is based on the most recent USGS models for the conterminous U.S. (2018). The CGS further maintains a similar map titled the Probabilistic Seismic Hazards Assessment Peak Ground Acceleration Map that provides data specific California's seismic shaking hazards. For the region surrounding the Program Study Area, the Peak Ground Acceleration, which has a 10-percent probability of being exceeded within the next 50 years, ranges from approximately 10 to 20 percent of acceleration of gravity (g) (i.e., the force caused by shaking) (CGS 2019d). While Peak Ground Acceleration is useful for the regional comparisons of potential effects of fault activity, other considerations are important in seismic design, including frequency and duration of motion and soil conditions underlying the Program Study Area (City of Merced 2010).

Additionally, a desktop review of regulatory maps within the CGS Information Warehouse provide delineated "zones of required investigation" to reduce the threat to public health and safety and minimize the loss of life and property posed by an earth-triggered quakes were reviewed. The review results indicated no regulatory information, evaluation and/or fault evaluation reports, no hazard zones have been recorded in the Program Study Area under the Seismic Hazard Mapping Act (CGS 2019e).

Ground Failure

Ground failure includes ground shaking, ground settlement and surface rupture. Ground shaking is the vibration that radiates from the epicenter of an earthquake (City of Merced 2010). Ground shaking can vary over an area as a result of factors such as topography, bedrock type, and the location and orientation of a fault rupture due to seismic activity. Ground settlement (i.e., subsidence) is the lowering of the ground surface during seismic activity and is caused by consolidation of the underlying sediments, densification of soil material, or liquefaction (discussed below). Surface rupture is when some ground is raised or lowered leaving a visible crack in the earth surface. Ground failure can cause serious direct damage or collapse of infrastructure caused by seismic activity and is considered the second "primary" earthquake hazard. The severity of ground failure depends on the strength and depth of the earthquake, but there are several other contributing factors, such as the regional geology, local topography, and the site-specific ground characteristics within the Program Study Area (Branz 2019). Specifically, the intensity of the vibration or shaking and its potential impact to buildings and other development in the Program Study Area is determined by several factors (City of Merced 2010):

- The nature of the underlying materials, including rock and soil;
- Structural characteristics of a building;
- Quality of workmanship and materials used in its construction;
- Location of the epicenter and the magnitude of the earthquake; and

- Duration and character of the ground motion.

The Program Study Area could be subjected to ground failure in the event of a major earthquake along the faults mentioned above or other area faults.

Landslides and Lateral Displacement

Any slope where relatively large masses of material are supported by soil that is likely to soften under strain is prone to a landslide. The risk increases in areas where the ground is steep, weak, or fractured; is saturated by heavy rain; or is compromised by historical ground movements (Branz 2019). Landslides occur most frequently during or following large storms or seismic activity and is most likely to take place in areas where large storms or seismic activity have previously occurred.

Lateral movement (i.e., displacement, spreading, etc.) occurs when seismic shaking causes a mass of soil to lose cohesion and move relative to the surrounding soil. Lateral movement can be entirely horizontal and can occur on flat ground, but it is more likely to occur on or around sloping ground, such as adjacent to hillsides and waterways (Branz 2019).

In general, the potential for land sliding, slope failure, and lateral displacement in the Program Study Area in its current condition is very low due to the overall topography, slope, and compositions of soils. A desktop review of Landslide Maps and Report Indices was conducted for the Program Study Area. The review results indicated no landslide information or reports, and as such there is no potential areas for landslides within the Program Study Area (CGS 2019f).

Liquefaction

Soil liquefaction occurs when ground shaking from an earthquake causes a sediment layer saturated with groundwater to lose strength and take on the characteristics of a fluid, thus becoming similar to quicksand. Factors determining the liquefaction potential are soil type, the level and duration of seismic ground motions, the type and consistency of soils, and the depth to groundwater. Loose sands and peat deposits, along with recent Holocene age deposits, are more susceptible to liquefaction, while older deposits of clayey silts, silty clays, and clays deposited in freshwater environments are generally stable under the influence of seismic ground shaking.

Liquefaction can damage buildings, roads, and pipelines through loss of structural support capabilities and subsequent destabilization of soils. The Program Study Area primarily consists of well drained, coarse-loamy soils that have a low potential for liquefaction or ground failure to occur. Groundwater levels within the City fluctuate regularly depending on the location within the City and time of year. Generally, groundwater levels within the Mehrten Formation are located at a depth of approximately 300 feet, while groundwater levels within shallower aquifers in the City can be accessed as close as 1 to 15 feet in depth (City of Merced 2010). Therefore, the liquefaction potential within the City varies from low to moderate depending on the location within the City and due to the low potential for ground shaking to occur within the City (City of Merced 2010).

3.6.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to geology, soils, and minerals. When a potential impact is determined to be potentially significant, mitigation measures (MMs) were identified that would reduce or avoid that impact.

3.6.4.1 Impact Analysis

Impact GEO-1 **Potential to directly or indirectly expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:**

- **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 as defined by the Division of Mines and Geology Special Publication 42 or strong seismic ground shaking;**
- **Seismic-related ground failure, including liquefaction; or**
- **Landslides.**

Impact GEO-1 Analysis
Program Impacts

Construction and Operation

Rupture of a Known Earthquake Fault or Strong Seismic Ground Shaking

There are no known faults within the Program Study Area. Further, a review of seismic ground shaking probability identifies the Program Study Area to have a moderate potential for ground shaking having a Peak Ground Acceleration range of 10 to 20 percent acceleration of gravity with a 10 percent probability of being exceeded within the next 50 years (USGS 2018; CGS 2019d). Consistently, the Program Study Area has historically experienced low levels of ground shaking from earthquakes occurring on surrounding faults. As recently as June 2020, a 5.8 intensity earthquake in Lone Pine, California was felt at City offices. The Kings Canyon Lineament (i.e., approximately 20 miles from the Program Study Area) and the San Joaquin Fault (approximately 40 miles from the Program Study Area) are the closest potentially active sources of ground shaking to the Program Study Area (USGS 2020).

The Program would be developed in accordance with current design standards and codes (Section 3.6.2, Regulatory Framework: Uniform Building Code, California Standard Building Code, City of Merced Municipal Code, and City of Merced Standard Designs of Common Engineering Structures) which account for the generally high seismic probability within the state and the moderate ground shaking potential of the Program Study Area. Program design plans would require a stamp by a licensed civil and/or structural engineer whose professional licensures ensure implementing structural standards accounting for seismic hazards thus limiting the potential for placing people or infrastructure at risk of substantial adverse effects from rupture or ground shaking from a known earthquake fault. Additionally, none of the Program components would include uses for human habitation, although a few structures

would occasionally be occupied by City personnel. As stated, the facilities built as part of the Program would meet the necessary design requirements to limit the risk of injury, loss, or death as a result of failure of Program facilities.

Additionally, the majority of the Program components would be located underground and would not pose a risk related to injury, loss, or death. To date, the existing collection system has not experienced rupture, failure, or release of raw sewage as a result of ground shaking from an earthquake, indicating that the construction and operation of additional similar wastewater facilities would not further expose people or structures to potential substantial effects as a result of the Program. Construction and operation of the improved wastewater collection system would be similar to the existing system related to structural stability and installation methods, and therefore, the potential for rupture of a known earthquake fault or seismic shaking that could expose people or structures to risk from implementation of the Program is less than significant.

Seismic-Related Ground Failure

As stated above, there are no known faults within the Program Study Area; however, ground shaking has been observed in Merced from faults in the Sierra Nevada mountains. The Program Study Area has the potential to be subject to ground failure in the event of a major earthquake caused by one of the region's potentially active faults. The Program Study Area consists primarily of well-drained, coarse-loamy soils that have a low potential for liquefaction or ground failure due to liquefaction. Similar to the discussion of seismic ground shaking above, the Program components would be designed in accordance with current codes and design standards (Section 3.6.2, Regulatory Framework: Uniform Building Code, California Standard Building Code, City of Merced Municipal Code, and City of Merced Standard Designs of Common Engineering Structures). These standards include structural stability requirements such as foundation support, grading and earthwork specifications, and testing and start-up of newly installed facilities. The design plans would be approved and stamped by a licensed engineer in conformance with these applicable building codes and key design standards (i.e., ASCE-7 and the City's standards for common engineering structures). Therefore, the potential for implementation of the Program to expose people or infrastructure to potentially adverse effects related to liquefaction or ground failure is considered less than significant.

Landslides

According to the assessment of the CGS Landslide Maps and Report Indices reviewed for the Program Study Area, no active landslide deposits have been identified in the Program Study Area. That means, in addition to the fact that the Program Study Area is relatively flat and is not surrounded by any topographic features (e.g., hills or mountains) that have slopes steep enough to cause landslides, that the potential for a landslide to occur in the area is very low. While localized landslides associated with construction requiring trenching or digging could occur even with low potential for landslides in the area, construction safety precautions, such as shoring or other trench stabilization measures, would be implemented as a part of OSHA regulations, specifically, 29 CFR 1926.620, 29 CFR 1926.651, and 29 CFR 1926.652 (Section 3.6.2.1 Regulatory Framework), and would not directly or indirectly expose people or structures to the threat of landslide. Therefore, the potential for landslides to occur and cause substantial harm or threat to persons or structures as a result of implementation of the Program would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

As described for the Program above, the Program Study Area is not located near a fault zone, and the potential for rupture of a known earthquake fault or ground failure, which could expose people or structures to risk from the new trunk sewer infrastructure, is considered low. The new pump station associated with the Northern Trunk Sewer would be located in an above-ground, enclosed structure, and therefore would be required to comply with ASCE-7, Minimum Design Loads for Buildings and other Structures, to ensure that the structure would withstand seismic shaking or fault ruptures through the stabilization of underlying soils, foundation support specifications, and the use of appropriate building materials and support for the new building, limiting any potential risk of placing employees at risk of seismic related structure failures to a less than significant level.

The new pipelines for the Northern and Southern Trunk Sewers would be designed and built in accordance with the City's standards for common engineering structures, which includes stability specifications for sewer systems. These standards would limit the potential for failure of the new wastewater collection system infrastructure through the use of appropriate construction materials and installation methods, and the stabilization of underlying soils and would limit the potential for risk of structure or pipeline failure during a ground shaking event.

Further, as described for the Program, construction of trenches or excavations for the new facilities (i.e., pump station or pipelines) associated with the new trunk sewers could result in localized land sliding, bank collapse, or other ground failure but worker safety regulations (Section 3.6.2.1 Regulatory Framework) provide procedures that would be followed during construction, which would make this impact less than significant. Additionally, none of the new trunk sewer infrastructure components are meant for human habitation; therefore, there would be no potential for injury, loss, or death related to rupture of a fault or ground shaking. Therefore, impacts related to ground shaking or failure as a result of implementation of the new trunk sewer infrastructure would be less than significant.

The new trunk sewer infrastructure would not trigger landslides or result in different conditions from those described above. Therefore, the potential for landslides to occur as a result of the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

As described for the Program above, the Program Study Area is not located near a fault zone, and the potential for rupture of a known earthquake fault or ground failure, which could expose people or structures to risk from the expansion to the WWTRF, is considered low. Similar to the new trunk sewer infrastructure and the discussion for the

overall Program above, expansion of the WWTRF would require new structures that would be built in conformance with the ASCE-7, Minimum Design Loads for Buildings and other Structures and required to be stamped by a licensed civil or structural engineer, which includes specifications for stabilization of underlying soils, foundation support; use of appropriate building materials and support for any of the new structures required for the WWTRF expansion; and design plans that meet current design standards and regulations. Therefore, impacts related to ground shaking as a result of implementation of the WWTRF expansion would be less than significant.

The expansion of the existing WWTRF would not trigger landslides or result in different conditions from those described above. Therefore, the potential for landslides to occur as a result of the expansion of the WWTRF would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GEO-1 Findings

Impact GEO-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GEO-1 Mitigation Required: None Required

Impact GEO-1 Overall Level of Significance After Mitigation: Less than Significant

Impact GEO-2 Potential to result in substantial soil erosion or the loss of topsoil.

Impact GEO-2 Analysis

Program Impacts

Construction

Due to the relatively flat nature of the Program Study Area, substantial soil loss from precipitation or secondary stormwater runoff is not anticipated. However, construction activities associated with the Program, including for the new pipelines, pump stations, and WWTRF expansion, would include the excavation and the movement of soil, which could result in the loss of topsoil if not properly handled. This is anticipated for areas of the Program that would not occur in the paved right-of-way (ROW) or previously disturbed areas. Temporary stockpiles of soil have the potential to result in loss of topsoil during construction when soils are exposed and being transported and could potentially result in a significant impact if not appropriately stored and handled. However, implementation of the Program would comply with MM GEO-1, Prepare an Erosion Control and Stormwater Pollution Prevention Plan (SWPPP), and Title 15, Division III, Chapter 15.50 of the City's Municipal Code related to discharge control for construction projects. This Code includes requirements for obtaining a grading permit, obtaining a CWA Section 402 NPDES General Construction Permit, and general design standards, as well as best management practices (BMPs) for construction-related grading and drainage activities. MM GEO-1 would incorporate the principles outlined in the City Code requirement for the City and the Contractor to follow, which would minimize the potential erosion and loss of topsoil from the Program construction activities. The Erosion Control Plan and SWPPP would include other requirements

from the NPDES Permit related to stormwater, erosion, and sediment control. Therefore, construction-related erosion and loss of topsoil would be considered less than significant with MM GEO-1 incorporated.

All topsoil exposed as a part of implementation of the Program would be restored to pre-existing contours to the extent possible and revegetated or stabilized as required by MM GEO-1. As such, the potential for substantial erosion would be limited since the site would be revegetated, and site grading would be designed for adequate drainage, limiting exposed soils that could be subject to erosion. Therefore, operational impacts resulting from implementation of the Program related to erosion and loss of topsoil would be considered less than significant with mitigation incorporated.

Through the implementation of MM GEO-1, impacts associated with substantial soil erosion or the loss of topsoil would be less than significant with mitigation incorporated.

Operation

There would be no operational impacts related to loss of topsoil because once constructed, Program components would be stationary and would not result in substantial movement of soils and above-ground sites would be regulated by City stormwater permits. Therefore, impacts from operation would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Similar to the discussion for the Program above, construction activities associated with the new trunk sewer infrastructure would consist of the excavation and movement of soil, which could result in the loss of topsoil and increase erosion potential in the construction area if not properly handled. Movement of soils could occur through the placement of facilities such as the new pipelines associated with the Northern and Southern Trunk Sewers as well as at the new pump station associated with the Northern Trunk Sewer. As such, all topsoil exposed as a part of the activities related to new trunk sewer infrastructure would be restored to pre-existing contours to the extent possible and revegetated as required by MM GEO-1. MM GEO-1 would be required for the new trunk sewer infrastructure, which includes the preparation and implementation of an Erosion Control Plan and SWPPP, along with the appropriate BMPs, and the new trunk sewer infrastructure would be inspected throughout the construction process. Therefore, with the implementation of MM GEO-1, the potential for erosion and loss of topsoil during construction would be reduced to a less than significant impact.

Operation

There would be no operational impacts related to loss of topsoil because once constructed, the new trunk sewer infrastructure components would be stationary and would not result in a substantial amount of soil movement. Therefore, impacts would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

Similar to the discussion for the Program above, the expansion of the existing WWTRF would consist of excavation and movement of soil, which could result in the loss of topsoil and increase the potential for erosion at the WWTRF if not properly handled, potentially creating a significant impact. Although the majority of the existing WWTRF consists of previously disturbed areas and paved and gravel pathways, the construction of the expansion would involve work on topsoil currently used for agricultural operations. As such, all topsoil exposed as a part of the construction activities related to the WWTRF expansion would be restored to pre-existing contours to the extent possible and revegetated or converted to paved or gravel areas as required to accommodate a design to limit erosion potential as required by MM GEO-1. MM GEO-1 would include the preparation and implementation of an Erosion Control Plan and SWPPP, which would implement appropriate BMPs and call for inspections throughout the construction process. Therefore, with the implementation of MM GEO-1, the potential erosion and loss of topsoil would be reduced to a less than significant impact.

Operation

There would be limited operational impacts related to loss of topsoil because once constructed, WWTRF expansion components would be stationary and would not result substantial movement of soils. Therefore, there would be a less than significant impact.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-1

Level of Significance After Mitigation: Less than Significant

Impact GEO-2 Findings

Impact GEO-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact GEO-2 Mitigation Required: MM GEO-1

Impact GEO-2 Overall Level of Significance After Mitigation: Less than Significant

Impact GEO-3 Potential to 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.

Impact GEO-3 Analysis

Program Impacts

Construction and Operation

The City is located on four geologic formations, which include a mixture of interbedded alluvium with a mixture of sedimentary and metamorphic deposits. The soils in this region primarily consist of poorly sorted gravel, sand, silt, and clay, with a low to moderate erosion potential. As discussed in Impact GEO-1, there is a low potential for ground failure, lateral spreading, subsidence, liquefaction, or collapse to occur within the Program Study Area due to the low likelihood of seismic activity of a significant magnitude. There is no potential for landslides to occur in the Program Study Area due a relatively flat topography in the area. In addition, there is a very low to nonexistent potential for soils and underlying geology to become unstable due to Program activities because the Program components would be built in accordance with state and local standards, including ASCE-7, Minimum Design Loads for Buildings and other Structures, for above-ground Program components such as pump stations or WWTRF facilities and with the City's standards for common engineering structures, which include stability specifications for sewer systems, such as pipelines. These standards would limit the potential for failure of the new wastewater collection system infrastructure through the use of appropriate construction materials and installation methods, and the stabilization of underlying soils. Further, as required to meet these design standards, site-specific geotechnical investigations would be performed prior to the start of any construction activities associated with Program activities to identify any possible unstable soils, and design modifications would be required to address these soils (i.e., soil stabilization for pipelines or reinforced concrete foundations for buildings). While localized landslides or unstable soils associated with excavation of trenches and foundations could occur even with the low potential for landslides in the area, construction safety precautions, such as shoring or other trench stabilization measures, would be implemented as a part of OSHA regulations (Section 3.6.2.1, Regulatory Framework) and would not directly or indirectly expose people or structures to threat of unstable soils. Therefore, impacts related to unstable soils would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

As described for the Program above, there is low potential for ground failure, lateral spreading, subsidence, liquefaction, or collapse to occur within the area due to seismic activity. There is low potential for landslides to occur in the Program Study Area due to gentle slopes and soil types. In addition, there is a very low to nonexistent potential for soils and underlying geology to become unstable due to the installation of new trunk sewer infrastructure. As described previously, design and construction of Program facilities would comply with ASCE-7, Minimum Design

Loads for Buildings and other Structures. Design and construction of Program facilities would also comply with the City's standards for common engineering structures, which includes stability specifications for sewer systems and the new pipelines. These standards would limit the potential for failure of the new wastewater collection system infrastructure through the use of appropriate construction materials and installation methods, and the stabilization of underlying soils. Further, as described above, excavation of trenches and foundations associated with construction could result in bank collapse, but OSHA worker safety regulations would provide procedures that would be followed during construction, which would make this impact less than significant. Therefore, landslides, lateral spreading, subsidence, liquefaction, or collapse during construction or the operation of the new trunk sewer infrastructure is not expected, and impacts would be considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

As described for the Program above, there is low potential for ground failure, lateral spreading, subsidence, liquefaction, or collapse to occur within the Program Study Area due to seismic activity. There is no potential for landslides to occur in the Program Study Area other than in excavation areas. In addition, there is a very low to nonexistent potential for soils and underlying geology to become unstable due to expansion of the existing WWTRF. The expansion of the WWTRF would be built in conformance with ASCE-7, Minimum Design Loads for Buildings and other Structures, which would include specifications for the use of appropriate construction materials and installation methods, and the stabilization of underlying soils. Therefore, landslides, lateral spreading, subsidence, liquefaction or collapse during construction or the operation of the expansion of the WWTRF would not be expected, and impacts would be considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GEO-3 Findings

Impact GEO-3 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GEO-3 Mitigation Required: None Required

Impact GEO-3 Overall Level of Significance After Mitigation: Less than Significant

Impact GEO-4	**Potential to be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property.**

Impact GEO-4 Analysis
Program Impacts

Construction and Operation

Expansive or collapsible soils are characterized by the ability to undergo significant volume change (e.g., shrink and swell) as a result of variation in soil moisture content. Specifically, the causes of soil expansion or collapse are related to the type and amount of clay minerals in the soil, conditions under which the clay originated, and the original density of the soil. Clay minerals can form in-place by weathering of rocks, or they can be transported and deposited by water or wind. A change in the moisture content of a soil can cause clay minerals to shrink or expand (i.e., swell) (Arizona Geological Survey 2019). Soil moisture content can change due to many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. Engineering standards govern expansion potential evaluations and the expansion index (Table 3.6-1). Section 1803.2 of the 1994 UBC directs expansive soil tendency be graded by this method. The UBC mandates that “special [foundation] design consideration” be employed if the expansion index is 20 or greater.

The soils in the Program Study Area generally consist of poorly sorted gravel, sand, silt, and clay and are acidic with low fertility. The soils have a moderate shrink-swell potential, with a granular, clayey, and relatively consolidated and cemented nature, and as such, the soils in the Program Study Area are regarded as moderately expansive, with a low to moderate erosion potential (City of Merced 2010). Program components would be built in accordance with state and local standards, including ASCE-7, Minimum Design Loads for Buildings and other Structures, and with the City’s standards for common engineering structures, which would limit the potential for failure of the new wastewater collection system infrastructure from being located on potentially expansive soils through the use of appropriate construction materials and installation methods, and the stabilization of underlying soils. Further, as required to meet these design standards, site-specific geotechnical investigations would be performed prior to the start of any construction activities associated with Program activities in order to identify any possible unstable soils and design modifications that would be required to address these soils (i.e., soil stabilization for pipelines or reinforced concrete foundations for buildings). Therefore, the impact associated with expansive soils in conjuncture with the implementation of the Program would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

As described for the Program above, the soils in the Program Study Area consist of poorly sorted gravel, sand, silt, and clay. These soils have a moderate shrink-swell potential, and as such, the soils in the Program Study Area are regarded as moderately expansive (City of Merced 2010). The New Trunk Sewer Infrastructure would be constructed with ASCE-7, Minimum Design Loads for Buildings and other Structures, and with the City’s standards for common engineering structures, which would limit the potential for failure of the new wastewater collection system

infrastructure from potentially expansive soils through use of construction materials, installation methods, and stabilization of underlying soils. Therefore, the impact associated with expansive soils in conjuncture with the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

As described for the Program above, the soils in the Program Study Area consist of poorly sorted gravel, sand, silt, and clay. These soils have a moderate shrink-swell potential, and as such, the soils in the Program Study Area are regarded as moderately expansive (City of Merced 2010).T The expansion of the WWTRF would be built in conformance with ASCE-7, Minimum Design Loads for Buildings and other Structures, which would include specifications for the use of appropriate construction materials and installation methods, and the stabilization of underlying soils. Therefore, the impact associated with expansive soils in conjuncture with the expansion to the existing WWTRF would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GEO-4 Findings

Impact GEO-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GEO-4 Mitigation Required: None Required

Impact GEO-4 Overall Level of Significance After Mitigation: Less than Significant

Impact GEO-5	**Potential to 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.**

Impact GEO-5 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

The Program proposes to provide wastewater collection services to areas within the SUDP/SOI that are currently not served by sewer collection systems and are typically reliant on septic systems, which would reduce the reliance on

septic systems and does not include installation or use of septic systems or other alternative disposal systems. As such, implementation of the Program would not affect the use of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impact to soils incapable of adequately supporting septic tanks or alternative wastewater disposal systems.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GEO-5 Findings

Impact GEO-5 Overall Level of Significance Prior to Mitigation: No Impact

Impact GEO-5 Mitigation Required: None Required

Impact GEO-5 Overall Level of Significance After Mitigation: No Impact

Impact GEO-6 Potential to directly or indirectly destroy a unique paleontological resources or site or unique geologic feature.

Impact GEO-6 Analysis

Program Impacts

Construction

The Program Study Area lies within an area of both Neogene and Quaternary Periods (i.e., Cenozoic Era) deposits. The paleontological potential of the Program Study Area is high. The Mehrten Formation, one of the four geologic formations occurring in the Program Study Area, is a sedimentary unit known for its fossil plant and vertebrate localities. According to the Society of Vertebrate Paleontology (SVP) guidelines, this rock unit has a high potential to yield significant paleontological resources. Given the high paleontological potential of rock units in the Program Study Area, there is the potential for ground-disturbing construction activities from installation of Program facilities to unearth potentially significant paleontological resources in previously undisturbed areas. Therefore, in order to ensure that construction personnel are trained in appropriate identification and treatment procedures for these potentially significant resources, MM GEO-2 would be required and would include the development of a Worker Environmental Awareness Training Program (WEAP) for paleontological resources. Further, if previously undiscovered paleontological resources are encountered on a Program facilities site, MM GEO-3 would also be required to properly handle and treat these resources in compliance with federal regulations and SVP guidelines. Proper handling of these previously undiscovered resources identified in MM GEO-3 would include stopping all work within 100 feet of the discovery, notifying City staff, retaining a qualified geologist or paleontologist to evaluate the resource, and implementing further treatment measures as prescribed by professional standards, and if a significant resource, consulting with the resource agencies. For trenchless installations of the pipelines (i.e., under major highways, railways, or waterways), impacts to paleontological resources would likely be avoided due to the small drilling footprint of these methods. However, if visible paleontological resources, such as bone fragments, are witnessed in

the drilling slurry, then MM GEO-3 would be employed. Implementation of MM GEO-2 and MM GEO-3 would develop treatment measures to effectively eliminate potentially significant impacts to resources related to undiscovered paleontological resources, and therefore, the impact would be considered less than significant with mitigation incorporated.

Operation

Once operational, the Program components would involve limited and non-substantial ground disturbing activities that would have limited potential to impact to paleontological resources. Therefore, there would be a less than significant impact.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-2 and MM GEO-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

As described for the Program above, the Mehrten Formation occurring the Program Study Area has the potential to yield undiscovered paleontological resources during construction of the new trunk sewer infrastructure. Pipeline and pump station construction and installation would involve excavation and open trenches, and thus, construction could potentially disturb previously undiscovered paleontological resources and result in a potentially significant impact prior to mitigation. As such, MM GEO-2 and MM GEO-3 would be required to ensure that construction personnel are properly trained on the identification of paleontological resources, should they be encountered during the construction and to ensure that the proper treatment measures are implemented if paleontological resources are encountered, including stopping all work within 100 feet of the discovery, notifying appropriate and qualified personnel, and further treatment measures (should the resource be identified as a potentially significant paleontological resource. Construction of both the Northern and Southern Trunk Sewers would also involve several trenchless pipeline installations to go under major highways (i.e., SR 99 and Santa Fe Drive), railways, and waterways. These trenchless pipeline installations would involve limited work zones, and the underground impacts would be limited to approximately the circumference of the drill pipe. Although it is difficult to distinguish potential paleontological resources in drilling slurry, the workers would be trained through MM GEO-2 on identification of paleontological resources and would employ MM GEO-3 if any potential paleontological resources are witnessed in the drilling slurry. If paleontological resources are witnessed, all work within the trenchless work area would cease until a qualified geologist or paleontologist evaluates the resource, and further treatment measures would be implemented if the identified resource is determined to be significant. Therefore, with the implementation of these mitigation measures, impacts resulting from the construction of the new trunk sewer infrastructure would be reduced to a less than significant level.

Operation

Once operational, the new trunk sewer infrastructure would involve limited and non-substantial ground disturbing activities that would have limited potential to impact to paleontological resources. Therefore, there would be a less than significant impact.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-2 and MM GEO-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

As described for the Program above, one of the rock formations occurring the Program Study Area has the potential to yield paleontological resources during construction of the WWTRF expansion. The WWTRF is considered a previously disturbed area; however, there would still be a possibility that previously undiscovered paleontological resources could be encountered during construction of the WWTRF expansion. As such, MM GEO-2 and MM GEO-3 would be required to ensure that construction personnel are properly trained on the identification of paleontological resources, should they be encountered and ensure that the proper treatment measures are implemented, including stopping all work within 100 feet of the discovery, notifying appropriate and qualified personnel, and implementing further treatment measures as required. Therefore, with the implementation of these mitigation measures, impacts resulting from the construction of the expansion of the WWTRF would be reduced to a less than significant level.

Operation

Once operational, the expansion of the WWTRF would involve operation of stationary structures that would not involve any ongoing impacts to paleontological resources. Therefore, there would be no operational impacts.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM GEO-2 and MM GEO-3

Level of Significance After Mitigation: Less than Significant

Impact GEO-6 Findings

Impact GEO-6 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact GEO-6 Mitigation Required: MM GEO-2 and MM GEO-3

Impact GEO-6 Overall Level of Significance After Mitigation: Less than Significant

Impact GEO-7 Potential to 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.

Impact GEO-7 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

The Program Study Area is not located in a designated MRZ, which is a land classification created by the CGS that is used to designate sites with known deposits of commercially viable mineral or aggregate material. Therefore, the potential for the loss of availability of known mineral resources resulting from the implementation of the Program is not anticipated. Additionally, construction and placement of Program components, including the new pipelines, would largely occur within developed roads, or roads easements that are planned for future development. Therefore, installation of these features would not be expected to limit access to any mineral resources that are of value to the region or the residents of the state. Implementation of the Program would not require a substantial amount of mineral resources that would 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. Therefore, no impact would occur.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact GEO-7 Findings

Impact GEO-7 Overall Level of Significance Prior to Mitigation: No impact

Impact GEO-7 Mitigation Required: None Required

Impact GEO-7 Overall Level of Significance After Mitigation: No Impact

Impact GEO-8 Potential to result in the loss of availability of a local-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

Impact GEO-8 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

Similar to Impact GEO-7, there are local-important mineral resource recovery sites delineated within the Program Study Area (City of Merced 2010) and the Program would not involve substantial amounts of locally important mineral resources. Thus the Program would not result in the loss of a recovery site delineated on a local general plan, specific plan, or other land use plan or substantial amounts of locally important mineral resources. There are no other aspects of construction or operation of the Program that would prevent access to a resource recovery site in the region. Therefore, the Program would have no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Measure: None Required

Level of Significance After Mitigation: No Impact

Impact GEO-8 Findings

Impact GEO-8 Overall Level of Significance Prior to Mitigation: No Impact

Impact GEO-8 Mitigation Required: None Required

Impact GEO-8 Overall Level of Significance After Mitigation: No Impact

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3.6.5 Geology, Soils, and Minerals Mitigation

Mitigation Measure GEO-1: Prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan

To reduce the potential for erosion and sedimentation resulting from construction activities, the City shall require that the selected contractor prepare an Erosion Control Plan and Stormwater Pollution Prevention Plan (SWPPP) prior to the start of construction. The SWPPP would include a risk-level determination based on sediment transport and receiving water risk, in addition to specifications for best management practices (BMPs) that would be implemented during construction of Program facilities to reduce or eliminate impacts to surface water. BMPs have been defined by the Regional Water Quality Control Board (RWQCB) in the California Quality Association Construction Handbook, and include erosion and sediment control, non-stormwater and materials management, and waste management and materials pollution control. Additionally, the SWPPP would describe the effluent limits and sampling and analysis requirements during construction (if applicable) and post-construction measures to prevent or control runoff degradation once construction is complete.

The Erosion Control Plan shall provide, at a minimum, measures and BMPs to trap sediment, stabilize excavated soil, and stabilize and revegetate any disturbed areas with native plants. Straw bales, coir rolls, hydroseeding, and other BMPs shall be used in areas of bare soil to prevent long-term land scarring and in drainages near all areas of disturbance to reduce surface runoff velocities and to prevent sediment from entering drainages. Maintenance of erosion and sediment control measures shall be conducted on a weekly basis, at minimum, during active construction activities. The revegetation of all graded and disturbed areas of bare soil shall be completed within 6 months after construction is complete. Seed mixes shall be used to replicate the naturally occurring vegetation, with the exception of any irrigated areas associated with the Wastewater Treatment and Reclamation Facility (WWTRF) operations. These plans shall be implemented and inspected by the City accordingly throughout the construction process.

The contractor under the City's authority shall apply for coverage under California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit), State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ for construction activities that will disturb more than 1 acre. The General Permit requires that a SWPPP shall be prepared before construction begins.

Mitigation Measure GEO-1 Implementation

Responsible Party: The contractor and the City's Qualified SWPPP Developer (QSD).

Timing: Prior to, during, and post-construction activities.

Monitoring and Reporting Program: SWPPP inspections.

Standards for Success: No SWPPP violations.

Mitigation Measure GEO-2: Pre-Construction Worker Environmental Awareness Training (Paleontological Resources)

The purpose of a Worker Environmental Awareness Program (WEAP) is to educate personnel (i.e., construction workers) about the existing onsite and surrounding resources and the measures required to protect these resources as well as avoidance and potential hazards within these sites. The WEAP, developed by the City, shall include materials and information on potentially sensitive biological and cultural resources, paleontological resources, air quality protection measures, and potential hazards resulting from construction within the Program Study Area and applicable precautions personnel should take to reduce potential impacts.

The WEAP presentation shall be given to all personnel who may harm sensitive environmental resources as identified within the WEAP mitigation measures (i.e., paleontological resources,). The WEAP presentation shall be given prior to the start of construction and as necessary throughout the life of the Project as new personnel arrive onsite. The City and the contractor are responsible for ensuring that all onsite personnel attend the WEAP presentation, receive a summary handout, and sign a training attendance acknowledgement form to indicate that the contents of the program are understood and to provide proof of attendance. Each participant of the WEAP presentation shall be responsible for maintaining their copy of the WEAP reference materials and making sure that other onsite personnel are complying with the recommended precautions. The contractor shall keep the sign-in sheet onsite and submit copies of the WEAP sign-in sheet to the City's Project Manager, who shall keep it on file at City offices.

Paleontological resources include any remains, traces, or imprints of a plant or animal that has been preserved in the Earth's crust since some past geologic time and may include fossil materials such as bones, leaf impressions, and other carbonized remains and shells of invertebrates such as snails and clams. For the paleontological materials portion of the WEAP presentation, the following information and implementation steps shall be prepared, presented, and executed prior to and during construction to prevent exposure and raise awareness of potential impacts to unknown paleontological resources:

- The City shall retain qualified Geologist or Paleontologist to conduct the pre-construction paleontological resource and/or unique geologic feature portion of the construction worker awareness training; and
- Construction personnel shall be informed of the possibility of such resources within the Project area and the protocol to be followed if a resource is encountered as detailed in MM GEO-3.

Mitigation Measure GEO-2 Implementation

Responsible Party: The City and contractor

Timing: Prior to construction activities and throughout construction activities as new personnel arrive on a proposed Project construction site

Monitoring and Reporting Program: Development of a WEAP presentation and handout packet in accordance with this mitigation measure and any other resource specific WEAP requirements. A sign-in sheet shall be completed for all workers on the construction site and kept on file at the proposed Project construction site, and copies shall be submitted to the City's Project Manager to be kept on file at City offices.

Standards for Success: The prevention of paleontological resources from being disturbed or destroyed by proposed Project construction without proper documentation and recordation.

Mitigation Measure GEO-3: Proper Handling of the Unanticipated Discovery of Paleontological Resources or Unique Geologic Features

If paleontological resources (i.e., fossils) and/or unique geologic features are encountered during construction, compliance with federal regulations (16 USC Chapter 1C sections 470aa through 470aaa-11) and guidelines (Society of Vertebrate Paleontology [SVP] guidelines) regarding the treatment of such resources shall be required. If paleontological resources or unique geologic features are encountered during ground disturbing activities, work within 100 feet of the discovery shall be halted until the City notifies a qualified geologist or paleontologist to evaluate the significance of the find. If the find is determined to be significant, the City shall determine the appropriate avoidance measures or other appropriate mitigation in consultation with a qualified geologist or paleontologist and landowner, such as site salvage. Significant paleontological resources recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified paleontologist according to current professional standards. The SVP provides guidelines on assessment and mitigation of adverse impacts to paleontological resources.

Mitigation Measure GEO-3 Implementation

Responsible Party: The City and the chosen contractor

Timing: During all ground-disturbing activities

Monitoring and Reporting Program: If any find is determined to be significant, representatives of the City shall document consultation with the qualified geologist or paleontologist and document the determination of recommended protection and avoidance measures or other appropriate mitigation. The City shall prepare a brief memorandum incorporating notes and records from the Contractor and qualified geologist or paleontologist to document steps taken to comply with the avoidance measures or other appropriate mitigation. The memorandum shall be kept on file at the City's offices.

Standards for Success: The evaluation and recording of any newly identified paleontological resources and unique geologic features, and treatment by avoidance, protection, or documentation of any discovered resource that qualify as significant**.**

3.6.6 Abbreviations

amsl	above mean sea level
AP Act	Alquist-Priolo Fault Zoning Act
BMP	best management practice
Caltrans	California Department of Transportation
CBC	California Building Code
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
City	City of Merced
CWA	Clean Water Act
EIR	Environmental Impact Report
g	Percent of acceleration of gravity
General Permit	General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities
IBC	International Building Code
MM	Mitigation Measure
MRZ	Mineral Resource Zone
NEHRP	National Earthquake Hazards Reduction Program
NOP	Notice of Preparation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
PRC	Public Resources Code
QSD	Qualified SWPPP Developer
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SMARA	Surface Mining and Reclamation Act
SR	State Route
SVP	Society of Vertebrate Paleontology
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
UBC	Uniform Building Code
USACE	United States Army Corp Of Engineers
USC	United States Code
USGS	United States Geologic Survey

USDA	United States Department of Agricultural
WEAP	Workers Environmental Awareness Program
WOTUS	Waters of the United States
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.6.7 References

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3.7 GREENHOUSE GASES AND ENERGY RESOURCES

3.7.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.
- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation.
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to greenhouse gases (GHGs) or energy resources that may result from implementation of the Program, identifying mitigation for significant impacts, where feasible.

3.7.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives related to GHGs and energy resources that are relevant to the Program.

3.7.2.1 Federal

Greenhouse Gas Endangerment

On April 2, 2007, in *Massachusetts v. USEPA*, 549 US 497, the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act (CAA). The Supreme Court held that the Unites States Environmental Protection Agency (USEPA) must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. In making these decisions, USEPA is required to follow the language of Section 202(a) of the CAA.

On April 17, 2009, the USEPA Administrator signed proposed "endangerment" and "cause or contribute" findings for GHGs under Section 202(a) of the CAA. USEPA held a 60-day public comment period, considered public comments, and issued final findings. USEPA found that six GHGs taken in combination endanger both the public health and the public welfare of current and future generations. USEPA also found that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the greenhouse effect as air pollution that endangers public health and welfare under CAA Section 202(a).

Clean Vehicles

The Energy Policy and Conservation Act of 1975 (EPCA) mandated that the National Highway Traffic Safety Administration (NHTSA) establish and implement a regulatory program for motor vehicle fuel economy, known as the corporate average fuel economy (CAFE) program, to reduce national energy consumption. As codified in Chapter 329 of Title 49 of the U.S. Code (U.S.C.) and, as amended by the Energy Independence and Security Act of 2007 (EISA), EPCA sets forth specific requirements concerning the establishment of average fuel economy standards for passenger cars and light trucks. These are motor vehicles with a gross vehicle weight rating less than 8,500 pounds and medium-duty passenger vehicles with a gross vehicle weight rating less than 10,000 pounds. The Secretary of Transportation delegated responsibility for implementing the CAFE program to NHTSA.

EISA, enacted by Congress in December 2007, amended the EPCA CAFE program requirements by providing the Department of Transportation (DOT) additional rulemaking authority and responsibilities. Consistent with its statutory authority, in rulemaking to establish CAFE standards for model year 2017 and beyond passenger cars and light trucks, NHTSA developed two phases of standards. The first phase included final standards for model years 2017–2021. The second phase, covering model years 2022–2025, included standards that were not final, due to the statutory requirement that NHTSA set average fuel economy standards not more than five model years at a time. Rather, NHTSA wrote that those standards were augural, meaning that they represented its best estimate, based on the information available at that time, of what levels of stringency might be maximum feasible in those model years. In 2012, the agencies jointly adopted more stringent Phase 2 standards for light duty cars and trucks, which would cover model years 2017 through 2025. In August of 2016, the agencies adopted more stringent Phase 2 standards for medium- and heavy-duty vehicles, which would cover model years 2018 through 2027 for certain trailers and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks.

On March 31, 2020, NHTSA and the USEPA released a new rule, the final Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, setting CAFE and carbon dioxide (CO_2) emissions standards for model years 2021 through 2026 passenger cars and light trucks. The rule rolls back the 2012 standards for model years 2021 through 2026 for passenger cars and light trucks which required an average fleetwide fuel economy equivalent of 54.5 miles per gallon in model year 2025 with a 5 percent annual increase to an average fuel economy of about 40 miles per gallon in model year 2025 with annual increases of 1.5 percent starting in 2021. As a part of issuing the new SAFE rule, NHTSA issued a Final Environmental Impact Statement which found that the relaxed standards would result in increased petroleum consumption which in turn would result in increases to greenhouse gases and criteria pollutants known to contribute to adverse health impacts (NHTSA 2020). These estimated increases from the roll back of the 2012 standards are expected to result in more than a billion metric tons additional climate pollution through 2040 as determined by calculating the difference from the reduction of 2 billion metric tons the 2012 rule was expected to accomplish compared to the standards of the 2020 rule (NHTSA 2020).

Mandatory Reporting of Greenhouse Gases

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, USEPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and

engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to USEPA.

New Source Review

USEPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs, which defines when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities would be required to obtain Prevention of Significant Deterioration and Title V permits. USEPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources would be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units.

As required by a settlement agreement, USEPA proposed new performance standards for emissions of CO_2 for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts would be required to meet an output-based standard of 1,000 pounds of CO_2 per megawatt-hour, based on the performance of widely used natural gas combined cycle technology. On March 28, 2017, Executive Order (EO) on Energy Independence (EO 13783) was ordered which calls for a review of the Clean Power Plan. On October 16, 2017, USEPA issued the proposed rule Repeal of Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units an Energy Independence (USEPA 2018a).

Cap-and-Trade

"Cap-and-trade" refers to a policy tool where emissions are limited to a certain amount and can be traded or provide flexibility on how the emitter can comply. There is no current federal GHG cap-and-trade program; however, some states have joined to create initiatives to provide mechanisms for cap-and-trade.

The Regional Greenhouse Gas Initiative, which began in 2008, is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO_2 emissions from power plants, auctions CO_2 emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently only California and Quebec are participating in the cap-and-trade program (C2ES 2015).

3.7.2.2 State

Assembly Bill 32

The California State Legislature enacted Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include CO_2, methane (CH_4), nitrogen oxides (NO_X), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The California Air Resources Board (CARB) is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> *Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.*

CARB approved the 1990 GHG emissions level of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) on December 6, 2007 (CARB 2007). Therefore, to meet the state's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a business as usual (BAU) scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (CARB 2008). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, CARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (CARB 2010).

Progress in Achieving Assembly Bill 32 Targets and Remaining Reductions Required

The state has made steady progress in implementing AB 32 and achieving targets included in EO S-3-05. The progress is evident in updated emission inventories prepared by CARB, which showed that the state inventory dropped below 1990 levels for the first time in 2016 (CARB 2018). CARB's Climate Change Scoping Plan (Scoping Plan) (subsequently amended by the 2017 update) includes projections indicating that the state would meet or exceed the 2020 target with adopted regulations (CARB 2017).

CARB 2008 Scoping Plan

The Scoping Plan contains measures designed to reduce the state's emissions to 1990 levels by the year 2020 to comply with AB 32 (CARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include the following:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;

- Developing a California Cap-and-Trade Program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed Cap-and-Trade Program. The Scoping Plan states that the inclusion of these emissions within the Cap-and-Trade Program would help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps, and requirements are provided as a margin of safety by accounting for additional GHG emission reductions (CARB 2008).

Cap-and-Trade Program

The Cap-and-Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's Cap-and-Trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015.

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit would not be exceeded. An inherent feature of the Cap-and-Trade Program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are guaranteed only on an accumulative basis.

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program would be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program would be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California would meet its 2020 GHG emissions reduction mandate.

CARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identified the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report

established a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050.

Assembly Bill 398

The Governor signed AB 398 on July 25, 2017, to extend the Cap-and-Trade Program to 2030.The legislation includes provisions to ensure that offsets used by sources are limited to 4 percent of their compliance obligation from 2021 to 2025 and 6 percent of their compliance obligation from 2026 through 2030. AB 398 also prevents air districts from adopting or implementing emission reduction rules from stationary sources that are also subject to the Cap-and-Trade Program (CARB 2017).

Senate Bill 32

Senate Bill (SB) 32 was signed into law on September 8, 2016. SB 32 gives CARB the statutory responsibility to include the 2030 target previously contained in EO B-30-15 in the 2017 Scoping Plan Update. SB 32 states that “In adopting rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions authorized by this division, the state [air resources] board shall ensure that statewide greenhouse gas emissions are reduced to at least 40 percent below the statewide greenhouse gas emissions limit no later than December 31, 2030.”

2017 Climate Change Scoping Plan Update

The 2017 Climate Change Scoping Plan Update was adopted on December 14, 2017 amending the 2008 Scoping Plan and addresses the SB 32 targets. The major elements of the framework proposed to achieve the 2030 target are as follows:

1. SB 350
    a. Achieve 50 percent Renewables Portfolio Standard (RPS) by 2030.
    b. Doubling of energy efficiency savings by 2030.
2. Low Carbon Fuel Standard
    a. Increased stringency (reducing carbon intensity 18 percent by 2030, up from 10 percent in 2020).
3. Mobile Source Strategy (Cleaner Technology and Fuels Scenario)
    a. Maintaining existing GHG standards for light- and heavy-duty vehicles.
    b. Put 4.2 million zero-emission vehicles on the roads.
    c. Increase zero-emission vehicles buses and delivery and other trucks.
4. Sustainable Freight Action Plan
    a. Improve freight system efficiency.

   b. Maximize use of near-zero emission vehicles and equipment powered by renewable energy.

   c. Deploy over 100,000 zero-emission trucks and equipment by 2030.

5. Short-Lived Climate Pollutant Reduction Strategy

   a. Reduce emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030.

   b. Reduce emissions of black carbon 50 percent below 2013 levels by 2030.

6. SB 375 Sustainable Communities Strategies

   a. Increased stringency of 2035 targets.

7. Post-2020 Cap-and-Trade Program

   a. Declining caps, continued linkage with Québec, and linkage to Ontario, Canada.

   b. CARB will look for opportunities to strengthen the program to support more air quality co-benefits, including specific program design elements. In Fall 2016, CARB staff described potential future amendments including reducing the offset usage limit, redesigning the allocation strategy to reduce free allocation to support increased technology and energy investment at covered entities and reducing allocation if the covered entity increases criteria or toxics emissions over some baseline.

8. 20 percent reduction in GHG emissions from the refinery sector.

9. Develop Integrated Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Many of the measures included in the 2017 Climate Change Scoping Plan Update are implemented on a statewide level and do not specifically apply to the Program. However, the short-lived climate pollutants would be applicable to the Program through the use of cleaner construction equipment.

Senate Bill 375: The Sustainable Communities and Climate Protection Act of 2008

SB 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits more than 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

CARB has prepared the Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Targets. The update includes an increase in the 2035 target for Merced County from 10 percent to 14 percent.

Assembly Bill 1493: Pavley Regulations and Fuel Efficiency Standards

AB 1493, enacted on July 22, 2002, required CARB to develop and adopt regulations and fuel efficiency standards that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by USEPA's denial of an implementation waiver. USEPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011.

The standards were phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards resulted in an approximately 22 percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards resulted in about a 30 percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation, rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for AB 1493 was incorporated into Amendments to the Low-Emission Vehicle Program, referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Cars program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation would reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The rules would reduce pollutants from gasoline and diesel-powered cars and would deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles, and hydrogen fuel cell cars. The regulations would also ensure that adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

Senate Bill 1368: Emission Performance Standards

In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant.

Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the state. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 pounds of CO_2 per megawatt-hour (MWh).

Senate Bill 1078: Renewable Electricity Standards

On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed EO S-14-08, which established an RPS target for California requiring

that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger signed EO S-21-09, which directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010, by Resolution 10-23. In 2011, the State Legislature adopted this higher standard in SB X1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas.

Senate Bill 350: Clean Energy and Pollution Reduction Act of 2015

The legislature approved and the governor then signed SB 350 on October 7, 2015, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations.

Senate Bill 100: California Renewables Portfolio Standard Program.

The Governor approved SB 100 on September 10, 2018. The legislation revised the RPS goals to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. The bill would require that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030.

Senate Bill X7-7: The Water Conservation Act of 2009

SB X7-7 directs urban retail water suppliers to set individual 2020 per capita water use targets and to begin implementing conservation measures to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet of urban water use in 2020.

Executive Order S-3-05

On June 1, 2005, former California Governor Arnold Schwarzenegger announced EO S-3-05, which announced the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that would stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an EO, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15

On April 29, 2015, Governor Edmund G. Brown Jr. issued EO B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's EO aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris in late 2015. The

EO sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure that California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMTCO_2e$. The EO also requires the state's climate adaptation plan to be updated every 3 years and for the state to continue its climate change research program, among other provisions. As with EO S-3-05, this EO is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to provide post-2020 targets was signed by the Governor in 2016. SB 32 includes a 2030 mandate matching the requirements of the EO.

Executive Order S-01-07: Low Carbon Fuel Standard

The governor signed EO S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the EO established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, CARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to CARB for consideration as an "early action" item under AB 32. CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The LCFS was subject to legal challenge in 2011. Ultimately, CARB was required to bring a new LCFS regulation for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The Office of Administrative Law approved the regulation on November 16, 2015. The regulation was last amended in 2018.

Executive Order S-13-08

EO S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the EO, the 2009 California Climate Adaptation Strategy was adopted, which is the "… first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

Executive Order B-55-18

EO B-55-18 issued by Governor Brown on September 10, 2018, establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and to achieve and maintain net negative emissions thereafter. The EO directs CARB to work with relevant state agencies to develop a framework for implementation and accounting that tracks progress toward this goal.

California Energy Code

Compliance with the California Energy Code (Title 24, Part 6, of the California Code of Regulations [CCR], California's Energy Efficiency Standards) and Title 20, Public Utilities and Energy, standards must occur for all new buildings constructed in California. These efficiency standards apply to new construction of both residential and nonresidential (i.e., maintenance buildings and pump station buildings associated with the Program) buildings, and they regulate energy consumed for heating, cooling, ventilation, water heating, and lighting. The building efficiency standards are enforced through the local building permit processes, and local government agencies may adopt and enforce energy standards for new buildings provided that these standards meet or exceed those provided in the Title 24 guidelines.

3.7.2.3 Local

San Joaquin Valley Air Pollution Control District

On December 17, 2009, the San Joaquin Valley Air Pollution Control District (SJVAPCD) Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," and the policy "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climate change. SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climate change could be considered cumulatively considerable. SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

Merced Vision 2030 General Plan

The City of Merced (City) Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to GHG emissions and energy resources, including the following:

Goal Area SD-3: Sustainable Development Policies

- **Policy SD-3.1.** Promote the use of Solar Energy and other Alternative Energy Resources

City of Merced Climate Action Plan

The City's Climate Action Plan (CAP) was adopted in 2012 and includes goals, strategies, and actions to reduce local community GHG emissions to 1990 levels by the year 2020. Although the CAPs planning timeframe predates the start of construction for the Program which would occur in 2022 at the earliest, certain goals and strategies would continue to be carried forward as the City contemplates next steps in its climate action planning. Specific goals and strategies that are presented in the Merced CAP that are relevant to the Program are included below (City of Merced CAP 2012):

Goal 4. Protect Air Resources (AR)

- **Strategy AR 4.2:** Clean Trips-Clean Vehicles
    - Action Strategy AR 4.2.4: Reduce Idling. Identify actions that result in win-win outcomes for the community and community members, and implement through feasible and reasonable means, which may or may not include an ordinance amendment.
    - Action Strategy AR 4.2.9: Explore methods, and implement where appropriate, actions to reduce heavy-duty diesel emissions. For example, support clean heavy-duty fleets by facilitating the conversion of heavy-duty trucks to clean fuels while also encouraging the provision of alternative fuel infrastructure and operational requirements.

Goal 6: Increase the Use of Renewable Energy Sources (RE)

- **Strategy RE 6.1:** Renewable Energy Systems
    - Action Strategy RE 6.1.3: Explore methods to encourage new commercial and industrial land uses greater than a certain size to utilize on-site renewable energy systems to offset a minimum percentage of the projected building energy use. Renewable energy systems may include energy generated by solar, wind geothermal, water, or bio-based energy capture systems.
    - Action Strategy RE 6.1.5: Install methane-powered electric generators at the City's Wastewater Treatment Reclamation Facility (WWTRF) when feasible. Take interim steps necessary to achieve this goal.

Goal 7: Building Energy Conservation (BE)

- **Strategy BE 7.1:** Green City Facilities and Infrastructure
    - Action Strategy BE 7.1.3: Consider use of renewable energy systems on City-owned facilities, providing assessment and options for City Council review and discussion.
    - Action Strategy BE 7.1.6: Improve energy efficiency when replacing equipment, renovating, or constructing.

3.7.3 Environmental Setting

GHGs and climate change are cumulative global issues. CARB and USEPA regulate GHG emissions within California and the U.S., respectively. While CARB has the primary regulatory responsibility within California for GHG emissions, local agencies can also adopt policies for GHG emission reduction. Additionally, the Program Study Area is located within the San Joaquin Valley Air Basin (SJVAB) and within the jurisdiction of the SJVAPCD.

Many chemical compounds in the earth's atmosphere act as GHGs, as they absorb and emit radiation within the thermal infrared range. When radiation from the sun reaches the Earth's surface, some of it is reflected back into the atmosphere as infrared radiation (heat). GHGs absorb this infrared radiation and trap the heat in the atmosphere. Over time, the amount of energy from the Sun to the Earth's surface should be approximately equal to the amount of

energy radiated back into space, leaving the temperature of the Earth's surface roughly constant. Many gases exhibit these "greenhouse" properties. Some of them occur in nature (water vapor, CO_2, CH_4, and nitrous oxide [N_2O]), while others are exclusively human-made (like gases used for aerosols) (USEPA 2018b).

The principal climate change gases resulting from human activity that enter and accumulate in the atmosphere are listed below:

- **Carbon Dioxide:** CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and chemical reactions (e.g., the manufacture of cement). CO_2 is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
- **Methane:** CH_4 is emitted during the production and transport of coal, natural gas, and oil. CH_4 emissions also result from livestock and agricultural practices and the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide:** N_2O is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.
- **Fluorinated Gases:** Hydrofluorocarbons, perfluorinated chemicals, and Sulfur hexafluoride are synthetic, powerful climate-change gases that are emitted from a variety of industrial processes. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent climate-change gases, they are sometimes referred to as high global warming potential gases.

3.7.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to GHGs and energy resources. When an impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.7.4.1 Impact Analysis

Methodology for Analysis

Under CEQA, establishing significance thresholds is at the discretion of the lead agency. Outside of adopting their own thresholds, lead agencies often look to guidance provided by expert resource agencies such as the CARB or the applicable air pollution control district (APCD) or air quality management district (AQMD) whose purpose is to provide technical guidance on the resources they oversee. Many APCDs and AQMDs provide guidance on the assessment of air quality and GHG emissions and their potential for significant impacts based on the impacts identified in Section 3.7.1, Basis for Analysis, and proscribe recommendations for mitigating impacts.

The Program Study Area falls within the jurisdiction of SJVAPCD. SJVAPCD guidance on determining impact significance recommends three conditions in which a project's impacts would be less than significant:

1. If the project complies with an approved GHG reduction plan:

   CAPs are typically the most applicable GHG reduction plans to the SJVAPCD criteria. Merced's CAP was adopted in 2012; however, the 2020 emission reduction targets to 1990 levels it sets forth have since been superseded by the state's 2017 Scoping Plan, which sets reduction targets for the year 2030. Since 2012, The

City has been in the process of updating the CAP with the preparation of a Programmatic CAP. A draft of the Programmatic CAP was released in 2015, but to date it has not been finalized, and similar to the 2012 CAP, the Programmatic CAP only considers 2020 emission reduction targets. Since the CAPs present targets that would occur before Program construction activities are initiated, this negates the Program's ability to meet the goals of the CAP in the first place. As such, the City's CAP is not considered to be an applicable approved GHG reduction plan.

2. If the project implements Best Performance Standards (BPS):

   The second criteria for evaluating significance, BPS, is intended for stationary sources and development projects. The SJVAPCD has established BPS for certain stationary sources and has provided draft BPS for development projects but not for construction emissions associated with those types of projects. Impacts resulting from implementation of the Program, including project components would be largely construction-related and thus, BPS standards would not apply.

3. The project reduces operational GHG emissions by at least 29 percent over BAU conditions (demonstrated quantitatively).

   The final criteria, BAU, calls for an assessment of the statewide GHG emissions reduction from the BAU emission condition. In other words, an assessment of the reduction of GHG emissions at a future date that would be based on a percentage decrease of historic GHG levels (typically levels in the year 1990). Establishing the methodology for determining what BAU conditions and what targets should be has been the subject of recent legislation and legal proceedings and is currently still unsettled. Both AB 32 (21.7 percent below 1990 GHG levels by 2020) and SB 32 goals (40 percent below 1990 GHG levels by 2020), EO S-3-05 (80 percent below 1990 GHG levels by 2050), and the legal proceedings surrounding assessments based on their standards have brought to light the validity of applying statewide efficiency-based thresholds to project-level impact evaluations.

The Newhall Ranch (*Center For Biological Diversity, et al. v. California Department of Fish and Wildlife* [The Newhall Land and Farming Company, Real Party in Interest] [2015] 62 Cal.4th 204) decision affirmed that "thresholds only define the level at which an environmental effect 'normally' is considered significant; they do not relieve the lead agency of its duty to determine the significance of an impact independently." The Court went on in the decision to suggest approaches in which the lead agency could undertake to establish significance thresholds. Of the recommended approaches, establishment of a quantitative threshold is the most applicable to assessment of the Program's impacts since they are mainly construction based.

Establishment of Quantitative Thresholds

These quantitative thresholds can be established by APCDs and AQMDs based on best available data to determine quantitative values in which emissions beyond that value would result in a significant impact within their jurisdiction. To date, SJVAPCD has not adopted quantitative thresholds, so the City looked to nearby and similarly situated air districts to identify quantitative thresholds that would best evaluate the potential significance of the Program GHG emissions. A review of air districts with established quantitative thresholds shown in Table 3.7-1 identified the Sacramento Metropolitan Air Quality Management District (SMAQMD) as having the most applicable and conservative construction and operational thresholds. The SMAQMD threshold was selected because as discussed in the SMAQMD Guide to Air Quality Assessment in Sacramento County, the thresholds would ensure that at least 90

percent of new GHG emissions would be reviewed and assessed for mitigation, which would thereby contribute to GHG emission reduction goals set by AB 32, SB 32, the CARB Scoping Plan, and EO S-3-05.

Table 3.7-1: Adopted GHG CEQA Quantitative Significance Thresholds in California

Agency	Construction Threshold ($MTCO_2e$)	Operational Threshold ($MTCO_2e$)
Bay Area Air Quality Management District	N/A	Project: 1,100 Stationary: 10,000
East Kern Air Pollution Control District	N/A	Stationary: 25,000
Monterey Bay Unified Air Pollution Control District	N/A	Stationary: 25,000
Mojave Desert Air Quality Management District	100,000	100,000
Antelope Valley Air Quality Management District	100,000	100,000
Santa Barbara County Air Pollution Control District	N/A	Stationary: 10,000
San Luis Obispo Air Pollution Control District	N/A	Project: 1,150 Stationary: 10,000
South Coast Air Quality Management District	N/A	Commercial Project: 1,400 Mixed Use Project: 3,000 Residential Project: 3,500 Stationary: 10,000
Sacramento Metropolitan Air Quality Management District	1,100[1]	Project: 1,100 Stationary: 10,000

Notes:

1. SMAQMD states in its CEQA guidance that “Lead agencies may decide to amortize the level of short-term construction emissions over the expected (long-term) operational life of a project.”

Key:

$MTCO_2e$ = million tons of carbon dioxide equivalent

N/A = not applicable

The specific methodology for assessing the impacts of the Program, including its components compared to the SMAQMD quantitative thresholds was completed in accordance with current industry guidance, including SMAQMD’s CEQA Guidance and the California Association of Environmental Professionals Climate Change Committee’s guidance for assessing GHG impacts in the post-2020 timeframe and post-Newhall Ranch, "Final White Paper Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California,” published in October 2016 (AEP 2016). The SMAQMD has also adopted a threshold of 1,100 $MTCO_2e$ for construction and operation of land use development projects, such as new residential and commercial projects. SMAQMD bright-line thresholds were developed for commercial projects, residential projects, and stationary sources. Commercial and residential bright-line thresholds are typically based on a market capture rate or a gap analysis, which is tied back to AB 32 reduction targets (1990 levels by 2020). These quantitative thresholds reflect local or regional land use conditions, particularly residential and commercial density, and access to transit.

The SMAQMD numerical threshold may be viewed as an acceptable CEQA assessment tool by SJVAPCD considering their absence of a recommended threshold. The 1,100 $MTCO_2e$ threshold is used to determine the Program's potential to generate GHG emissions that may have a significant impact on the environment or conflict with an applicable GHG plan, policy, or regulation.

Additionally, the Program's compliance with applicable measures from the City's CAPs, the AB 32 Scoping Plan, and the 2017 Scoping Plan Update (SB 32 target year) would be used to determine potential conflicts with GHG reduction plans.

Impact GHG-1	**Generate greenhouse gas emissions, either directly, or indirectly, that may have a significant impact on the environment.**

Impact GHG-1 Analysis

Combined Program/Proposed Project Impacts

The City's 2030 General Plan and 2030 General Plan Draft EIR assessed GHG emissions associated with reasonable build-out of the SUDP/SOI for construction and operational activities associated with that reasonable build-out, finding that potential GHG emissions would result in significant, cumulatively considerable, and unavoidable impact. The 2030 General Plan Draft EIR concluded, "Until the SJVAPCD modifies regulations to address the emission of greenhouse gases, specific mitigations that would address climate change locally are speculative. As the SJVAPCD modifies its plans and policies to address global warming considerations, CEQA documents will have to consider those plans and policies when assessing projects. The air quality impact analysis in [the General Plan EIR] include[s] mitigation measures at the local level to reduce atmospheric greenhouse gas emissions in accordance with existing plans and policies to address global climate change. However, development under the… [2030] General Plan in combination with growth and development at the regional level, would result in a significant, cumulatively considerable and unavoidable impact." As described further in the following subheadings, the Program and proposed Project were considered as a part of the 2030 General Plan build-out and are consistent with the plans and policies of the 2030 General Plan. Additionally, as described in Section 3.2, Air Quality, many plans, policies, and regulations related to Air Quality and Greenhouse Gas emissions have subsequently taken into account GHG emissions and established reduction targets more clearly outlining assessment of significant impacts. This means that while the 2030 General Plan Draft EIR found GHG emissions as a result of plan implementation to be significant, cumulatively considerable, and unavoidable, impacts under the Program require an individual assessment based on considerations of most recent plans, policies, and regulations.

Construction

Direct GHG emission impacts were assessed for both construction and operation activities associated with the Program and the proposed Projects by looking at the CO_2 equivalent. The primary sources of Program-related GHG emissions would occur temporarily from combustion of fossil fuels from the operation of internal combustion engines (portable equipment, off road equipment, and vehicles) during construction activities. Table 3.7-2 shows the estimated construction emissions associated with the proposed Projects for 2022, 2023, and 2024 and total estimated emissions. Further construction equipment and durations associated with the Program activities were conservatively estimated to represent 10 percent of the total construction emissions associated with the three

proposed Projects modeled in Table 3.7-2 since projects implemented subsequent to the proposed Projects would have smaller footprints, be shorter in duration, and require less equipment.

Table 3.7-2: Estimated Program and Proposed Project Construction GHG Emissions

Year	$MTCO_2e$			
	Northern Trunk Sewer	**Southern Trunk Sewer**	**WWTRF Expansion**	**Total**
2022	523	291	312	1,126
2023	550	169	196	915
2024	107	0	0	107
Total Proposed Project Emissions	**1,180**	**460**	**508**	**2,148**
Total Program Emissions	**N/A**	**N/A**	**N/A**	**214.8**
Project Emissions Amortized[1]	39	15	17	72
Program Emissions Amortized[1]				7
Total Amortized Construction Emissions[1]				**79**

Notes:
[1]Amortized over 30-year Program planning horizon
Key:
$MTCO_2e$ = million tons of carbon dioxide equivalent
N/A = not applicable
WWTRF = Wastewater Treatment and Reclamation Facility

As shown in Table 3.7-2, the Northern Trunk Sewer, Southern Trunk Sewer, and WWTRF projects would have 1,180, 460, and 508 $MMTCO_2e$ emissions, respectively, and subsequent Program activities are estimated to have 214.8 $MMTCO_2e$ emissions total. Because construction impacts from any one component of the Program or proposed Projects would be relatively short in duration (anticipated to be 5 years and realistically 2 years or less), they would contribute a relatively small portion (less than a quarter) of the overall lifetime GHG emissions of the Program. Further, GHG emission reduction measures for construction equipment are relatively limited, meaning that there are few measures that would help reduce GHG emissions from construction. While, individually these estimates are below or slightly above the 1,100 $MMTCO_2e$ threshold of the SMAQMD, following the standard practice of amortization, which factors GHG impacts over the anticipated lifetime of a program or project to consider the GHG reduction measures and strategies that would decrease GHG emissions to the levels envisioned by the plans and regulations identified in Section 3.7.2, Regulatory Setting, the GHG emissions associated with construction of the Program and the proposed Projects are substantially below the SMAQMD construction threshold when considered over a 30 year period. Additionally, the mitigation measure in Section 3.3, Air Quality, MM AIR-3 would implement the SMAQMD best management practices for construction which would reduce emission of criteria pollutants, including CO_2. Based on the estimated results modeling for estimated CO_2 equivalent emissions construction over the life of the Program would not result in emissions of significant greenhouse gases that would have a significant environmental impact. Therefore, the impact for construction of the Program and proposed Projects would be less than significant.

Operation

CO_2 equivalent emissions during operation of the Program and proposed Projects are expected to be similar to existing operations, largely consisting of mobile source related emissions (i.e., worker commute trips and periodic facility maintenance visits). Indirect source emissions associated with the operation of the new or upgraded Program facilities would be generated from electrical consumption to power pump stations and additional equipment from the upgrades to the WWTRF; however, the energy consumption would be minimal and as such is not included in the emissions estimate. The operation of the facilities such as pump stations and the WWTRF would require backup generator(s) for unexpected power failures that could result in operational GHG-related emissions; however, the generator(s) would only be run during power outages and for intermittent routine maintenance. As a SJVAPCD-permitted low-use engine, the hours of the generator(s) would be limited to a maximum of 100 hours for the year and thus would not result in substantial generation of GHG emissions. Table 3.7-3 presents the summary of the estimated total GHG emissions associated with the Program including the proposed Projects.

Table 3.7-3: Estimated Annual Program Greenhouse Gas Emissions

Program	$MTCO_2e$ per year
Construction	79
Operational – Mobile	110
Operational - Stationary	23
Total	**212**
Threshold	1,100
Exceed Threshold?	No
Significant?	No

Key:
$MTCO_2e$ = million tons carbon dioxide equivalent
WWTRF = Wastewater Treatment and Reclamation Facility

As shown in Table 3.7-3, the Program's long-term emissions would be 212 $MTCO_2e$ and would be substantially less than the 1,100 MTCO2e SMAQMD threshold. These operational GHG emissions result from operation of the wastewater collection system and the WWTRF expanded under the Program to reasonable build-out conditions. This includes operational mobile estimates of approximately 22 $MTCO_2e$ per year for each 4 to 5 Mgal/day incremental increase of capacity at the WWTRF (up to 35 Mgal/day build-out for a total of 110 $MTCO_2e$ per year) as well as operation of stationary equipment such as back-up generators, construction emissions. Additionally, since the Program would not be completely built-out for more than a decade, it is likely that better technologies would be available in the future, which would further reduce GHG emissions from daily operations (including stationary and operational equipment). As such, GHG emissions associated with the Program and proposed Projects would be less than significant.

Therefore, the potential for the Program including the proposed Projects to generate substantial amounts of GHG emissions that would result in a significant effect on the environment would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None required.

Level of Significance After Mitigation: Less than Significant

Impact GHG-1 Findings

Impact GHG-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GHG-1 Mitigation Required: None required

Impact GHG-1 Overall Level of Significance After Mitigation: Less than Significant

Impact GHG-2 Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing the emissions of greenhouse gases.

Impact GHG-2 Analysis

Program Impacts

Construction and Operation

Implementation of the Program would have a significant impact if it conflicted with the emission reduction goals set forth by AB 32 and SB 32. As discussed above, the GHG reductions in the City's CAP only address 2020 GHG emission levels for the City and are not applicable to the Program given the post-2020 start date for construction and operation. The Program's consistency with applicable goals and strategies is discussed in further detail below.

CARB has outlined a number of potential strategies for achieving the 2030 reduction target of 40 percent below 1990 levels. As previously described in Section 3.7.2, Regulatory Framework, these potential strategies include renewable resources for half of the state's electricity by 2030, reducing petroleum use in cars and trucks, and reducing the carbon content of transportation fuels. Implementation of the Program, including its components would comply with these future regulations, as promulgated by the USEPA, CARB, or other agencies and would not generate substantial amounts of GHG emissions that would hinder the state's ability to achieve the goals under SB 32, as evidenced by the less than significant amount of GHG emissions for the Program. Consistency with the SB 32 Scoping Plan measures is provided in Table 3.7-4.

Table 3.7-4: Consistency with Senate Bill 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
SB 350 50 Percent Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33 percent in 2020 to 50 percent in 2030.	**Consistent:** The City would purchase electricity necessary to construct and operate the Program components from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels	**Consistent.** This measure applies to existing buildings. New structures are required to comply with Title 24 Energy Efficiency Standards that are expected to increase in stringency. Structures proposed include new pump stations WWTRF structures, which would be required to comply with the Title 24 standards.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 18 percent reduction in carbon content by 2030.	**Consistent**. Vehicles accessing the specific sites associated with Program components would use fuel

Scoping Plan Measure	Project Consistency
	containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario). Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent.** The City would continue to "green" its fleet through implementation of its CAP. Potential on-road construction vehicles and operational haul trucks would be subject to the regulation. The vehicle fleet would continue to be cleaner as the regulation is implemented.
Sustainable Freight Action Plan. The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero-emission operation and maximize near-zero-emission freight vehicles and equipment powered by renewable energy by 2030.	**Not Applicable.** The measure applies to owners and operators of trucks and freight operations. The vehicles associated with construction and operation would not be subject to this rule.
SLCP Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Consistent.** Vehicles and equipment used to construct and operate Program components would minimize idling and encourage the use of cleaner construction equipment generating fewer SLCPs. The Program would be consistent with regulatory measures associated with SLCP strategies. The state is currently investigating strategies to reduce SLCPs by encouraging resource recovering wastewater treatment projects to help achieve the goal of reducing fugitive methane by 40 percent by 2030, to include the following: • Determining opportunities to support co-digestion of food-related waste streams at wastewater treatment plants. • Incentivizing methane capture systems at wastewater treatment plants to produce renewable electricity, transportation fuel, or pipeline biomethane
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled.	**Not Applicable.** The Program would not involve residential development.

Scoping Plan Measure	Project Consistency
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program indirectly affects people who use the products and services produced by the regulated industrial sources when increased cost of products or services (such as electricity and fuel) are transferred to the consumers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period.
Natural and Working Lands Action Plan. CARB is working in coordination with several other agencies at the federal, state, and local levels, stakeholders, and with the public, to develop measures as outlined in the Scoping Plan Update and the governor's EO B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The Program is a wastewater system and would not be considered natural or working lands.

Source: CARB 2017 Scoping Plan Update.

Key:

CAP = Climate Action Plan

CARB = California Air Resources Board

CEQA = California Environmental Quality Act

EO = Executive Order

GHG = greenhouse gas

LEV III = Low-Emission Vehicle Program

SB = Senate Bill

SLCP = Short-Lived Climate Pollutant

ZEV = zero-emission vehicle

The Program's consistency with applicable City CAP measures is provided in Table 3.7-5.

Table 3.7-5: Consistency with City of Merced Climate Action Plan

Goal/Strategies	Consistency Determination
Goal 4. Protect Air Resources (AR) • Strategy AR 4.2: Clean Trips-Clean Vehicles ○ Action Strategy AR 4.2.4: Reduce Idling. Identify actions that result in win-win outcomes for the community and community members, and implement through feasible and reasonable means, which may or may not include an ordinance amendment. ○ Action Strategy AR 4.2.9: Explore methods, and implement where appropriate, actions to reduce heavy-duty diesel emissions. For example, support clean heavy-duty fleets by facilitating the conversion of heavy-duty trucks to clean fuels while also encouraging the provision of alternative fuel infrastructure and operational requirements.	**Consistent**. MM AIR-3 would reduce vehicle idling associated with construction. Vehicles associated with bio-solids hauling would be subject to existing regulations prohibiting idling. The Program would not conflict with the City's ability to change out its fleet of vehicles for alternative-fueled vehicles or new model vehicles resulting in fewer emissions associated with diesel particulate matter.
Goal 6: Increase the Use of Renewable Energy Sources (RE) • Strategy RE 6.1: Renewable Energy Systems ○ Action Strategy RE 6.1.3: Explore methods to encourage new commercial and industrial land uses greater than a certain size to utilize on-site renewable energy systems to offset a minimum percentage of the projected building energy use. Renewable energy systems may include energy generated by solar, wind geothermal, water, or bio-based energy capture systems. ○ Action Strategy RE 6.1.5: Install methane-powered electric generators at the City's WWTP when feasible. Take interim steps necessary to achieve this goal.	**Not Applicable**. Action Strategy 6.1.3 is not applicable as the Program, including its components are not a new commercial or industrial land use. The Program would not conflict with the City's ability to implement Action Strategy RE 6.1.5. The use of methane-powered electric generators is currently being considered as part of the WWTRF upgrade design and if feasible would be incorporated into the overall WWTRF facilities operation. Green infrastructure, including low wattage lighting and solar and wind energy are currently being implemented where possible throughout City-facilities, including the wastewater collection system facilities.
Goal 7: Building Energy Conservation (BE) • Strategy BE 7.1: Green City Facilities and Infrastructure ○ Action Strategy BE 7.1.3: Consider use of renewable energy systems on City-owned facilities, providing assessment and options for City Council review and discussion. ○ Action Strategy BE 7.1.6: Improve energy efficiency when replacing equipment, renovating, or constructing.	**Consistent.** The Program would not preclude the City's ability to implement renewable energy infrastructure using the methane generated at the City's Wastewater Treatment Plant facility. Equipment installed under the Program would be more energy efficient than current equipment.

Key:
City = City of Merced
WTRF = Wastewater Treatment and Reclamation Facility
Source: City of Merced CAP 2012

As demonstrated above, the Program including the proposed Projects would be consistent with applicable GHG reduction measures from the state's Scoping Plan and measures from the City's CAP. The emissions associated with the Program and proposed Projects would be less than 1,100 $MTCO_2e$ and would result in a less than significant impact and thus would not have the potential to result in a conflict with the Scoping Plan or the City's CAP. Therefore, the Program and the proposed Projects would not conflict with an applicable plan, policy, or regulation with the purpose of reducing GHG emissions, and it would result in a less than significant impact.

Level of Significance Prior to Mitigation: Less than Significant Impact

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant Impact

Impact GHG-2 Findings

Impact GHG-2 Overall Level of Significance Prior to Mitigation: Less Than Significant Impact

Impact GHG-2 Mitigation Required: None Required

Impact GHG-2 Overall Level of Significance After Mitigation: Less Than Significant Impact

Impact GHG-3	**Result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.**

Impact GHG-3 Analysis

Program and Proposed Project Impacts

Implementation of the Program and the proposed Projects includes reasonable build-out of the area subject to the City's 2030 General Plan, which would result in increased capacity for wastewater generated within the Program Study Area. The new and upgraded wastewater collection system as well as the improvements to the existing WWTRF would require minimal energy consumption beyond what currently exists due to the use of a gravity fed system, to the extent feasible. Energy efficiencies would be incorporated into Program construction and operations, as specified by the federal, state, and local policies, and regulations pertaining to energy standards (See Section 3.7.2, Regulatory Framework). This would ensure that natural resources are conserved to the maximum extent possible (i.e., Energy Independence and Security Act of 2007, Title 10 Code of Federal Regulations, Part 431, Energy Efficiency Program for Certain Commercial, and Industrial Equipment, including Subpart B, Paragraph 431.25 for Electric Motors; and Subpart K, Paragraph 431.196 for Distribution Transformers and other regulations listed in Section 3.7.2, Regulatory Framework would be followed). However, specific components of the Program, such as pump stations, trunk sewers, and WWTRF expansions, would likely require an increase in energy consumption beyond what currently exists. Additional short-term construction-related energy consumption would also likely be required intermittently over the time that reasonable build-out is expected to occur. These additional construction and operational energy consumption impacts are discussed in further detail below.

Construction

Construction activities would consume energy through the operation of heavy off-road equipment, trucks, and worker traffic. Additional energy usage would occur as power for tools and equipment used onsite; including but not limited to gas generators, air compressors, and other typical direct construction energy uses.

Construction activities associated with the Program components would also use electricity and gas as a short-term consequence of construction of the Program and proposed Project components. Diesel and gasoline are the primary fuel types expected to be used to power construction equipment. Merced Irrigation District (MID) and Pacific Gas and Electric (PG&E) are the commercial electricity providers within the Program Study Area. Additionally, PG&E provides natural gas to customers as well. Table 3.7-6 provides a summary of the anticipated construction energy use associated with implementation of the Program.

Table 3.7-6: Program Construction Fuel Consumption

Source	Diesel Fuel Consumption (gallons)	Gasoline Fuel Consumption (gallons)
Off-road Equipment	112,198	0
Heavy Duty Trucks	7,616	0
Vendor Truck Trips	36,532	0
Worker Vehicles	0	69,855
Project Total	**156,347**	**69,855**
2018 Diesel Fuel Data for Merced County	132,000,000	39,000,000
Percentage of County	**0.12%**	**0.18%**

Source of Fuel Data: CEC 2020

Construction activities associated with the Program components would be similar to other construction activities occurring throughout the City's SUDP/SOI in that it would use typical construction equipment described Chapter 2.0, Project Description. Based on system capacity and review, the power and energy system within the Program Study Area is considered adequate to handle the limited and sporadic demand throughout construction of the Program including the proposed Projects, which would be similar to existing conditions from surrounding operations throughout the Program Study Area. As shown in Table 3.7-6, the amount of gasoline and diesel fuel that would be consumed if the Program is implemented would not represent a substantial fraction of the available gasoline and diesel fuel supply in Merced County. Furthermore, the Program would comply with the state's anti-idling and emissions regulations, which would result in a more efficient use of diesel fuel consumption, as well as the California Energy Code (Title 24, Part 6), California Building Code, and the United States Department of Energy specifications. These codes include specifications for type and efficiency requirements for motors used, lighting control requirements, and voltage drop requirements. Based on this, the Program would not result in wasteful, inefficient, or unnecessary consumption of energy resources.

Operation

Any operational traffic increases associated with the Program including the proposed Projects would be nominal since the WWTRF is an existing facility, and pipelines and other infrastructure would require limited operation and maintenance trips (estimated 10 additional trips per year for the new trunk sewers and 2 additional trips a day for the WWTRF expansion for biosolid hauling) that would likely covered by existing City staff within the scope of their current operations and maintenances efforts associated with the City's existing system. Operation of the wastewater collection system would maintain similar if not improved energy efficiency with implementation of energy reduction technology such as high efficiency lightbulbs. Operation of pipelines would be gravity fed wherever feasible, requiring minimal amount of energy use associated with wastewater conveyance. Where forcemains and thereby pump stations are required because gravity systems would not be feasible, there would be a slight increase in energy demand. This increase is not anticipated to constitute a significant impact to energy consumption since energy-conserving operational equipment for the operation of the pump station and the WWTRF upgrades would be incorporated to meet Title 24 standards, and therefore would not result in a significant impact or wasteful, inefficient, or unnecessary consumption of energy. The impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

New Trunk Sewer Infrastructure Project Impacts

Similar to the discussion for the Program above, the new trunk sewer infrastructure would require the consumption of energy during both construction and operations.

Construction

Construction of the new trunk sewer infrastructure would require the use of heavy off-road equipment, trucks, and worker traffic, which would consume energy. However, the construction of the new trunk sewer infrastructure would not result in wasteful, inefficient, or unnecessary consumption of energy due to current regulations governing construction equipment and the high cost of fuel, which would limit the contractors' use of such equipment to minimize on costs. Further, federal, state, and local standards require limitations on unnecessary use of equipment, such as idling of equipment and vehicles that would further reduce the potential for wasteful, inefficient, or unnecessary consumption of energy resources. Therefore, construction impacts from the new trunk sewer would be less than significant.

Operation

Operation of the new trunk sewer would require minimal energy consumption due to the use of the gravity fed system, which relies heavily on the use of gravity rather than energy to pump wastewater through the system. However, because the entire system cannot rely on gravity due to the topography of the region, a pump station would be required for the Northern Trunk Sewer project to maintain adequate flows throughout the system. This pump station would be operated intermittently based on demand fluctuations throughout the day. This pump station (and any Program pump stations), as well as any associated appurtenances, would be equipped with standard Title 24

energy-conserving features, and would be in compliance with all federal, state, and local standards concerning energy efficiency of structures. Therefore, operation of the new trunk sewer infrastructure would not result in wasteful, inefficient, or unnecessary consumption of energy resources. The impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

WWTRF Expansion Project Impacts

Construction and operation of the WWTRF up to the eventual build-out capacity of 35 Mgal/d would require additional energy usage during both construction and operation to run and operate the WWTRF.

Construction

Similar to the impact discussion for the Program and new sewer trunk infrastructure above, construction of the WWTRF expansions would consume energy, specifically fuel, during active construction periods. Each expansion of the WWTRF would increase energy demands over time as construction efforts occur and additional facilities are constructed to accommodate the reasonable build-out growth projections identified in the City's 2030 General Plan. Therefore, there would be periods of heavy construction and periods with no construction until reasonable build-out is achieved. All construction activities and equipment would be in compliance with federal, state, and local standards governing energy consumption (see Section 3.7.2, Regulatory Framework), including limits on idling times and incorporation of energy efficient vehicles where possible to reduce energy consumption throughout construction. Therefore, the expansion of the WWTRF would result in a less than significant impact related to wasteful, inefficient, or unnecessary consumption of energy resources.

Operation

Operations associated with additional structures, treatment processes, and equipment, among other design features required for the expansions of the WWTRF from current capacity to reasonable build-out of 35 Mgal/d, would require the consumption of additional energy beyond current demands. Currently, the WWTRF's electrical system supplies power to run 3,238 horsepower (HP) at peak running loads to operate pumps and treatment processes. With the planned expansions to 35 Mgal/d, build-out peak running load energy usage is anticipated to be 9,444 HP. Energy usage at the WWTRF would vary daily depending on flows into the system, and as the WWTRF expansions are constructed periodically, various energy conservation features and efficiencies are anticipated as part of the WWTRF expansions, which would reduce the total overall energy demands from those estimated. Further, all new structures would include Title 24 standards and would comply with all federal, state, and local standards governing energy usage. Therefore, operations of the WWTRF expansion would result in a less than significant impact to wasteful, inefficient, or unnecessary consumption of energy resources.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GHG-3 Findings

Impact GHG-3 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GHG-3 Mitigation Required: None Required

Impact GHG-3 Overall Level of Significance After Mitigation: Less than Significant

Impact GHG-4 Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Impact GHG-4 Analysis

Combined Program/Project Impacts

Implementation of the Program and proposed Projects are not subject to any adopted energy conservation plans, so it would not conflict with energy conservation plans. Any new electrical equipment installed for implementation of the Program would be required to comply with established federal, state, and local energy standards pertaining to energy reduction. Specifically, the City's CAP includes goals and strategies related to the protection of air resources and incentives for the use of renewable energy sources and green energy building standards. These goals and strategies have been taken into consideration, in conjunction with federal and state regulations (i.e., CCR Title 24, Part 6, California Energy Efficiency Standards), during the design of project-specific components of the Program and would be incorporated into design of future Program components. Therefore, the Program would have a less than significant impact related to conflicting with state or local plans for renewable energy or energy efficiency.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact GHG-4 Findings

Impact GHG-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact GHG-4 Mitigation Required: None Required

Impact GHG-4 Overall Level of Significance After Mitigation: Less than Significant

3.7.5 Greenhouse Gases and Energy Resources Mitigation

None required.

3.7.6 Abbreviations

AB	Assembly Bill
APCD	Air Pollution Control District
AQMD	Air Quality Management District
BAU	Business-As-Usual
BPS	Best Performance Standards
CAA	Clean Air Act
CAFÉ	Corporate Average Fuel Economy
CAP	Climate Action Plan
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CH4	Methane
City	City of Merced
CO2	Carbon Dioxide
EIR	Environmental Impact Report
GHGs	Greenhouse Gases
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
HP	Horsepower
LCFS	Low Carbon Fuel Standard
Mgal/d	Million Gallons Per Day
MMs	Mitigation Measures
MTCO2e	Metric Tons of Carbon Dioxide Equivalent
MMTCO2e	Million Metric Tons of Carbon Dioxide Equivalent
MWh	Megawatt-Hour
NHTSA	National Highway Traffic Safety Administration
NOP	Notice of Preparation
PFCs	Perfluorinated Chemicals
RPS	Renewables Portfolio Standard
SAFE	Safer Affordable Fuel-Efficient
SB	Senate Bill
SJVAPCD	San Joaquin Valley Air Pollution Control District
SJVAB	San Joaquin Valley Air Basin
SLCP	Short-Lived Climate Pollutant
SMAQMD	Sacramento Metropolitan Air Quality Management District
USEPA	Unites States Environmental Protection Agency

WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.7.7 References

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3.8 HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRES

3.8.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR) to ascertain whether the Program may do the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- 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.
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would create a significant hazard to the public or the environment.
- For a project located within an airport land use plan, or where such a plan has not been adopted, within 2 miles of a public or private airport or public use airport, would the project result in safety hazard or excessive noise for people residing or working in the project area.
- Impair implementation of, or physically interfere with an adopted emergency response plan, or emergency evacuation plan.
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.
- If located in or near state responsibility areas or lands classified as very high fire hazard severity zones:
    - Would the project impair an adopted emergency response plan or emergency evacuation plan?
    - Would the project exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?
    - Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?
    - Would the project 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?

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts describing the potential impacts to hazards, hazardous materials, and wildfires that may result from implementation of the Program and identifies mitigation for potentially significant impacts, where feasible.

3.8.2 Regulatory Framework

This section discusses the federal and state regulations as well as local policies and objectives that relate to hazards, hazardous materials, and wildfires and are relevant to the Program.

3.8.2.1 Federal

Hazardous Material Management
Resources Conservation and Recovery Act

The Resources Conservation and Recovery Act (RCRA) established the federal regulatory program for hazardous substances and gives the United States Environmental Protection Agency (USEPA) the authority to regulate the generation, transport, treatment, and disposal of hazardous substances in a "cradle to grave" system. Under RCRA, USEPA regulates the generation, transportation, treatment, storage, and disposal of hazardous substances. This regulatory system includes tracking all generators of hazardous waste.

1984 Hazardous and Solid Waste Amendment Act

RCRA was amended by the 1984 Hazardous and Solid Waste Amendment Act, which prohibited the use of certain techniques for the disposal of certain hazardous wastes (USEPA 2018a). The Emergency Planning and Community Right-to-Know Act of 1986 imposes safety requirements to protect local communities in the event of accidental release of hazardous substances. The requirements provide measures to mitigate or prevent the risks from interaction with hazardous materials, such as handling, storage, and disposal. This law protects human health and the environment by minimizing the present threat and if the unintended release of hazardous materials were to occur (USEPA 2018b). USEPA has delegated fulfillment of many of RCRA's requirements to the California Department of Toxic Substances Control (DTSC).

Clean Air Act

Regulations under the Clean Air Act (CAA) (42 United States Code [USC] 7401 et seq. as amended) are designed to prevent accidental releases of hazardous materials. The regulations require facilities that store a threshold quantity or greater of listed regulated substances to develop a risk management plan, including hazard assessments and response programs to prevent accidental releases of listed chemicals.

Hazardous Materials Transportation
Hazardous Materials Transportation Act

The transport of hazardous materials is regulated by the United States Department of Transportation under the Hazardous Materials Transportation Act. To accomplish this, the Federal Aviation Administration, Federal Motor Carrier Safety Administration, Federal Railway Administration, Pipeline and Hazardous Materials Safety Administration, and United States Coast Guard have been given authority to enforce hazardous material transport regulations.

Worker Safety
Occupational Safety and Health Administration

The Occupational Safety and Health Act of 1970 created the Occupational Safety and Health Administration (OSHA), which is responsible for protecting the health of workers in events such as during the handling of hazardous materials. OSHA has created regulations to set federal standards of workplace safety including exposure limits, mandatory workplace training, accident and injury reporting, and safety procedures. These regulations are recorded in the Code of Federal Regulations (CFR) Title 29.

Federal Aviation Regulations
Federal Aviation Administration

The Federal Aviation Administration (FAA) has jurisdiction over navigable airspace in the public interest as necessary to ensure the safety of aircraft use. Federal Aviation Regulation (FAR), Title 14, Part 77 includes provisions to promote safe and efficient use and preservation of navigable airspace. The FAA FAR Part 77 includes specific requirements for proposed construction or alterations of structures within the vicinity of an airport. Consultation with the FAA would be required for any project that would place structures or construction equipment (i.e., a crane) over 200 feet in height within navigable airspace. Any object of construction equipment more than 200 feet would not necessarily be incompatible with this regulation but would be subject to FAA notification and an aeronautical study to determine whether the prosed structures would constitute a hazard to air navigation. Form 7460-1 (Notice of Proposed Construction or Alteration) would be required 45 days prior to the start date of any proposed construction activities (Title 14 CFR Part 77) to initiate FAA consultation.

3.8.2.2 State

Hazardous Material Management
Hazardous Waste Control Act

The Hazardous Waste Control Act created the state's hazardous waste management program. It is similar to but more stringent than the RCRA. The act is implemented by regulations contained in Title 26 of the California Code of Regulations (CCR), which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transportation; design and permitting of recycling treatment, storage and disposal facilities; operation of facilities and staff training; and closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the Hazardous Waste Control Act and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location. Copies of the manifest must be filed with the DTSC.

California Environmental Protection Agency and Department of Toxic Substances Control

The California Environmental Protection Agency (CAL EPA) is responsible for creating and enforcing environmental regulations within California. Within CAL EPA is the DTSC, which was formed under the Hazardous Waste Control

Act. DTSC is responsible for regulating hazardous waste, remediating existing contamination, and identifying ways to reduce production of hazardous wastes. DTSC can delegate enforcement responsibilities to local jurisdictions.

Unified Program

The Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) is a unified hazardous materials management program that was established by California's Secretary for Environmental Protection following Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following programs:

- Hazardous Materials Release Response Plans and Inventories
- California Accidental Release Prevention Program
- Underground Storage Tank Program
- Above-Ground Petroleum Storage Act Program
- Hazardous Waste Generator and Onsite Hazardous Waste Treatment Programs
- California Uniform Fire Code: Hazardous Material Management Plans and Hazardous Material Inventory Statements

These six environmental programs are implemented at the local government level by Certified Unified Program Agencies (CUPAs). CUPAs provide a central permitting and regulatory agency for permits, reporting, and compliance enforcement. California Public Resources Code (PRC) Section 21151.4 sets special requirements for environmental impact reports and negative declarations for projects that involve the construction or alteration of a facility within 0.25 mile of a school that creates the following conditions:

- The project might reasonably be anticipated to emit hazardous air emissions;
- The project would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified in Section 25532(j) of the Health and Safety Code; or
- The project may pose a health or safety hazard to persons who would attend or would be employed at the school.

As part of the CEQA process, the lead agency preparing the EIR must consult with the appropriate school district regarding the potential impact of the project on the school, and the school district must be notified about the project in writing at least 30 days before the proposed certification of the EIR or adoption of the mitigated negative declaration PRC section 21151.4; 14 CCR Section 15186(b)).

Cortese List Government Code Section 65962

Government Code Section 65962 was enacted in 1985 and was amended in 1992. It is used as a planning tool to comply with CEQA and requires information about locations of hazardous materials release sites. It states that through the combined efforts of the DTSC, the Department of Health Services, the State Water Resources Control Board (SWRCB), and local enforcement agencies, a list of potentially hazardous areas and sites will be compiled and

remain up to date (at a minimum, updated annually). The list is consolidated by the Secretary for Environmental Protection and is distributed to each city and county in which sites on the list are located. The list can be found on the DTSC's data management system known as EnviroStor, which includes information from the SWRCB GeoTracker database.

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including the management and construction of the California highway system. In addition, Caltrans is responsible for the permitting and regulation of state roadways and requires that permits be obtained for transportation of oversized loads and certain materials such as hazardous materials, and for construction-related traffic disturbance.

California Public Resources Code

PRC Section 21151.4. (a) An environmental impact report shall not be certified or a negative declaration shall not be approved for any project involving the construction or alteration of a facility within one-fourth of a mile of a school that might reasonably be anticipated to emit hazardous air emissions, or that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code, that may pose a health or safety hazard to persons who would attend or would be employed at the school, unless both of the following occur:

1) The lead agency preparing the environmental impact report or negative declaration has consulted with the school district having jurisdiction regarding the potential impact of the Project on the school.

2) The school district has been given written notification of the Project not less than 30 days prior to the proposed certification of the environmental impact report or approval of the negative declaration.

(b)As used in this section, the following definitions apply:

(1) "Extremely hazardous substance" means an extremely hazardous substance as defined pursuant to paragraph (2) of subdivision (g) of Section 25532 of the Health and Safety Code.

(2) "Hazardous air emissions" means emissions into the ambient air of air contaminants that have been identified as a toxic air contaminant by the State Air Resources Board or by the air pollution control officer for the jurisdiction in which the Project is located. As determined by the air pollution control officer, hazardous air emissions also means emissions into the ambient air of a substance identified in subdivisions (a) to (f), inclusive, of Section 44321 of the Health and Safety Code. [Amended by Stats. 2008, Ch. 148, Sec. 1. Effective January 1, 2009]

Worker Safety

Division of Occupational Safety and Health

The Division of Occupational Safety and Health (DOSH or CalOSHA) is responsible for enforcing workplace safety regulations and requirements in California, including hazardous materials requirements recorded under CCR Title 8. These regulations include requirements for safety training, availability of safety equipment, accident and illness

prevention programs, warnings about hazardous substance exposure (such as asbestos), and preparation of emergency action and fire prevention plans.

DOSH also enforces hazard-communication program regulations that contain training and information requirements. Such requirements include procedures for identifying and labeling hazardous substances, communicating information about hazardous substances and their handling, and preparing health and safety plans to protect workers and employees at hazardous waste sites. Under the hazard-communication program, employers must make Material Safety Data Sheets available to employees and document employee information and training programs.

Emergency Response

California Emergency Services Act

The California Emergency Services Act provides the basic authority for conducting emergency operations following a proclamation of emergency by the governor or appropriate local authorities. Local government and district emergency plans are considered to be extensions of the California Emergency Plan, established in accordance with the Emergency Services Act.

The California Emergency Management Agency (CAL EMA) is the state agency responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. CAL EMA regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials (CCR Title 19). CAL EMA is also the lead state agency for emergency management and is responsible for coordinating the state-level response to emergencies and disasters.

Fire Protection

California state fire safety regulations apply to State Responsibility Areas (SRAs) during the time of year designated as having hazardous fire conditions. The California Department of Forestry and Fire Protection (CAL FIRE) has developed a fire hazard severity scale that considers vegetation, climate, and slope to evaluate the level of wildfire hazard in all SRAs. An SRA is defined as the part of the state where CAL FIRE is primarily responsible for providing basic wildland fire protection assistance. Areas under the jurisdiction of local fire protection services are considered to be Local Responsibility Areas, and areas on federal lands are considered Federal Responsibility Areas.

During the fire hazard season, these regulations include the following: (a) restrict the use of equipment that may produce a spark, flame, or fire; (b) require the use of spark arrestors on any equipment that has an internal combustion engine; (c) specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and (d) specify fire suppression equipment that must be provided onsite for various types of work in fire-prone areas. CAL FIRE has primary responsibility for fire protection within SRAs.

Uniform Fire Code

The Uniform Fire Code (UFC) contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and the surrounding premises. The code contains specialized technical regulations related to fire and life safety.

3.8.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to hazards and hazardous materials, including the following:

Goal Area S-4: Fire Protection

- **Policy S-4.2.** Maintain a reasonable level of accessibility and infrastructure support for fire suppression, disaster, and other emergency services.

Goal Area S-5: Airport Safety

- **Policy S-5.2.** Prevent the encroachment of potential hazards to flight within the Airport's airspace.

Merced County Airport Land Use Compatibility Plan

The Merced County Airport Land Use Compatibility Plan was developed by the Merced County Airport Land Use Commission and was adopted in 1999 to address compatibility between airports within Merced County and the surrounding land uses. Various safety zones were established based on this plan which include the following:

- Zone A: This zone is the Runway Protection Zone where all structures are prohibited.
- Zone B1: This zone is the Approach/Departure Zone. In this zone, educational facilities, hospitals, and aboveground storage of hazardous materials are prohibited. There is also a 0.2 unit per acre maximum density requirement for this zone.
- Zone B2: This zone is the Extended Approach/Departure Zone. In this zone, educational facilities, hospitals, and aboveground storage of hazardous materials are prohibited. There is a 1.0 unit per acre maximum density requirement for this zone.
- Zone C: This zone is the Common Traffic Pattern zone. In this zone, educational facilities, hospitals, and libraries are prohibited. There is an 8 units per acre maximum density requirement for this zone.
- Zone D: This zone is for Other Airport Environs and is the outermost zone of the airport. There are no development restrictions for this zone, with the exception of objects over 150 feet in height.

Additionally, the Merced County Airport Land Use Compatibility Plan states that construction activities that could occur within the planning area are subject to the following provisions (Merced County Airport Land Use Commission 2012):

> *If a project contains proposed structures or other objects that may exceed the height standards defined in FAR Part 77, Subpart C, as applied to each Airport, the project proponent must submit notification of the proposal to the FAA where required by the provisions of FAR Part 77, Subpart B, and by the California Public Utilities Code, Sections 21658 and 21659. The FAA will conduct an "aeronautical study" of the object(s) and determine whether the object(s) would be of a height that would constitute a hazard to air*

navigation. The FAA notification requirements apply to all objects including structures, antennas, trees, mobile objects, and temporary objects such as construction cranes.

Merced County Hazardous Waste Management Plan

The Merced County Hazardous Waste Management Plan was prepared in 1989 to address waste reduction and onsite treatment, the siting of offsite hazardous waste facilities, transportation of hazardous wastes, cleanup of contaminated sites, and emergency response procedures related to hazards within the Merced County area. The Hazardous Waste Management Plan is enforced by the Merced County Division of Environmental Health in conjunction with the Merced City Fire Department. The Merced County Division of Environmental Health also maintains a list of known hazardous waste sites within the county, which is updated regularly.

City of Merced Local Hazard Mitigation Plan

The City of Merced Local Hazard Mitigation Plan was adopted on March 16, 2015, in an effort to reduce future loss of life and property resulting from disasters, as well as to provide decision-makers with a tool to direct mitigation activities and resources (City of Merced 2015). According to this plan, the City is at the greatest risk from hazardous materials release and flooding, whereas other threats, such as fire exposure, extreme temperatures, and potential dam failures, have a moderate hazard potential within the City (City of Merced 2015).

3.8.3 Environmental Setting

The Program Study Area considered the Specific Urban Development Plan/Sphere of Influence (SUDP/SOI) of the City, which includes mixed uses such as residential, commercial, industrial, agricultural, and open spaces. Identified potential hazards from GeoTracker, EnviroStor database, and other hazards or sensitive receptor data sources within the Program Study Area are shown on Figure 3.8-1.

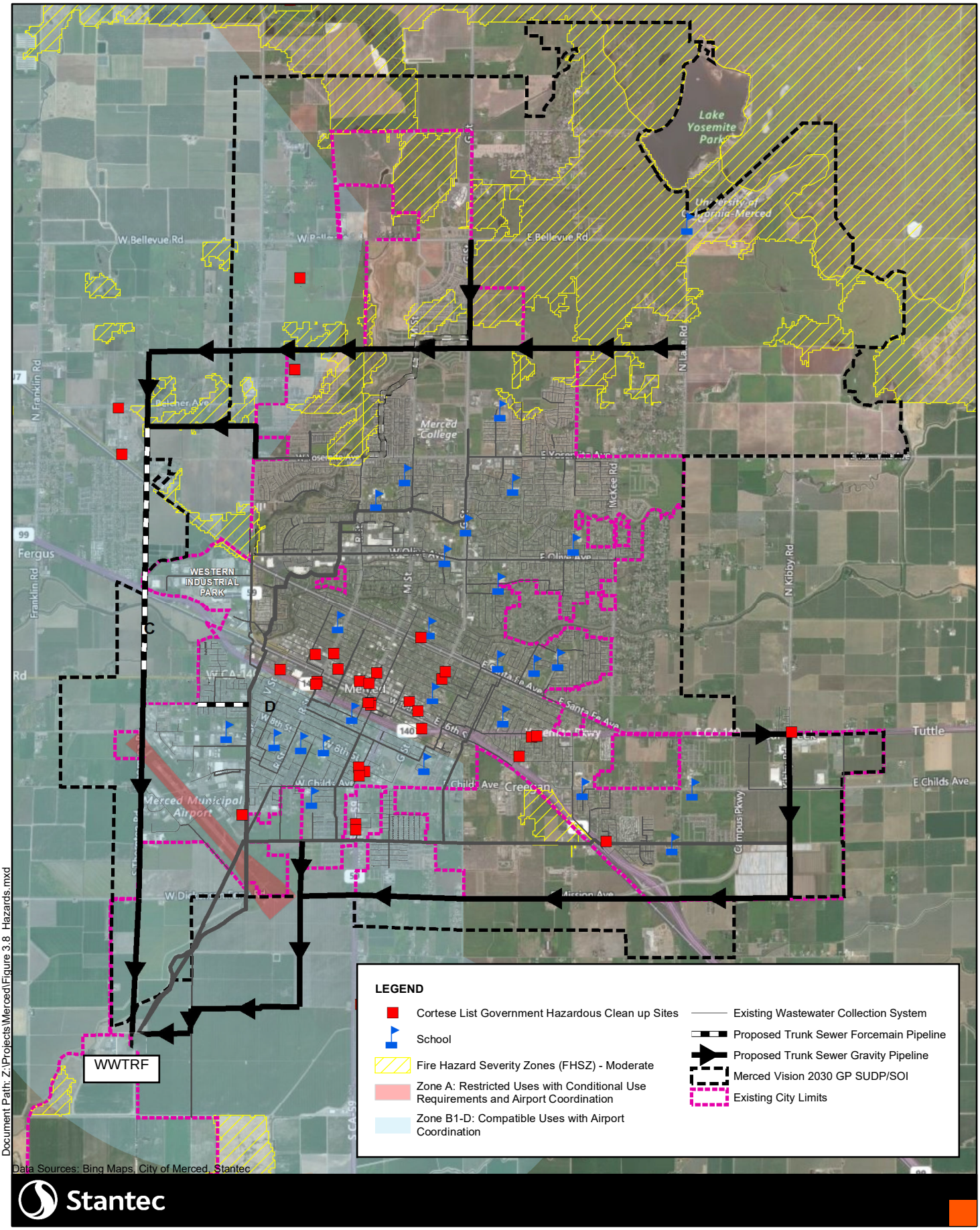


Figure 3.8-1
Potential Hazards Within City of Merced SUDP/SOI
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3.8.3.1 Definition of Terms

Hazardous Materials and Wastes

For purposes of this section, the term “hazardous materials” refers to both hazardous substances and hazardous wastes. A “hazardous material” is defined in the CFR as, “a substance or material that…is capable of posing an unreasonable risk to health, safety, and property when transported in commerce” (49 CFR 171.8). California Health and Safety Code Section 25501 defines a hazardous material as follows:

> *Hazardous material means any material that, because of its quantity, concentration, or physical, or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. “Hazardous materials” include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.*

Hazardous wastes are defined in California Health and Safety Code Section 25141(b) as wastes that:

> *Because of their quantity, concentration, or physical, chemical, or infectious characteristics, [may either] cause, or significantly contribute to an increase in mortality or an increase in serious illness [, or] pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.*

Section 25532(j) of the Health and Safety Code defines "regulated substances accident risk" to mean a potential for the accidental release of a regulated substance into the environment that could produce a significant likelihood that persons exposed may suffer acute health effects resulting in significant injury or death.

Section (j) defines "regulated substance" to mean any substance that is either of the following (20 CFR Article 2 Section 25532):

(1) A regulated substance listed in Section 68.130 of Title 40 of the CFR pursuant to paragraph (3) of subsection (r) of Section 112 of the Clean Air Act (42 USC Section 7412[r][3]).

(2) An extremely hazardous substance listed in Appendix A of Part 355 (commencing with Section 355.10) of Subchapter J of Chapter I of Title 40 of the CFR that is any of the following:

   i. A gas at standard temperature and pressure.

   ii. A liquid with a vapor pressure at standard temperature and pressure equal to or greater than 10 millimeters mercury.

   iii. A solid that is one of the following:

      I. In solution or in molten form.

      II. In powder form with a particle size less than 100 microns.

III. Reactive with a National Fire Protection Association rating of 2, 3, or 4

iv. A substance that the office determines may pose a regulated substances accident risk pursuant to subclause (II) of clause (i) of subparagraph (B) or pursuant to Section 25543.3.

Acute Hazardous Wastes

Acute hazardous wastes have been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral lethal dose 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation lethal does 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal lethal dose 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible or incapacitating reversible illness (CFR 40 261.11).

Asbestos

Naturally occurring asbestos is generally found in serpentine soils within the Sierra Nevada foothills of California and is considered a hazardous material due to exposure related public health concerns (Caltrans 2006). The Naturally Occurring Asbestos Hazard Map was reviewed to determine if the Project would involve construction in areas of relative likelihood for the presence of natural occurring asbestos (California Geological Survey 2011). The majority of Merced County, and specifically the City, is not known for the occurrence of natural occurring asbestos.

In addition to naturally occurring asbestos, many building materials, including pipelines have the potential to contain asbestos cement (AC) and other hazardous materials that could cause damage to the environmental and to people, if disturbed. If material containing asbestos are disturbed, tiny fibers can become airborne, which could cause respiratory damage that could lead to lung disease or other pulmonary complications.

AC pipe is a material that was commonly used in the middle portion of the 20th Century, prior to much of the federal and state legislation regulating this hazardous material. AC pipe is most commonly encountered where public water systems were developed or extended in the 1940s through 1960s. It is a piping material that is safe if undisturbed. Risk of exposure is limited to activities that disturb the material causing it to become airborne.

Valley Fever

Coccidioidomycosis, more commonly known as “Valley Fever,” is primarily a disease of the lungs caused by the spores of the *Coccidioides immitis* fungus (“cocci”). The spores can be found in some areas naturally occurring in soils, can become airborne when the soil is disturbed, and can subsequently be inhaled into the lungs. Valley fever is considered endemic in the Central Valley of California, with the highest concentration of known cases of Valley Fever infection occurring in Kern, Kings, San Luis Obispo, Tulare, Madera, and Monterey Counties (Center for Infectious Diseases 2017). Activities or conditions that increase the amount of fugitive dust within these areas, or other regions known to contain the cocci spores, increase the risk of exposure to infection. While Merced County is not listed as one of the top areas of concern for Valley Fever, there have been reported cases of Valley Fever infection within Merced County in 2012 (estimated 60 cases) and 47 reported cases in 2017, meaning that the cocci spores have the potential to occur with the region (Center for Infectious Diseases 2017).

Hazardous Air Pollutants

The USEPA defines hazardous emissions, also known as Hazardous Air Pollutants (HAPs), as those pollutants that are known or suspected to cause cancer or other serious health effects (USEPA 2017). HAPs can come from sources such as gasoline, motor oils, asbestos, and paint strippers and can be inhaled or ingested. Fuels such as diesel and gasoline required for the operation of construction equipment are considered Class 3 flammable liquid hazardous materials, which can lead to fires or explosions if handled incorrectly. Additionally, oils and lubricants for operation of equipment are also considered Class 3 hazardous materials.

3.8.3.2 Schools

There are four school districts within the City limits, the Merced City School District, Merced Union High School District, Weaver Union School District, and the McSwain Union School District, all of which contain a number of individual schools which are shown on Figure 3.8-1. There are no schools within 0.25 mile of the new trunk sewer infrastructure, including the Northern Trunk Sewer Project and Southern Trunk Sewer Project, or the Wastewater Treatment and Reclamation Facility (WWTRF).

3.8.3.3 Cortese List Government Code Section 65962

As discussed in the regulatory setting above, the Cortese list, which is compiled pursuant to Government Code Section 65962, is used to confirm compliance with CEQA requirements, providing a list of known locations of hazardous material release sites. The EnviroStor database, which is managed by the DTSC, and the GeoTracker database, which is managed by the SWRCB, are used to determine the proximity of a project to the nearest hazardous materials site. Active Cortese list cleanup sites, at the time this Draft EIR was written, within and near the Program Study Area are shown on Figure 3.8-1 (DTSC 2018; SWRCB 2018a). As shown on Figure 3.8-1, there is one listed site adjacent to the Southern Trunk Sewer; however, there are no currently listed sites with or directly adjacent to the Northern Trunk Sewer or WWTRF.

3.8.3.4 Emergency Response and Emergency Evacuation Plans

The City of Merced has developed an Emergency Operations Plan that addresses mitigation, planning, and response activities to be applied in various emergency situations. Emergency evacuation plans and routes depend largely on the type and extent of the emergency; however, the local and major roadways within the City provide access for both emergency response personnel and the general public. Additionally, both the Merced Fire Department and the Merced Police Department operate 24 hours a day, seven days a week and provide small- and large-scale emergency assistance within the City (City of Merced 2012).

3.8.3.5 Airports and Airstrips

There is one airport within the City of Merced, the Merced Regional Airport, which is located in the southwest corner of the City. The Castle Airport, which is located approximately three miles to the west of SR 59, is not directly within the City's SUDP/SOI or Program Study Area, however portions of this airport's designated safety zones overlap with the City's SUDP/SOI and Program Study Area (Figure 3.8-1).

The Merced Regional Airport is a publicly owned facility that provides both commercial air and freight air cargo services for the City of Merced, as well as the surrounding areas. The Castle Airport, which was once the location of the Castle Air Force Base, has since been converted for civilian use. The 2030 General Plan land uses surrounding both these airports generally consist of industrial designations in order to be consistent with the Merced County Airport Land Use Compatibility Plan and FAA requirements regarding potential hazards (Merced County Airport Land Use Commission 2012; City of Merced 2012).

3.8.3.6 Fire Hazards

CAL FIRE maintains fire hazard severity zone maps for local responsibility areas and SRAs. Fire hazard is a way to measure physical fire behavior so that people can predict the damage that a fire is likely to cause. The Project is located in a local responsibility area maintained by the City (CAL FIRE 2012). Wildland and urban fires do occur within the City due to the hot, dry summers that occur within the region. According to the Merced Vision 2030 General Plan Draft EIR, the majority of the fires that occur within the City are caused by human activities that involve motor vehicles, equipment, arson, and burning of debris (City of Merced 2010). As shown on Figure 3.8-1, areas in the northern portion of the Program Study Area are included within a moderate fire severity zone, but no high fire severity zones occur in the Program Study Area (CAL FIRE 2007).

3.8.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to hazards and hazardous materials. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.8.4.1 Impact Analysis

Impact HAZ-1	**Potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.**

Impact HAZ-1 Analysis

Program Impacts

Construction

Temporary construction activities associated with implementation of the Program would involve the transport and use of gasoline, diesel fuel, hydraulic fuel, solvents, and oils typically associated with operation of construction equipment and vehicles. These chemicals would be used and stored on construction sites within the Program Study Area during Program construction activities and would be transported along public roadways throughout the Program Study Area. Use and storage would continue as needed during construction projects until reasonable build-out of the 2030 General Plan is met. The use of generators to power equipment such as dewatering pumps may also be required under the Program for deep trenching or other excavations. Federal, state, and local laws governing the handling, storage, and transport of these and other hazardous materials and spill clean ups are discussed in Section 3.8.2, Regulatory Framework, and would be required for these Program activities. These regulations are designed to prevent the improper use of materials and to reduce the risk of exposure to the public. Impacts associated with routine release of hazardous materials during transport, use, or disposal could potentially result in a significant impact

to the public or the environment; however, the City and chosen contractor would be required to comply with all relevant and applicable federal, state, and local laws and regulations governing transport, storage, use, and disposal of hazardous materials during construction and implementation of projects under the Program. Therefore, compliance with these regulations would limit the potential for construction-related impacts from hazardous materials transport, use, or disposal, and potential impacts resulting from construction of the Program would be less than significant.

Operation

Impacts associated with operation of the Program would be include things such as the storage, transport, and disposal of potentially hazardous materials associated with operation of pump stations and the WWTRF as well as the movement of trucks and vehicles for maintenance. Release of chemicals from these operational activities would be limited to accidental spills. However, these operational activities would be subject to current regulatory requirements for hazardous materials management associated with the operation of the new and existing infrastructure (Section 3.8.2, Regulatory Framework) and would not change as a result of implementation of the Program. As such, operational impacts would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Installation of the new trunk sewer infrastructure would result in similar impacts related to hazardous materials as described under the Program discussion above. Construction of the new trunk sewer infrastructure would also require work with hazardous materials, which could cause a significant hazard to the public or the environment. However, compliance with federal, state, and local regulations governing hazardous materials (3.8.2, Regulatory Framework) would ensure that hazardous materials are treated appropriately during construction, and therefore, there would be a less than significant impact.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

Expansion at the existing WWTRF would require the use of hazardous materials similar to those described in the Program discussion above. Construction activities could result in a significant hazard to the public or the environment if these hazardous materials are not handled and managed appropriately. However, compliance with federal, state, and local regulations governing hazardous materials (Section 3.8.2, Regulatory Framework) would ensure that

hazardous materials are handled appropriately during construction of the proposed expansion of the WWTRF, and therefore, impacts would be less than significant.

Operation

Operation of the WWTRF regularly involves routine transport, storage, and use of hazardous materials (i.e., treatment processes and equipment, sodium hydroxide, sodium hypochlorite, etc.). The City maintains hazardous materials data sheets and management plans for these hazardous materials and would continue to do so under implementation of the Program. The proposed expansion of the WWTRF would not significantly alter these existing operations in a manner that would cause a significant hazard to the public or the environment since the operations would maintain current hazardous materials handling practices in compliance with federal, state, and local regulations. Therefore, operational impacts of the expansion of the existing WWTRF would result in a less than significant impact.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HAZ-1 Findings

Impact HAZ-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HAZ-1 Mitigation Required: None Required

Impact HAZ-1 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-2 Potential to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

Impact HAZ-2 Analysis

Program Impacts

Construction

The potential for release of hazardous materials into the environment could result from discovery of hazardous materials in the soils excavated during construction or from spills related to construction equipment and activities. The use of heavy construction equipment requires the use of small amounts of hazardous materials, such as oils, fuels, and other potentially flammable substances, which have the potential to be released into the environment if not handled properly. These materials would be used on Program construction sites during construction activities for equipment maintenance. The amount of these materials needed for equipment maintenance would not be enough to cause a significant hazard to the public if released since the quantity of these hazardous materials onsite at any given time would only amount to a refueling truck and the construction equipment. However, given the possibility of accidental release of hazardous materials during construction, a potentially significant impact related to accidental release of hazardous materials could occur prior to mitigation. As such, MM HYD-1, Avoid/Minimize Potential Impacts

from Construction Material Release and MM HAZ-1, Prepare and Implement a Hazardous Materials Release Prevention Plan, would be implemented. These MMs would require the contractor to prepare a Spill Prevention and Contingency Plan and Hazardous Materials Release and Prevention Plan that would include best management practices (BMPs) to control the accidental release of hazardous materials into the environment and would ensure that spills are appropriately cleaned up and would not result in a release of hazardous materials into the environment. Therefore, impacts related to accidental spills and release of hazardous materials would be less than significant with MM HYD-1 and HAZ-1 incorporated.

Valley Fever and Asbestos

During ground disturbing activities associated with the Program, there is also a possibility that hazardous materials, such as asbestos (naturally occurring or AC) or Valley Fever fungal spores, could be disturbed and released into the air. Ground-disturbing activities associated with the Program construction could include excavation, grading, and other earthmoving activities that produce dust throughout the Program Study Area. Valley Fever fungal spores live in the top 2 to 12 inches of soil, so the risk of exposure during construction of the Program would be high if these hazards are present within the soils; thus, a potentially significant impact prior to mitigation could occur. As part of the Worker Environmental Awareness Program (WEAP) included in MM HAZ-2, Worker Environmental Awareness Program (Hazard), workers would be required to participate in a WEAP prior to being allowed to work on the project. The WEAP would inform workers of the potential hazards within the Program Study Area. If appropriate or requested, workers would be provided the appropriate respiratory equipment to prevent inhalation of dust particles. Additionally, MM AIR-2, Implement Hazardous Materials Measures would be implemented to further reduce potentially hazardous dust within the Program Study Area by requiring regular watering of disturbed soils and excavated material throughout all construction activities. MM AIR-2 and MM HAZ-2 would collectively reduce dust, and therefore would reduce the potential of worker and general public exposure to hazardous air particles and would provide workers with the proper equipment and training necessary to reduce potential impacts related to Valley Fever and asbestos to a less than significant level. Therefore, impacts related to the release of asbestos and Valley Fever fungal spores would be less than significant with MM AIR-2 and MM HAZ-2 incorporated.

Operation

Operational release of hazardous materials into the environment would not significantly change from existing conditions. Operations of city wastewater facilities would continue as they currently do but would add the new Program facilities to the operational routine that involves the routine testing and maintenance of pump stations and appurtenances, monitoring of pipelines, and inspections of facilities. Similarly, the WWTRF expansion, which is discussed in further detail in Proposed Project: WWTRF Expansion Impacts below, would not result in substantial releases of potentially hazardous materials with the standard procedures for storage and cleanup that currently exist onsite. No increases in operational release of hazardous materials would occur as a result of operation of the Program. Therefore, operational impacts associated with implementation of the Program would be less than significant.

Because the quantity of hazardous materials on any one construction site within the Program Study Area is limited, appropriate prevention and management practices would be in place as required by local and regional regulatory agencies, and because MM HYD-1, MM AIR-2, MM HAZ-1 and MM HAZ-2 would be implemented during

construction, the potential for impacts from construction and operational related accidental spills or releases of hazardous materials would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1, MM AIR-2, MM HAZ-1 and MM HAZ-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Installation of the new trunk sewer infrastructure would also result in similar impacts related to release of hazardous materials as described under the Program discussion above. As such MM HYD-1, MM HAZ-1, MM HAZ-2, and MM AIR-2 would also be required for the new trunk sewer infrastructure installation. In particular, the new trunk sewer infrastructure would likely require work in overland portions of the Program Study Area, which could produce more dust, and potential hazards than work within previously disturbed areas and within the existing roadways. Additionally, the new pump station associated with the Northern Trunk Sewer would be placed in a previously undisturbed area, which could result in dust containing Valley Fever spores. As such, MM HAZ-2 would be required to inform and properly equip construction workers for work with potentially hazardous pollutants. MM AIR-2 would ensure that dust generated during construction is kept at a minimum by including regular watering of disturbed soils and trucks transporting soil material. Additionally, MM HYD-1 and MM HAZ-1 would require the contractor to prepare a Spill Prevention and Contingency Plan and Hazardous Materials Prevention Plan that would include BMPs to control the accidental release of hazardous materials into the environment, ensuring that spills are appropriately cleaned up and would not result in a release of hazardous materials into the environment. These MMs would be implemented throughout construction areas and activities associated with the new trunk sewer and would reduce potential impacts related to accidental release or exposure to hazardous materials or pollutants to a less than significant level. Therefore, impacts related to the release of hazardous materials into the environment from the new trunk sewer infrastructure would be less than significant with mitigation incorporated.

Operation

Similar to the Program discussion above, operation of the new trunk sewer infrastructure would not result in a substantial change from existing operations of wastewater collection infrastructure that currently exists in the City. Therefore, operational impacts related to release of hazardous materials into the environment from the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1, MM HAZ-1, MM HAZ-2, and MM AIR-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

Expansion of the existing WWTRF would result in similar potential for the release of hazardous materials during construction as described in the Program discussion above. Accidental spills of potentially hazardous materials as a result of construction activities at the WWTRF could occur, and similar to the discussion of the Program, could have a significant effect if left unmitigated. Thus, MM HYD-1 and MM HAZ-1 would be required to prevent the release of hazardous materials from construction activities through the implementation of a Spill Prevention and Contingency Plan and Hazardous Material Release and Prevention Plan. Additionally, although the regularly disturbed WWTRF footprint includes agricultural lands and paved facilities that would be at low risk for asbestos and Valley Fever spores exposure, there would still be a possibility for exposure due to new ground disturbing activities and dust creating a small potential for a significant impact if not mitigated by MM HAZ-2 and MM AIR-2 as described for the Program. The WEAP required by MM HAZ-2 would educate workers on the risks associated with Valley Fever spores and asbestos and on how to properly reduce risk of exposure and MM AIR-2 would implement hazardous materials measures by requiring regular watering of disturbed soils and excavated material throughout all construction activities mitigating risks to a less than significant level. Therefore, impacts from construction at the WWTRF would be less than significant.

Operation

Additionally, operational spills associated with lubricants or other materials and chemicals (i.e., sodium hydroxide, sodium aluminate, sodium hypochlorite, and polyaluminum chloride, amongst others) used during operation of the WWTRF, including at pump stations and control facilities that would be contained within the WWTRF footprint, would follow standard procedures for storage and cleanup of spilled materials (as required and enforced by the federal and state regulations regarding hazardous materials, transport, storage, and handling as described in Section 3.8.2, Regulatory Framework and the operational National Pollutant Discharge Elimination System permit [See Chapter 2.0, Project Description] stipulations of the WWTRF). As a result, potential spills would not be in amounts substantial enough to result in significant hazards to the public.

Therefore, overall construction and operational impacts associated with expansions at the WWTRF would be considered less than significant with MM HYD-1, MM HAZ-1, MM HAZ-2, and MM AIR-2 incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1, MM HAZ-1, MM HAZ-2, and MM AIR-2

Level of Significance After Mitigation: Less than Significant

Impact HAZ-2 Findings

Impact HAZ-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HAZ-2 Mitigation Required: MM HYD-1, MM AIR-2, MM HAZ-1, and MM HAZ-2

Impact HAZ-2 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-3 Potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school.

Impact HAZ-3 Analysis

Program Impacts

Construction

Construction of Program facilities has the potential to result in emissions of toxic air contaminants/HAPs in the form of diesel particulate matter emissions from diesel-fueled internal combustion engines. Additionally, other potentially hazardous materials present within soils, such as Valley Fever spores or asbestos, could be disturbed during construction activities and could become airborne and adversely affect nearby schools. As shown on Figure 3.8-1, there are a number of schools within the Program Study Area, and although no schools occur within 0.25 mile of the new truck sewer infrastructure or WWTRF, other future Program activities could occur within 0.25 mile of schools. As a result, potentially hazardous materials and emissions could be emitted near existing or new schools in the region, resulting in a potentially significant impact prior to mitigation. As discussed under Impact HAZ-2, MM AIR-2, Implement Hazardous Materials Measures, would be required during construction to reduce potentially hazardous construction-related dust and the potential for hazardous airborne particles to be released. Additionally, MM HAZ-3, Minimize Construction Emissions, would also include specific instructions for handling construction equipment, such as limiting idling times, which would limit the amount of toxic air contaminants released into the air near schools. Other emission-reducing requirements would include the use of late model engines, low-emission diesel products, alternative fuels, and other options as they become available. Further, given the relatively linear nature of pipeline infrastructure, construction activities, including ground disturbance and use of construction equipment, would be temporary at any one particular location within the Program Study Area, which would further reduce any potential impact to schools.

Hazardous materials used during construction would be typical of common construction activities and are discussed in Impacts HAZ-1 and HAZ-2. They would be handled by the contractor in accordance with applicable federal, state, and local regulations for hazardous substances. Additionally, the amount of these materials needed for onsite equipment maintenance at any given time would only amount to a refueling truck and the construction equipment, and thus would not be enough to cause a significant hazard to the public or any nearby schools if released.

Further, PRC Section 21151.4 requires that projects located within 0.25 mile of a school that might reasonably be anticipated to emit hazardous air emissions, that would handle an extremely hazardous substance or a mixture containing extremely hazardous substances in a quantity equal to or greater than the state threshold quantity specified pursuant to subdivision (j) of Section 25532 of the Health and Safety Code, or that may pose a health or safety hazard to persons who would attend or would be employed at the school, would either require the City or chosen contractor to consult with the school or give written notification to the school. There are numerous schools located within the Program Study Area. The City would comply with PRC Section 21151.4, would notify appropriate school personnel if construction activities would require work with hazardous materials or emissions within 0.25 mile of a school, and would follow applicable rules and regulations governing transport and use of hazardous materials as discussed herein. Therefore, the construction of the Program would have a less than significant impact to schools with compliance of PRC Section 21151.4 and with MM AIR-2 and MM AIR-3 incorporated.

Operation

Operation of the Program would continue to use hazardous materials onsite as a part of the treatment process; however, the potential for release of these chemicals into the air or ground would be limited since the site is designed for proper storage and use of the chemicals as well as the fact that the hazardous materials onsite such as solvents and oils are used in limited quantities and the WWTRF is further than 0.25 mile away from an existing or planned school. Thus, operational impacts associated with the Program would be less than significant.

Therefore, the potential for the implementation of the Program to generate hazardous emissions within 0.25 mile of a school during both construction and operation would be less than significant with MM AIR-2 and MM AIR-3 incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM AIR-2 and MM AIR-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

As shown on Figure 3.8-1, the new trunk sewer infrastructure would be placed largely on the outer portions of the Program Study Area and largely within existing or planned roadways. Figure 3.8-1 further shows that schools are generally concentrated near the center portion of the City. No schools occur within 0.25 mile of proposed construction activities associated with the new trunk sewer infrastructure and no schools. Additionally, development of the SUDP/SOI would require development of additional schools in the Program Study Area, but to date none are proposed within 0.25 mile of the new trunk sewer infrastructure. Therefore, the new trunk sewer infrastructure would not result in hazardous materials or emissions within 0.25 mile of an existing or proposed school. There would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

As shown on Figure 3.8-1, the existing WWTRF footprint is not located within 0.25 mile of an existing or proposed school. As such, the expansion of the WWTRF would not result in hazardous materials or emissions within 0.25 mile of an existing or proposed school. There would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact HAZ-3 Findings

Impact HAZ-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HAZ-3 Mitigation Required: MM AIR-2 and MM AIR-3

Impact HAZ-3 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-4 **Potential to be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and, as a result, would create a significant hazard to the public or the environment.**

Impact HAZ-4 Analysis

Program Impacts

Construction

The Program Study Area contains a number of currently active listed sites on the Cortese list database as potentially hazardous (DTSC 2018; SWRCB 2018a). As shown on Figure 3.8-1, the highest concentration of these sites are located around the central area of the City and along the State Route (SR) 99 and SR 59 corridors. Typically, gas stations, autobody shops, and other mechanical and industrial operations contain the highest proportion of hazardous sites, with what are known as leaking underground storage tanks being the most common type of hazardous cleanup site.

Working directly within an active Cortese-listed site would be avoided where possible; however, due to the high proportion of active Cortese-listed sites within the City and the potential of these sites occurring near Program facilities, a potentially significant impact related to potential release of hazards to the public or the environment could occur prior to mitigation. As such, MM HAZ-3, Cortese List Site Coordination, would be required for any construction work that would occur within or in close proximity of an active Cortese-listed site. MM HAZ-3 would require review of an updated Cortese list query by a Registered Professional Geologist who would determine if Program activities would impact listed sites and the appropriate actions to take, such as remediation of the site, if Program activities could not avoid a listed site and if construction activities would further exacerbate the potential risk of release of contamination (e.g., through movement of contaminated soils or waters during trenching). Therefore, the potential for construction of Program facilities to result in a significant hazard to the public or the environment to be located on a site defined by Government Code Section 65962.5 would be considered less than significant with mitigation incorporated.

Operation

Once operational, the Program components would largely be located underground, in fixed locations, and would not result in any ongoing impacts related to location within a Cortese-listed site. Therefore, there would be no operational impacts.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HAZ-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Similar to the impacts described for the Program above, the new trunk sewer infrastructure could require work within close proximity to Cortese-listed sites, which could result in a significant hazard to the public or the environment if not treated appropriately. However, as shown on Figure 3.8-1, the number of currently active Cortese-listed sites that could be affected by the new proposed trunk sewer infrastructure is limited to one site on the corner of Kibby Road and Central Yosemite Avenue for the Southern Trunk Sewer. This site is labeled as the General Electric Company - Kendall Site (SL 185092894) and is located on approximately 5 acres of land that contains groundwater and soil contaminated with volatile organic compounds (SWRCB 2018b). As such, trenching and excavation activities associated with placement of the new Southern Truck Sewer in this area could potentially come into contact with contaminated soils and groundwater, and could potentially release these contaminants into the surrounding area, causing a potentially significant impact prior to mitigation. Construction activities that would occur within this site would be required to comply with MM HAZ-3 to prevent further release of hazards to the public and the environment. Additionally, as specified in MM HAZ-3, a Registered Professional Geologist would be required to perform an updated query of listed sites and determine if they would be affected by construction activities. As such, currently listed Cortese sites would not result in a significant hazard to the public or the environment from the implementation of the new trunk sewer infrastructure. Therefore, with implementation of MM HAZ-3, construction impacts related to location of new trunk sewer infrastructure activities on a Cortese listed site would be less than significant.

Operation

Similar to the Program discussion above, once operational, the new trunk sewer infrastructure would largely be located underground, in fixed locations, and would not result in any ongoing impacts related to location within a Cortese-listed site. Therefore, there would be no operational impacts associated with the new trunk sewer infrastructure.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HAZ-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

There are no active Cortese-listed sites in the proximity of the exiting WWTRF. Therefore, there would be no impacts resulting from the expansion of the WWTRF related to Cortese-listed sites.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact HAZ-4 Findings

Impact HAZ-4 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HAZ-4 Mitigation Required: MM HAZ-3

Impact HAZ-4 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-5 **Potential to be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public or private 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.**

Impact HAZ-5 Analysis

Program Impacts

Construction

Implementation of the Program would involve construction and placement of pump stations, pipelines, and expansion of the WWTRF within 2 miles of the Merced Regional Airport and within the safety compatibility zones of both the Castle Airport and the Merced Regional Airport. Safety impacts resulting from construction of Program facilities could include the use of construction equipment with a height above 200 feet (i.e., a crane) within airport flight paths, as well as construction worker exposure to increased airport noise for work immediately adjacent to the airport. Additionally, any construction-related nighttime lighting could cause a potential safety risk to pilots if in the direct line of sight during takeoff or landing of aircraft.

Generally, construction activities near the airport would be temporary, and construction workers would not be exposed to prolonged or excessive noise or hazards from the airport due to the sporadic nature of flights and operational activities of the airport. As shown on Figure 3.8-1, the safe zones for the two airports are limited to the western edge of the Program Study area. Additionally, any nighttime lighting required for the construction of the Program would be limited and would likely not occur directly within the line-of-sight of pilots taking off or landing. However, because some of the pipeline and pump station construction activities would occur within the safety compatibility zones of these airports, a potentially significant impact related to safety conflicts from construction activities could occur prior to mitigation. As such, to reduce potential safety conflicts between construction equipment and airport operations. MM HAZ-4, Coordination with Airports, would be implemented and would require coordination with the airport, compliance with local and regional airport safety plans, notification of the proposal to the FAA, and compliance with any measures resulting from the FAA's aeronautical study. Implementation of MM HAZ-4 would reduce potential safety conflicts with the airports to a less than significant level.

Additionally, exposure to the operation of construction equipment can sporadically expose construction workers to increased noise. The addition of airport noise could intensify this intermittent noise exposure. However, the impacts of

increased noise are not anticipated to be significant with standard safety procedures and protocols for construction workers. Therefore, noise impacts from construction activities and the two airports would be less than significant.

Operation

Operation of constructed Program components would not result in safety hazards or have the potential to generate excessive noise exposure (which as described further in Section 3.11, Noise, as not significant). The Program would not involve the placement of people living in or near airports within the City. Additionally, all aboveground facilities, such as pump stations and structures at the WWTRF, would consist of small structures that would be similar in size and scale to a typical residential house and would not be greater than 200 feet tall. Maintenance activities associated with the Program would require occasional work within 2 miles of the Merced Regional Airport, but this work would occur as needed and would not result in a significant change from existing maintenance activities associated with the wastewater collection system in the City. Therefore, operational activities associated with the Program would be less than significant.

Therefore, overall impacts associated with the implementation of the Program during both construction and operations would be less than significant with MM HAZ-4 incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HAZ-4

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

As shown on Figure 3.8-1, installation of the new trunk sewer infrastructure, including the Northern Trunk Sewer, Southern Trunk Sewer, and Northern Trunk Sewer pump station would require construction activities within the safety compatibility zones of the Merced Regional Airport and Castle Airport. As described for implementation of the Program, construction activities within the safety compatibility zones of these airports could potentially cause workers to be exposed to temporary excessive noise levels or safety hazards from airport operations if construction equipment would exceed 200 feet in height or result in additional construction lighting that could adversely affect pilots during takeoff and landing of aircrafts, thus resulting in a potentially significant impact prior to mitigation. As such, implementation of MM HAZ-4 would be required to coordinate with these airports, conduct an aeronautical study, and implement measures from the aeronautical study if deemed necessary through coordination with these airports. Further, because construction activities are not anticipated to require any construction equipment exceeding 200 feet in height, and because any nighttime work and associated construction lighting is expected to be minimal in the safety compatibility zones of these airports, coordination with the airports is expected to be minimal for the new trunk sewer infrastructure construction activities, and would likely result in a no hazard determination from the FAA. Any construction activities outside of the safety compatibility zones of these airports (i.e., in the eastern portions of the Program Study Area) would not require any consultation with the airports and would result in a less than significant impact related to safety hazards. Therefore, with implementation of MM HAZ-4, construction impacts would be less than significant.

Operation

Once the new trunk sewer infrastructure is operational, it would largely be located underground and would have no effect on the airports in the region. The new pump station associated with the Northern Trunk Sewer would be located aboveground; however, it would consist of a small structure that is similar in size and scale to a typical residence and would be no more than 2,000 square feet in size. Therefore, this new pump station would not result in any permanent safety hazard related to being located within an airport safety compatibility zone. Therefore, operational impacts reacted to the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HAZ-4

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

The WWTRF footprint is located approximately 2 miles south of the Merced Regional Airport and is located within the Merced County Airport Land Use compatibility zone D. Construction activities associated with the proposed expansion of the WWTRF could have the potential to occur with 2 miles of the Merced Regional Airport and within the compatibility zone D of this airport. The Merced County Airport Land Use Compatibility Plan states that “this zone [D] is for Other Airport Environs and is the outermost zone of the airport. There are no development restrictions for this zone, with the exception of objects over 150 feet in height.” No construction equipment or structures associated with the expansion of the WWTRF would exceed 150 feet. Therefore, the expansion of the WWTRF would not result in an incompatible use. Therefore, impacts associated with construction of the WWTRF expansion would be less than significant.

Operation

Once the new facilities at the WWTRF are constructed, the heights and lighting of these new facilities would be consistent with the existing structures of the WWTRF and would not result in any substantial height or lighting impacts to pilots operating aircrafts from the Merced Regional Airport. The increase in number of structures would not be discernible to aircraft taking off or landing at the Merced Regional Airport. Therefore, operational impacts related to the expansion of the WWTRF would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

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Impact HAZ-5 Findings

Impact HAZ-5 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HAZ-5 Mitigation Required: MM HAZ-4 and MM HAZ-2

Impact HAZ-5 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-6 Potential to impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Impact HAZ-6 Analysis

Program Impacts

Construction

Construction of the Program would involve work within and adjacent to the City's right-of-way (ROW), which would potentially involve work within emergency access routes and construction vehicles entering and exiting the ROW for transport of construction materials and debris to and from individual sites and staging areas throughout the Program Study Area. Additionally, construction activities associated with the WWTRF expansion would involve the transport of materials along the Gove Road, West Dickenson Ferry Road, and Thornton Road ROWs. This construction could potentially block emergency response vehicles traveling along roadways or access to roadways and driveways for emergency vehicles, and thus, could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan prior to mitigation. Therefore, MM TRA-1, Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan, would be required to allow for adequate emergency ingress and egress throughout construction activities that would use public ROWs. The Traffic Control Plan would include coordination and proper notification of emergency response agencies (i.e., the Merced Fire Department and the Merced Police Department) of any detours or road closures that may be required during construction. Therefore, with implementation of MM TRA-1, potential construction impacts to emergency access would be reduced to a less-than-significant level.

Operation

Operation of the Program components would not impair or physically interfere with an adopted emergency response plan or emergency evacuation plan because once constructed, the majority of the Program components would be located belowground with access that would not impede emergency vehicle movement. The new Program components, including aboveground facilities such as pump stations, would be consistent with existing wastewater collection system infrastructure in the City, and operation of these facilities would not interfere with traffic flow beyond periodic maintenance requirements. These maintenance activities would be sporadic and would require minimal trips on the local roadways within the Program Study Area. Therefore, operational impacts related to an adopted emergency plan would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Similar to the Program discussion above, the new trunk sewer infrastructure would require work directly within roadways that could impair implementation of or physically interfere with adopted emergency plans or emergency evacuation plans. New trunk sewer infrastructure improvements would largely occur around the outer edges of the Program Study Area, where traffic is slightly reduced and overall residential densities are lower, which would mean that impacts to emergency response and evacuations would likely be slightly less for construction of these new trunk sewer improvements. Specifically, Thornton Road, Cardella Road, Belcher Avenue, G Street, Kibby Road, Mission Avenue, and Dickenson Ferry Road would be used for the majority of the new trunk sewer infrastructure placement and would require temporary restricted access along these ROWs for pipeline placement. A such, in order to allow for adequate flow for emergency personnel, MM TRA-1 would be required to allow for adequate emergency ingress and egress throughout construction activities along public ROWs. Therefore, construction impacts associated with new trunk sewer infrastructure would be less than significant with mitigation incorporated.

Operation

Similar to the Program discussion, once operational, the new trunk sewer infrastructure would largely be located underground and would have an inconsequential effect to emergency response or evacuation during access to manholes or other below ground infrastructure. The Northern Trunk Sewer pump station would be located outside of the ROW and would not result in any interference with emergency response or evacuations. Therefore, there would be no operational impacts associated with the new trunk sewer infrastructure.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

Construction and operation associated with the WWTRF expansion would not impair implementation of or physically interfere with adopted emergency response plans since the expansion would be substantially limited to work within the existing footprint of the WWTRF. As such, work at the WWTRF would not interfere with or substantially alter emergency response or evacuation plans. Truck haul trips to and from the WWTRF along Gove Road, West Dickenson Ferry Road, and Thornton Road could cause minor additions of vehicles to local roadway traffic; however, if required, these would be anticipated to generate approximately two additional trips a day and would not impact the roadway in a way that would impede emergency response or evacuations. No road closures or detours would be required for construction and operation of the WWTRF expansion, and project-related vehicles would not block existing streets within the area. Therefore, impacts related to construction and operation of the expansion of the WWTRF would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HAZ-6 Findings

Impact HAZ-6 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HAZ-6 Mitigation Required: MM TRA-1

Impact HAZ-6 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-7 Potential to expose people or structures either directly or indirectly, to a significant loss, injury or death involving wildland fires.

Impact HAZ-7 Analysis

Program Impacts

Construction

The urban and rural areas within the Program Study Area would be subject to limited risk of wildfires and their associated impacts resulting from Program construction activities due to the built-up nature of these areas (i.e., limited fuels that could cause a wildfire). Construction of the Program would involve the use of construction equipment that could cause the unintentional release of sparks or heat from construction equipment into nearby flammable material, such as brush or grasses. In particular, construction of pipelines or undisturbed areas such as new pump station locations could include construction activities near grasses or other flammable woody vegetation. However, all Program facilities, would be constructed in compliance with all applicable local, state, and federal requirements, including the California Fire Code, which limits the potential for construction equipment to spark a wildland or urban fire. by requiring the implementation of fire protection systems, means of adequate ingress and egress of construction equipment and personnel, and implementation of fire-resistive construction equipment. Additionally, the majority of construction activities would occur within existing paved ROWs and within existing disturbed areas and built-up areas (with gravel, concrete, pavement, and asphalt) where groundcover vegetation is minimal and less prone to flammability. This would limit the potential for construction of Program components to expose people or structures to risks from wildfires. Therefore, construction of the Program would have a less than significant impact related to wildland fires.

Operation

The infrastructure-related nature of the Program limits operational use to employees at the WWTRF and performing operations and maintenance activities on pump stations, pipelines, and appurtenances. The majority of facilities themselves would be located underground and would not be subject to risk of damage due to wildfires. The above ground facilities would on occasion have people located within them but would not regularly provide habitation or work accommodation shelter. Aboveground features, such as pump stations or new structures at the WWTRF, would be constructed in compliance with California Fire Code specifications related to structural fire safety, including

installation of fire sprinklers, where necessary, and use of flame-resistant building materials. As noted for the Construction impacts, wildfire sensitivity is and would continue to be low within Program facilities due to the vegetation free paved or gravel operational sites. While the overall fire risk in Merced is moderate, the Program components would limit risk of exposing people or structures to wildfires by use of inflammable materials such as pavement and gravel during site design and California Fire Code compliance. Therefore, operational impacts related to exposure of structures to significant loss from wildfires would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Construction of the new trunk sewer infrastructure would involve similar impacts related to wildfires as described in the Program discussion above. However, because the new trunk sewer infrastructure would largely occur within the outer portions of the Program Study Area, the potential for construction activities to occur within areas with brush or other flammable groundcover would be more likely because there is less built-up environment (i.e., areas consisting of pavement, concrete, and other non-flammable materials) and more open grass lands and areas with more vegetation (i.e., agricultural fields). As discussed in the Program discussion above, the contractors chosen for the Program would be required to comply with all local, state, and federal requirements governing fire control, and construction equipment would be operated, stored, and maintained in accordance with these regulations to prevent fires. Specifically, the California Fire Code requires implementation of fire protection systems, means of adequate ingress and egress of construction equipment and personnel, and implementation of fire-resistive construction equipment, which would limit the possibility of construction related fires to occur throughout construction activities. Therefore, construction of the new trunk sewer infrastructure would result in a less than significant impact related to loss from wildfires.

Operation

As discussed in the Program discussion above, any new structures, including the Northern Trunk Sewer pump station, would be constructed in accordance with the California Fire Code requirements and would install fire sprinklers and use flame-resistant building materials as needed to reduce the flammability potential of the new structure with limited potential to expose people or structures to risk of wildfire. Therefore, operational impacts associated with the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

Construction and operation of the expansion of the existing WWTRF would result in similar risk and potential exposure to wildfires as those described for the Program above. Construction activities at the WWTRF would occur within the existing footprint of the WWTRF, which consists of paved and gravel areas. The potential of sparks from construction activities would be limited in this area. Additionally, all new structures at the WWTRF would be constructed in compliance with the California Fire Code and would include installation of fire sprinklers and use of flame-resistant building materials where necessary to reduce the potential for flammability of any new structures. Additional facilities at the site would also be designed similarly to the existing facility with pavement and gravel ground cover throughout the site. Therefore, there would be a less than significant impact.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HAZ-7 Findings

Impact HAZ-7 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HAZ-7 Mitigation Required: None Required

Impact HAZ-7 Overall Level of Significance After Mitigation: Less than Significant

Impact HAZ-8 **If located in or near a state responsibility area or lands classified as very high fire hazard severity zones:**

- **Impair an adopted emergency response plan or emergency evacuation plan;**
- **Exacerbate wildfire risks due to slope, prevailing winds, and other factors, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire;**
- **Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment; or**
- **Expose people or structures to significant risks, including downslope downstream flooding or landslides, as a result of, runoff, post-fire slope stability, or drainage change.**

Impact HAZ-8 Analysis
Combined Program/Proposed Project Impacts

Construction

The City limits are not located within an SRA or in a region that is considered to have a very high fire severity zone. Some smaller portions of the Program Study Area are located in moderate fire severity zones, as designated by CAL FIRE (Figure 3.8-1) within largely undeveloped areas near the outskirts of the City (CAL FIRE 2007). Construction activities associated with the Program may take place in these moderate severity areas depending on development that occurs within the area, and could involve work that could cause sparks from operation of machinery. However, as discussed under Impact HAZ-7, all construction activities would be required to comply with the California Fire Code specifications; standard construction safety precautions; and local, state, and federal regulations governing fire suppression. These regulations would be implemented throughout construction activities associated with the Program and would reduce the potential for construction equipment to cause fires from sparks. Specifically, the California Fire Code requires implementation of fire protection systems, means of adequate egress of construction equipment and personnel, and implementation of fire-resistant construction equipment, which would limit the possibility of construction related fires to occur through construction activities Therefore, impacts related to fire hazards as they relate to construction would be less than significant.

Operation

Once the Program is constructed, the majority of the Program components would be located underground and would not be affected by any potential fires in the area, nor would they contribute to increased risk for fire. Aboveground features, such as pump stations and structures at the WWTRF, would be constructed in compliance with the California Fire Code, which would require installation of fire sprinklers and use of non-flammable building materials, as necessary. Therefore, operational impacts related to fire hazards would be considered less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HAZ-8 Findings

Impact HAZ-8 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HAZ-8 Mitigation Required: None Required

Impact HAZ-8 Overall Level of Significance After Mitigation: Less than Significant

3.8.5 Hazards and Hazardous Materials Mitigation

Mitigation Measure TRA-1: Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan

See MM TRA-1, Section 3.15, Transportation.

Mitigation Measure AIR-2: Implement Hazardous Materials Measures

See MM AIR-2, Section 3.3, Air Quality.

Mitigation Measure AIR-3: Minimize Construction Emissions

See MM AIR-3, Section 3.3, Air Quality.

Mitigation Measure HYD-1: Avoid/Minimize Potential Impacts from Construction Material Release

See MM HYD-1, Section 3.9, Hydrology and Water Quality.

Mitigation Measure HAZ-1: Prepare and Implement a Hazardous Materials Release Prevention Plan

The City shall create and implement a Hazardous Materials Release and Prevention Plan (HMRP Plan) to reduce the risk of sensitive receptors from being exposed to hazardous materials during construction. The HMRP Plan shall identify control measures to prevent the release of hazardous materials, as well as a detailed action plan outlining how to respond to an incidental spill in compliance with all local, state, and federal regulations relating to the handling of hazardous materials. The HMRP Plan shall be incorporated into the stormwater pollution prevention plan and consistent with the best management practices identified under the Hydrology and Water Quality Section and required under MM HYD-1 to reduce the impact of spilled hazardous materials. The HMRP Plan must meet containment details as identified in MM HYD-1 and identify spill containment materials necessary to adequately respond to a hazardous materials spill as set forth in MM HYD-1.

Mitigation Measure HAZ-1 Implementation

Responsible Party: The City is responsible for verifying and documenting that the HMRP Plan meets all applicable requirements. The selected construction contractor is responsible for following the HMRP Plan and implementing the actions in the event of a spill.

Timing: HMRP Plan preparation is required prior to construction. The HMRP Plan shall be implemented throughout construction.

Monitoring and Reporting Program: The HMRP Plan shall be developed by the construction contractor and is required to be kept onsite during construction. Additionally, the contractor must provide the City a copy and copies must be available for quick reference and review at the project site and at the City offices. The contractor must ensure that all construction workers involved in the operation and movement of

construction equipment are familiar with the HMRP Plan and that the HMRP Plan is appropriately followed throughout construction.

Standards for Success: Hazardous materials release prevention and adherence to HMRP Plan conditions and release prevention practices.

Mitigation Measure HAZ-2: Worker Environmental Awareness Program (Hazards)

The purpose of a Worker Environmental Awareness Program (WEAP) is to educate personnel (i.e., construction workers) about the existing onsite and surrounding resources, the measures required to protect these resources, and strategies for avoidance of potential hazards within these sites. The WEAP, developed by the City, shall include materials and information on potentially sensitive biological and cultural resources, air quality protection measures, and potential hazards resulting from construction within the Project area, and applicable precautions that personnel should take to reduce potential impacts.

The WEAP presentation shall be given to all personnel who may be exposed to site hazards or may harm sensitive environmental resources as identified within the WEAP mitigation measures (e.g., exposure to dust-generating or ground-disturbing activities, work within non-biologically cleared areas, or equipment operators who may encounter sensitive species). The WEAP presentation shall be given prior to the start of construction and as necessary throughout the life of the Project as new personnel arrive onsite. The City and the contractor are responsible for ensuring all onsite personnel attend the WEAP presentation, receive a summary handout, and sign a training attendance acknowledgement form to indicate that the contents of the program are understood and to provide proof of attendance. Each participant of the WEAP presentation shall be responsible for maintaining their copy of the WEAP reference materials and for making sure that other onsite personnel are complying with the recommended precautions. The contractor shall keep the sign-in sheet onsite and shall submit copies of the sign-in sheet to the City's Project Manager, who will keep it on file at City offices.

For the hazards and hazardous materials portion of the WEAP presentation, the following information and implementation steps shall be prepared, presented, and executed prior to and during construction to prevent exposure and raise awareness of potential site hazards:

- Inform personnel about potential hazards within the Project area, including but not limited to, both naturally occurring and man-made asbestos, including asbestos cement (AC), present within soils as well as Valley Fever spores (*Coccidioides immitis*) and the likelihood of presence within site-specific soils. Information given should include the following:
    - Providing context as to where these hazards could occur during construction and how to handle them if they are encountered (such as in the case of encountering AC pipelines or other structures with AC);
    - Outlining ways to prevent exposure (outlined below);
    - Informing personnel that the appropriate respiratory equipment can be provided upon request to further prevent exposure to dust particles;
    - Informing personnel about the symptoms of exposure to potential hazards, including asbestos and Valley Fever. Symptoms of Valley Fever exposure could include but are not limited to fever, cough, chills, and night sweats, which appear 1 to 3 weeks after exposure. Symptoms of asbestos exposure (i.e., Asbestosis) occur

over a much longer period of time (10 to 40 years after exposure) and could include but are not limited to shortness of breath, tightness in chest, chest pain, and appetite loss;

- Informing personnel about appropriate actions to take if symptoms of exposure occur, including regular doctor checkups (i.e., for personnel working regularly within the construction or industrial settings where exposure to asbestos is high), and seeking emergency medical care if symptoms for Valley Fever persist or get worse;

- Inform personnel about potentially hazardous sites within the Project areas and how to identify hazardous materials sites. Signs of potential contamination within soils could include stained soils, discolored or oily water, previously unknown underground storage tanks, etc. Work should be stopped if any of these signs are identified within the Project area, and MM HAZ-3 should be implemented before work shall resume.

Mitigation Measure HAZ-2 Implementation

Responsible Party: The City and chosen contractor

Timing: Prior to construction and throughout construction activities as new personnel arrive on the Project site

Monitoring and Reporting Program: Development of a WEAP presentation and handout packet in accordance with this mitigation measure and any other resource-specific WEAP requirements. A sign in sheet completed for all workers on the construction site shall be kept on file at the Project site, and copies shall be submitted to the City's Project Manager to be kept on file at City offices.

Standards for Success: Limit exposure of personnel to potential hazards during construction through prescribed safety precautions. If exposure cannot be avoided, education of personnel for immediate recognition of health symptoms to act quickly and seek appropriate medical or emergency care to limit long-term harm.

Mitigation Measure HAZ-3: Updated Active Cortese List Site Identification and Hazardous Site Remediation

The City shall conduct a review of the Cortese list database within 30 days of the start of construction to identify sites within 0.5 mile of Project activities to identify Cortese sites designated as 'Active'. A qualitied professional (i.e., a Registered Professional Geologist) shall conduct a review of these Active sites to determine if the specific contaminants of the Active site would interfere with Project construction activities or if construction workers could be exposed to contaminants of the Active site. If, based on the educated opinion of the qualified professional, hazardous sites would not be encountered by construction activities, then no further action is required. If it is determined by the qualified professional that an Active site has potential to be present in the location of proposed construction activities, then the City shall implement the following steps:

1. The qualitied professional (i.e., a Registered Professional Geologist) shall examine the Active site and work with the City to determine the site's potential for interactions with Project activities.

2. If the site has the potential to interfere with construction activities, the City shall contact, as applicable, the United States Environmental Protection Agency or regulating authority, Merced County Environmental Health Department, the site owner, and/or the responsible party to identify the clean-up measures being undertaken and

the timeline for clean-up. The qualified professional shall then make recommendations on the appropriate course of action, such as personal protection equipment for construction workers, further project specific site investigations, project site remediation, or other methods that would limit the potential for human or environmental exposure to Active hazardous materials contamination sites;

3. These recommendations shall then be submitted to the applicable agency(s). This course of action shall be evaluated and approved by the appropriate regulatory agency (e.g., Merced County Environmental Health Department);

4. The appropriate course of action (i.e., further investigation, remediation, or other methods) shall take place prior to the start of any construction activities within the area;

5. Once the hazardous site is determined by the qualified professional and the Health Department to no longer pose a threat to human health or the environment, then construction work can begin or continue;

6. The City shall be responsible for appropriate notification of regulatory agencies such as the Central Valley Regional Water Quality Control Board (CVRWQCB) and the Department of Toxic Substances Control (DTSC) if new sites are discovered or if previously known sites result in a status change (i.e., site is cleaned up).

Mitigation Measure HAZ-3 Implementation

Responsible Party: The City.

Timing: The updated Cortese list query shall be performed no more than 30 days prior to the start of construction and updated query searches shall be performed throughout construction if construction were to be delayed for a duration greater than one year or new sites are reasonably foreseeable to intact with the Project site.

Monitoring and Reporting Program: The Registered Professional Geologist shall submit a technical memorandum to the City to be kept on file that includes the updated query list of Active Cortese listed sites and the potential for interaction with Project construction. If previously unknown hazardous materials sites are encountered during construction, then a Registered Professional Geologist shall be retained to analyze the site and report necessary further action steps. The City shall submit appropriate documentation of any hazardous sites encountered to the CVRWQCB and the DTSC for updating of the Cortese-listed sites database.

Standards for Success: Project construction activities shall not interact with hazardous sites such that release of hazardous materials that could impact human health or the environment could occur.

Mitigation Measure HAZ-4: Coordination with Airports

The City shall coordinate with the Federal Aviation Administration (FAA) at least 45 days prior to the start of construction activities for any construction activities that would occur within an airport compatibility zone that have the potential to result in construction equipment (i.e. a crane) that would potentially exceed 200 feet. The City shall submit Form 7460-1, “Notice of Proposed Construction or Alteration” to the FAA to obtain a no hazard determination from the FAA. If the FAA responds with a hazard determination, the City will work with the FAA to remedy the potential hazard before the start of construction. If the FAA response is a no hazard determination, then no further

action is required. If the FAA does make a hazard determination, additional precautions and measures as required by FAA will be obtained to comply with FAA requirements. Additional ongoing coordination may be required to ensure that proposed construction activities within a compatibility zone of the airports (specifically Merced Regional Airport) do not disrupt airport operations and appropriate notice is provided to aviators within the airport.

Mitigation Measure HAZ-2 Implementation

Responsible Party: The City.

Timing: 45 days prior to the start of construction.

Monitoring and Reporting Program: The City shall prepare and submit Form 7460-1 to the FAA and follow up with the FAA in order the receive either a no hazard or hazard determination.

Standards for Success: Result in no hazards during construction or operations of the Project to either Merced Regional airport or Castle Airport.

3.8.6 Abbreviations

AC	Asbestos Cement
BMPs	Best Management Practices
CAA	Clean Air Act
CAL EPA	California Environmental Protection Agency
CAL EMA	California Emergency Management Agency
CAL FIRE	California Department of Forestry and Fire Protection
CalOSHA	Division of Occupational Health and Safety
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Merced
CUPA	Certified Unified Program Agency
DOSH	Division of Occupational Safety and Health
DTSC	California Department of Toxic Substances Control
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
HAP	Hazardous Air Pollutants
HMRP Plan	Hazardous Materials Release and Prevention Plan
MMs	Mitigation Measures
NOP	Notice of Preparation
OSHA	Occupational Safety and Health Administration
PRC	Public Resources Code
RCRA	Resources Conservation and Recovery Act
ROW	right-of-way
SR	State Route
SRA	State Responsibility Area
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWRCB	State Water Resources Control Board
Unified Program	Unified Hazardous Waste and Hazardous materials Management Regulatory Program
UFC	Uniform Fire Code
USC	United States Code
USEPA	United States Environmental Protection Agency
WEAP	Worker Environmental Awareness Program

WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.8.7 References

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3.9 HYDROLOGY AND WATER QUALITY

3.9.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.
- Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.
- 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:
    - Result in substantial erosion or siltation on- or off-site;
    - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;
    - 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
    - Impeded or redirect flood flows.
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts. Potential impacts to hydrology and water quality that may result from implementation of the Program are described, and mitigation for significant impacts, where feasible, is identified.

3.9.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives related to hydrology and water quality that are relevant to the Program.

3.9.2.1 Federal

Federal Clean Water Act

The Federal Clean Water Act (CWA) (33 United States Code [USC] Section 1251 et seq.), formerly the Federal Water Pollution Control Act of 1972, was enacted with the intent of restoring and maintaining the chemical, physical,

and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. Those discharges are regulated by the National Pollutant Discharge Elimination System (NPDES) permit process (CWA Section 402). Section 401 of the CWA regulates surface water quality and a Water Quality Certification is required for federal actions (including construction activities) that may result in impacts to surface water. In California, NPDES permitting authority is delegated to and administered by the nine Regional Water Quality Control Boards (RWQCBs). The City of Merced (City) and Program Study Area are located within Region 5 regulated by the Central Valley Regional Water Quality Control Board (CVRWQCB).

NPDES Construction Permit

The CWA prohibits certain discharges of stormwater containing pollutants except in compliance with an NPDES permit. The federal statutes and regulations require discharges to surface waters comprised of stormwater associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than 1 acre of total land area and discharges to municipalities with combined stormwater and sewer systems) to obtain coverage under an NPDES permit. The NPDES permit must require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology to reduce or eliminate pollutants in stormwater runoff.

National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is responsible for managing the National Flood Insurance Program (NFIP), which makes federally backed flood insurance available for communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage.

The NFIP, established in 1968 under the National Flood Insurance Act, requires that participating communities adopt certain minimum floodplain management standards, including restrictions on new development in designated floodways and a requirement that new structures in the 100-year flood zone be elevated to or above the 100-year flood level, known as base flood elevation. To facilitate identifying areas with flood potential, FEMA has developed Flood Insurance Rate Maps (FIRMs) that can be used for planning purposes, including floodplain management, flood insurance, and enforcement of mandatory flood insurance purchase requirements.

3.9.2.2 State

Porter-Cologne Water Quality Control Act

The State of California established the State Water Resources Control Board (SWRCB), which oversees the nine RWQCBs, through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Through the enforcement of the Porter-Cologne Act, the SWRCB determines the beneficial uses of the waters (surface and groundwater) of the state, establishes narrative and/or numerical water quality standards, and initiates policies relating to water quality. The SWRCB and, more specifically, the RWQCB, are authorized to prescribe Waste Discharge Requirements (WDRs) for the discharge of waste, which may impact waters of the state. Furthermore, the development of water quality control plans, or Basin Plans, are required by the Porter-Cologne Act to protect water quality. The City and the Program Study Area are both within the jurisdiction of the 2018 Water Quality Control Plan for the Sacramento and San Joaquin River Basins (2018 Basin Plan). Table 2-1 of the 2018 lists six surface water bodies specific to the

Merced River with varying types of beneficial uses. While the Program Study Area is within the Merced River watershed, there are no water bodies that would be associated with Program components. As a tributary to the San Joaquin River, the Merced River and its tributaries are The SWRCB issues both General Construction Permits and Individual Permits under the auspices of the federal NPDES program.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in 2014 and amended in 2015, creates a framework for sustainable, local groundwater management. The act defines sustainable groundwater management as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results," such as land subsidence and water quality degradation.

3.9.2.3 Local

Merced Vision 2030 General Plan

The City's Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to hydrology and water quality, including the following:

Goal Area P-3: Water

- **Policy P-3.1.** Ensure that adequate water supply can be provided within the City's service area, concurrent with service expansion and population growth.

Goal Area OS-1: Open Space for the Preservation of Natural Resources

- **Policy OS-1.5.** Preserve and enhance water quality.

Goal Area OS-5: Conservation of Resources

- **Policy OS-5.1.** Promote water conservation throughout the planning area.

Goal Area S-3: Flooding

- **Policy S-3.3.** Maintain essential City services in the event of flooding or dam failure.
- **Policy S-3.4.** Locate and design essential facilities to minimize flood risk.

Merced Municipal Code

Chapter 17.48 (Flood Damage Prevention) of the City's Municipal Code includes several regulations that promote public health, safety, and general welfare of the community. Methods for reducing flood loss within this chapter include the following:

A. Restricting or prohibiting uses which are dangerous to health, safety, and property due to water or erosion hazards, or which result in damaging increases in erosion or flood heights or velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural floodplains, stream channels, and natural protective biers, which help accommodate or channel floodwaters;

D. Controlling fill, grading, dredging, and other development which may increase flood damage; and

E. Preventing or regulating the construction of flood barriers, which will unnaturally divert floodwaters or which may increase flood hazards in other areas.

A development permit is required for any construction that would occur within a special flood hazard zone, as identified by the Federal Insurance Administration of FEMA.

Merced Integrated Regional Water Management Plan

The Merced Integrated Regional Water Management Plan (IRWMP) program is a collaborative effort between the City and County of Merced, the Merced Irrigation District (MID), the City of Atwater, and the City of Livingston to identify water management issues, needs, objectives, and actions to meet long-term water needs within Merced County (east of the San Joaquin River). The first Merced IRWMP was completed in August 2013 and is currently being updated to comply with state guidelines released in 2016. The updated Merced IRWMP will identify programs and projects needed to address regional water needs (Merced IRWMP 2018). The objectives within the Merced IRWMP include the following:

A. Correct groundwater overdraft conditions.
B. Manage flood flows and stormwater runoff (including those caused by climate change) for public safety, water supply, recharge, and natural resource management.
C. Meet demands for all uses, including agriculture, urban, and environmental resource needs.
D. Improve coordination of land use and water resources planning.
E. Effectively address climate change adaption and/or mitigation in water resources management and infrastructure.
F. Maximize water use efficiency, including expanding in-lieu recycled water projects where feasible.
G. Protect and improve water quality for all beneficial uses, consistent with the Basin Plan.
H. Protect, restore, and improve natural resources.
I. Address water-related needs of disadvantaged communities.
J. Protect and enhance water-associated recreation opportunities.
K. Establish and maintain effective communication among water resource stakeholders in the Region.
L. Enhance public understanding of water management issues and needs.

City of Merced Urban Water Management Plan

Urban Water Management Plans (UWMPs) are required under the California Water Code (CWC) to be completed every 5 years by urban water suppliers within the state. These UWMPs are designed to maintain efficient use of urban water supplies, to continue to promote conservation programs and policies, to ensure that sufficient water supplies are available for future beneficial use, and to provide a mechanism for response during water drought

conditions. The 2015 UWMP for the City was completed in November 2017 in conjunction with other water planning efforts completed, such as the 2030 General Plan, the Merced Area Groundwater Pool Interests (MAGPI), the 2016 Water Master Plan Update, the Merced Groundwater Basin Groundwater Management Plan Update, and the Merced IRWMP (City of Merced 2017a).

Merced Groundwater Basin Groundwater Management Plan

The Groundwater Management Plan (GWMP) provides the framework to implement a groundwater management strategy for the Merced groundwater basin. The purpose of the GWMP is to identify and implement a number of actions to preserve and increase the quantity of groundwater resources within the Merced groundwater basin. MID and the City prepared the original Final Draft GWMP in 1997 to comply with the legislative requirements, and in December of 1997, water purveyors within the Merced groundwater basin signed a memorandum of understanding that created the association known as MAGPI. This GWMP was then updated on July 29, 2008, to incorporate new data and comply with update legislative requirements (MAGPI 2008). Applicable goals and elements within the GWMP include the following:

- **Goal 1** – Protect and maintain groundwater quality within the Merced Groundwater basin to satisfy current and future beneficial use.
- **Goal 3** – Protect and Maintain groundwater recharge areas within the Merced groundwater basin.
- **Element 1** – Control of Saline Water intrusion. Saline water can slowly degrade groundwater quality, limiting its range of potential use.
    - Potential source of saline intrusion in the Merced groundwater basin includes downward seepage of sewage, agricultural, or industrial waste (potential wide-spread problem associated with municipal waste water treatment plants, application of fertilizers, and dairies).

Merced Irrigation-Urban Groundwater Sustainability Agency

The Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA) was formed in response to the Sustainable Groundwater Management Act, which required that all high and medium priority groundwater basins be managed by one or more groundwater sustainability agencies (GSAs). The GSAs have the authority to develop one or more groundwater sustainability plans (GSPs) to identify and implement solutions for the long-term sustainable management of local groundwater resources. The City and the Program Study Area are located within the boundaries of the Merced Irrigation-Urban groundwater basin, a critically over-drafted basin that is under the jurisdiction of the MIUGSA. On January 28, 2020, the MIUGSA submitted its GSP to the California Department of Water Resources; this plan details how the Merced Subbasin will become more sustainable over a 20-year timeframe (MIUGSA 2020). One of the priorities listed on page 6-7 of this GSP was “Project focuses on recharge.”

Merced Storm Drain Master Plan

In 2002 the City developed a Storm Drain Master Plan that identified infrastructure improvements necessary to accommodate stormwater runoff at build-out of the City’s Merced Vision 2015 General Plan. New development within the City is required to construct stormwater percolation/detention basins to collect runoff and filter it before it reaches the groundwater tables (City of Merced 2002).

3.9.3 Environmental Setting

3.9.3.1 Regional Setting

The Program Study Area is located within the San Joaquin River/Merced River basin or "watershed". The San Joaquin Valley basin extends over 11,000 square miles from the City of Stockton to the north, the City of Fresno in the south, the Sierra Nevada on the east, and the Coastal Ranges to the west. The San Joaquin River is the principal river within the area, and other major tributaries to the San Joaquin River include the Stanislaus, Tuolumne, and the Merced Rivers. Water flowing through the San Joaquin River drains toward the delta. The Merced Subbasin is one of the 11 distinct subbasins within the larger San Joaquin Valley Groundwater Basin.

Climate within the Program Study Area includes hot, dry summers and cool, humid winters, with average daily temperatures from 47 to 76 degrees Fahrenheit. Precipitation within the Program Study Area averages about 11 to 12 inches per year during the winter (City of Merced 2010).

3.9.3.2 Local Setting

Within the San Joaquin Valley Groundwater Basin lies the smaller Merced groundwater subbasin. The Merced subbasin includes lands south of the Merced River between the San Joaquin River to the west and the crystalline basement rock of the Sierra Nevada foothills to the east, as well as the Chowchilla River to the south. Water-bearing formations within the Merced subbasin consist of consolidated rocks and unconsolidated deposits. In particular, in the eastern portions of the Merced subbasin, consolidated rocks result in lower yields in water to wells, with the exception of the Mehrten Formation. Other consolidated rock formations with the Merced subbasin include the Ione Formation and the Valley Springs Formation. Unconsolidated deposits within the area include continental deposits, lacustrine and marsh deposits, older and younger alluvium, and floodplain deposits. The lacustrine, marsh, and floodplain deposits result in lower water yields, while the younger alluvium is more likely to yield moderate water. Additionally, there are three groundwater water bodies within the Merced subbasin, including an unconfined water body, a confined water body, and the waterbody located within the consolidated rocks.

Generally, topography within the Program Study Area is relatively flat with elevations ranging from 200 feet above mean sea level (amsl) to 150 feet amsl, with a general trend of higher elevations in the southeast and lower elevations in the southwest.

Flooding

FEMA oversees the delineation of flood zones and the provision of federal disaster assistance. FEMA manages the NFIP and publishes the FIRMs, which show the expected frequency and severity of flooding by area. Floodplains are divided into flood hazard zones designated by the potential for an area to flood. Zone X may include those areas that are located within the 100-year flood plain but are adequately protected by levee systems, while Zones A, AE, and AO are designated as areas inundated by a 100-year storm event.

Flooding within the Program Study Area is typically caused by infrequent, severe winter storms that combine with snowmelt runoff into the rivers from the Sierra Nevada foothills. Flat topography within the Program Study Area can cause stream and riverbanks to become easily overtopped by flood waters and spread over large areas. As such, more than half of the Program Study Area (which has similar limits as the City's Specific Urban Development

Plan[SUDP]/Sphere of Influence [SOI]) is located within a FEMA-designated 100-year flood plain, as shown on Figure 3.9-1 (FEMA 2008).

Additionally, as discussed in the 2030 General Plan Draft EIR, the Program Study Area has two inundation zones (Figure 3.9-2), resulting from potential failure of the Bear Reservoir Dam (east of the Program Study Area) and the Lake Yosemite Dam. The inundation zones from these two dams are shown in Figure 3.9-2 and cover a majority of the northern portion of the Program Study Area. The Department of Water Resources (DWR) is responsible for completing annual inspections of each of these dams for the purpose of safeguarding life and destruction of property. Risk of the dam failure from either of these dams is low (City of Merced 2010).

Surface Water

Local surface water sources within the Program Study Area include the Merced River, Black Rascal Creek, Bear Creek, and Fahrens Creek, in addition to numerous human-made channels that are included in MID's system of canals, levees, and ditches. Due to the increase in the area of impervious surfaces (i.e., roadways, sidewalks, and buildings), runoff and associated pollution concentrations has increased within the Program Study Area. Pollution levels are highest during November, during initial rain events, and often contain substances such as oil, battery acid, and engine coolant. Additionally, surface water quality is also affected by pesticides and fertilizers that are used in the areas surrounding the urban area of the City (within the Program Study Area). The pollutants are often washed into stream channels during storm events, thus affecting the water quality of the streams and other surface water bodies within the Program Study Area.

In regard to water supplies, according to the City UWMP, the largest use of water supplies within the City's Specific Urban Development Program/Sphere of Influence (SUDP/SOI) are from single- and multi-family residences, which collectively contribute to 71 percent of the water supply demand (City of Merced 2017a). Additionally, the demand for both potable and recycled water is continuing to increase over time. The projected demand for these water resources is estimated to rise from 22,741-acre feet (af) in 2015 to about 38,000 af by 2035 (City of Merced 2017a).

Groundwater

The Program Study Area is located within the Merced Groundwater Subbasin. Groundwater within the Program Study Area is supplied by the runoff from the Sierra Nevada foothills, where it then flows in to the 2,665 square mile Middle San Joaquin-Lower Chowchilla watershed (U.S. Geological Survey Hydrologic Unit 18040001) and the San Joaquin River groundwater basin. As discussed in the regional setting above, the San Joaquin River is the largest river within this system, which eventually drains into the delta and San Francisco Bay.

Groundwater within the Program Study Area generally tends to flow northeast to southwest; however, pumping and other human actions can cause these flows to be variable over time. Groundwater levels are saturated with fresh groundwater within the Program Study Area at a depth of about 1,200 feet, and overall quality of this groundwater tends to be moderate to good (City of Merced 2017b). However, shallower aquifers within the Program Study Area are impacted from contamination sources such as nitrates from wastewater disposal and agriculture, thus resulting in an overall decline in groundwater quality over time.

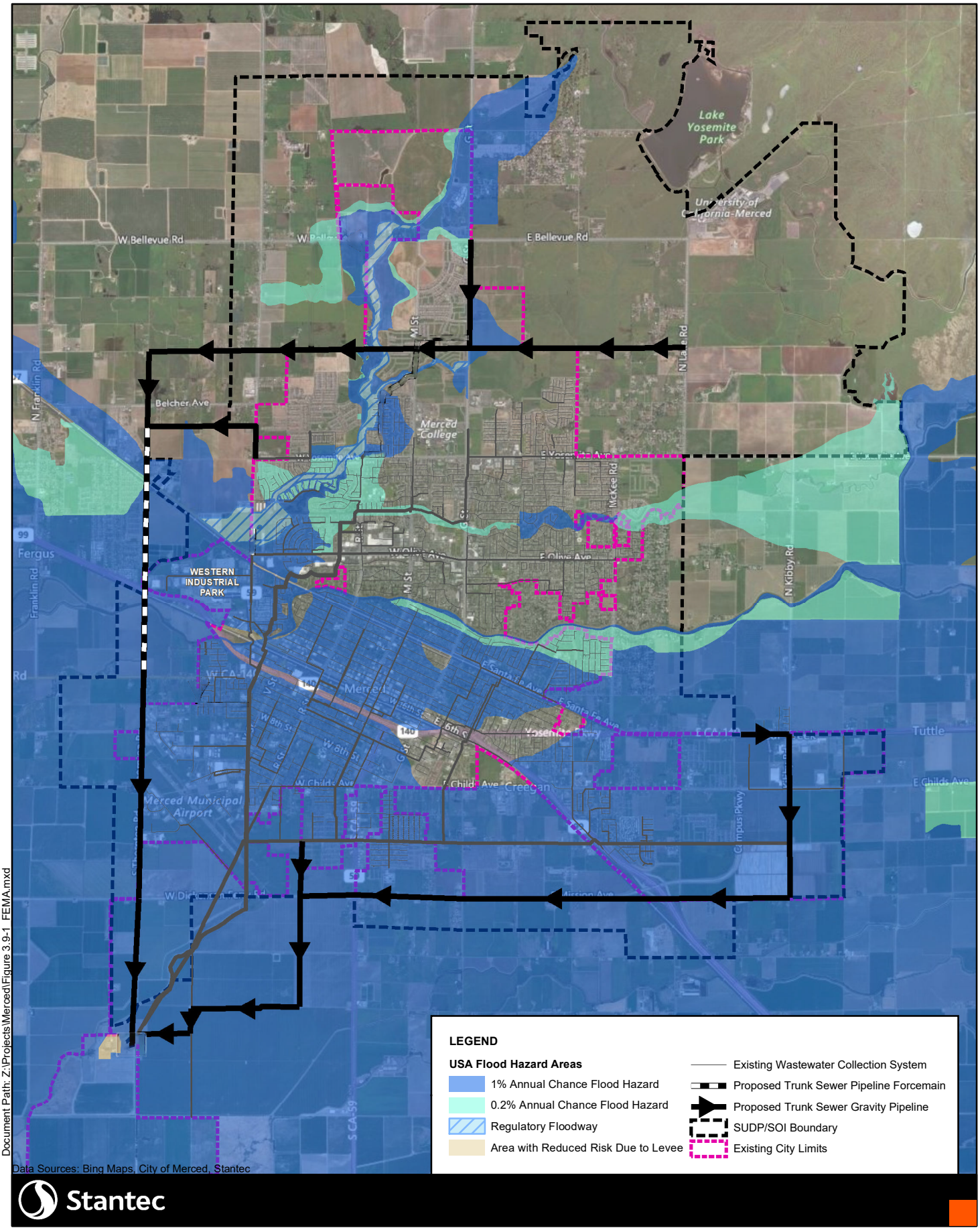
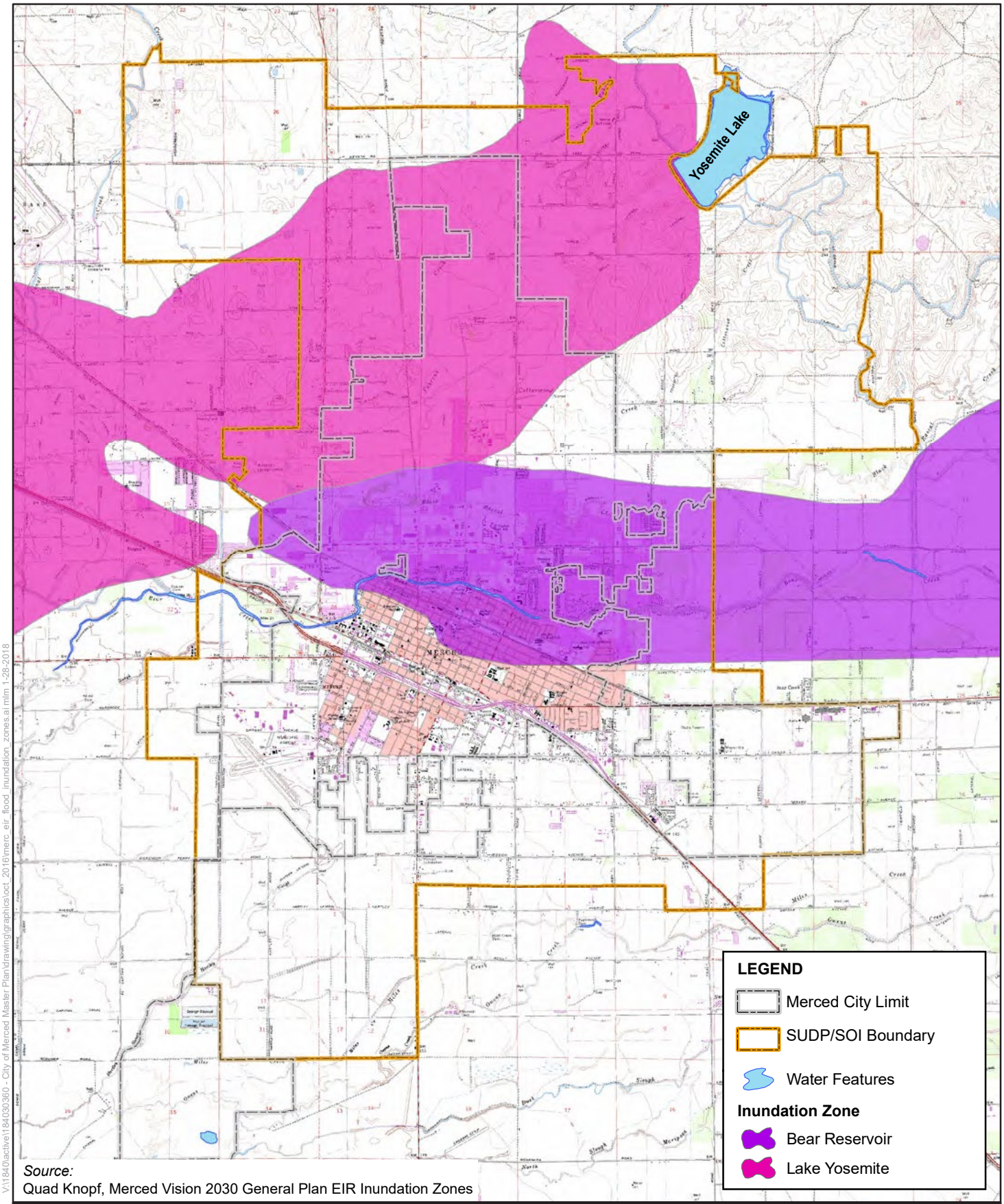


Figure 3.9-1
FEMA Flood Zones
City of Merced - Draft Environmental Impact Report



Source:
Quad Knopf, Merced Vision 2030 General Plan EIR Inundation Zones

Stantec

0 0.5 1 1.5 2
Miles

Figure 3.9-2
City of Merced Dam Failure Inundation Zones
City of Merced - Draft Environmental Impact Report

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Groundwater supplies within the Program Study Area have been closely monitored for more than 30 years and have shown a decline in water levels. From 1978 to 1985, water usage ranged from 313 to 396 gallons per day per capita. From 2005 to 2012, water usage ranged from 255 to 271 gallons per day per capita. The City has instituted water conservation measures in recent years in response to the prolonged drought and the Governor's Executive Order to reduce water consumption (City of Merced 2017b).

3.9.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to hydrology and water quality. When an impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.9.4.1 Impact Analysis

Impact HYD-1	**Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality.**

Impact HYD-1 Analysis
Combined Program/Proposed Project Impacts

Construction

Construction of the Program, including project components would require site preparation, mobilization of equipment to construction sites, installation of new infrastructure, and site restoration. These construction activities have the potential to degrade surface water quality by introducing sediment to surface waters and adversely affecting both surface and groundwater quality by introducing pollutants to receiving waters throughout the Program Study Area. Construction activities could also generate hazardous wastes that if improperly managed, could enter both surface- and groundwater sources.

Construction activities, including those associated with the Program and any future Program construction, can generate loose soils that if not properly managed, can run offsite and increase sediment loads to waterways. Runoff risk is highest during the rainy season when soils can get washed away into nearby waterways. Sedimentation to the waterways degrades water quality by increasing suspended sediment, reducing the channel's flood capacity, and potentially adversely affecting associated aquatic and riparian habitats, thus resulting in a potentially significant impact prior to mitigation. As such, MM GEO-1, Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan (SWPPP), would be implemented to ensure that disturbed soils during construction activities are properly stored and managed throughout the duration of construction activities, thus protecting water quality. The City requires that a SWPPP is prepared for all construction activities disturbing greater than 1 acre, which includes year-round best management practices (BMPs) designed to prevent impacts to water quality. MM GEO-1 would reduce water quality impacts from construction related runoff and erosion to a less than significant level.

Construction activities from the proposed Projects and any future Program construction could also generate chemical waste products such as adhesives, solvents, and petroleum lubricants, which have the potential to be accidentally released during construction. Chemicals associated with construction could adhere to soil particles and be washed into surface water sources, potentially further degrading the quality of surface water sources. As such, MM HYD-1,

Avoid/Minimize Potential Impacts from Construction Material Release, would be required to reduce potential impacts to water quality from construction materials release into waterways. MM HYD-1 includes the development and implementation of a Spill Prevention and Contingency Plan, which would effectively minimize impacts related to release of chemicals into waterways by limiting refueling distances from waterways, maintaining construction equipment, and including measures to be followed should an accidental spill occur within the Program Study Area during construction activities. Therefore, impacts to water quality resulting from construction material release would be less than significant with mitigation incorporated.

The majority of Program components, including the new pipelines, would be located within existing or future public roadway rights-of-way (ROWs), with smaller portions located within overland and undeveloped areas. Installation of the Program, including current and future Program components (i.e., pipelines) requires crossing of streams, smaller tributaries, culverts. and canals. Water crossings are anticipated to be completed using trenchless piping methods (i.e., horizontal directional drilling [HDD], jack and bore, or microtunneling) to avoid direct impacts to water features. However, in the event that trenchless methods are infeasible, traditional open trenching may be required. Impacts to the water quality associated with construction would occur from runoff and loose sediment on construction sites if it were to escape into waterways or drainages, typically during storm events or other times water runs offsite. If drainages and waterways are not avoided by installation methodologies, the rules and regulations specified in Section 3.9.2, Regulatory Framework, would need to be strictly adhered to, and all necessary permits would need to be obtained to ensure that no water quality violations occur. Federal and state permits requiring strict water quality standards, such as Section 401 of the CWA and compliance with the Porter-Cologne Act would require implementation of BMPs and potential monitoring of stream crossings, which would limit the potential impacts to waterways to less than significant levels or the Program and proposed Projects would face permit violations.

In the event that groundwater is encountered (not uncommon with deep excavations in the Central Valley during the wet season) during trenching or other construction activities, there is the potential for violations of water quality standards. MM HYD-2, Construction Dewatering Management Plan, would be implemented to ensure that water infiltrates the soil rather than results in runoff into receiving waters or storm drains. MM HYD-2 includes the preparation and implementation of a dewatering management plan to protect the existing water quality of the surrounding waterways. Additionally, if a permit, such as a RWQCB Low Threat Discharge Permit, were required, temporary onsite storage of water removed from trenches, excavations, etc. would be obtained, and water removed at drainage crossings or creeks may be temporarily stored onsite and allowed to settle prior to discharge back to the waterway, as specified in MM HYD-2. Therefore, potential impacts related to water quality from construction activities would be less than significant.

Operation

Operational impacts associated with water and groundwater quality could result from land application of biosolids and effluent discharges if not appropriately permitted, applied, and discharged and if pollutants are allowed to enter the surface- or groundwater system. As described in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, the City currently applies Class B solar dried biosolids to about 580 acres within the Wastewater Treatment and Reclamation Facility (WWTRF) property. The City is required to comply with Title 40 Code of Federal Regulations (CFR) Part 503 (as amended) for Class A biosolids applications as well as the CVRWQCB WDRs Order No. R5-2014-0096 and NPDES No. CA0079219 (as amended). As described in the Section 2.3.2.3, about 43,050 pounds per day (lbs/day) of solids would be produced from the 35 million gallons per day (Mgal/d) WWTRF at build-

out conditions. This would mean that about 790 acres would be required for the application of biosolids (rather than the current 580 acres for 12 Mgal/d) within the agricultural lands at the WWTRF property. Additional land application of biosolids would require an amended or new land application permit to apply additional biosolids that could result from the proposed Projects or future actions of the Program. If the City were to apply all the biosolids via land application (rather than truck biosolids away to the Synagro Central Valley Compost Facility, which is located about 22 miles from the WWTRF), the City would continue to apply and monitor these biosolids in accordance with 40 CFR Part 503 as well as in accordance with CVRWQCB Order No R5-2014-0096 and NPDES No. CA0079219. This would enforce specific application restrictions, which would ensure that chemical balance of nitrogen and phosphorus is achieved by rotation of crops and application of biosolids seasonally as dictated by the permit requirements. This would restrict timing and application sufficiently to ensure that impacts to waters, habitats, and floodways do not occur. If the City were not able to obtain a permit, biosolids would require disposal at a facility permitted to accept biosolids.

Effluent discharges to water or land also require WDR orders or a NPDES discharge permit. Similar to the requirements for biosolids, effluent discharges would require an amendment to or issuance of the City's current NPDES Permit (NPDES No. CA0079219, WDRs Order No. R5-2014-0096). This would ensure that any potential impacts to groundwater quality would remain at a less than significant level, even with the addition of further land application.

Construction and operational impacts to water quality resulting from implementation of future Program activities and the proposed Project would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1, HYD-2, and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Impact HYD-1 Findings

Impact HYD-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-1 Mitigation Required: MM HYD-1, HYD-2, and MM GEO-1

Impact HYD-1 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-2 Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

Impact HYD-2 Analysis

Combined Program/Proposed Project Impacts

Construction

Program construction activities have the potential to adversely affect groundwater if excavation depth would reach the local groundwater table, and thus result in a potentially significant impact related to interreference with groundwater management prior to mitigation. If this were to occur, dewatering would be required to allow for installation of facilities or foundations. Excavations would be required for the majority of project components, including pipelines, pump stations, and improvements at the WWTRF. As such, MM HYD-2, Construction Dewatering Management Plan, would be required for any excavation activities that have the potential to encounter groundwater. The construction dewatering plan would include designation of discharge disposal sites as well as implementation of BMPs to control discharges. The contractor would also be required to obtain a dewatering permit through the CVRWQCB. Therefore, impacts associated with construction dewatering or groundwater discharges would be less than significant with mitigation incorporated.

Operation

The majority of above-ground Program components would be located in previously disturbed areas where feasible. However, some above-ground facilities may be located in previously undisturbed areas, especially for placement of some of the pipelines and pump stations, which could create impervious areas where groundwater recharge from stormwater runoff may potentially be restricted or reduced. Pump station sites would range with buildings ranging from 100 by 100 feet to 2,000 square feet with lot size requirements ranging from less than 0.25 acre to 5-acres with increases to impervious surfaces corresponding to building and portions of the lot size, creating the potential to prevent groundwater recharge if pump stations were to occur on currently pervious site (which is anticipated). Site and drainage plans of the pump station sites would include specifications on how site drainage would be collected and directed to nearby to the storm drain system, where it would eventually return flow to a nearby water source or be allowed to percolate into the groundwater table. The majority of the new pump stations, including the pump station associated with the Northern Trunk Sewer, would include site drainage that would flow into roadside drainages. Although the exact locations of future pump stations are not yet known, it is anticipated that these sites would also include roadside drainage or into the storm drain system. It is not anticipated that the addition of relatively small pump stations (i.e., with an approximate maximum size of a 2,000-square-foot structure) and associated features would substantially decrease groundwater supplies by slightly altering the course of the site's stormwater runoff. Additionally, the areas surrounding the proposed pump station associated with the Northern Trunk Sewer is largely undeveloped land used for agricultural purposes which allows groundwater recharge in the surrounding areas.

Expansions at the existing WWTRF would require the addition of permanent above-ground structures, which would result in an increase in impervious surfaces within the WWTRF boundaries. These upgrades would include new treatment facilities, buildings, and roadways for access within the 133-acre impact area (much less of which would be converted to impervious areas), which would be less than 1 percent of the overall 1,332-acre WWTRF site. Although

these upgrades and improvements would increase the amount of impervious surfaces within the WWTRF boundaries, the actual impervious footprint would be much less than the entire 133-acre of the total impact area (estimated to be about 10 to 20 acres of impervious services). Additionally, the facilities would be designed to allow for adequate drainage for stormwater and thus would continue to allow for adequate groundwater recharge in the area. Therefore, permanent above-ground features associated with the expansions of the WWTRF would result in a less than 1 percent increase of impervious surfaces and would not substantially affect groundwater supplies, groundwater table levels, or groundwater recharge, and the impact would be less than significant. Therefore, permanent WWTRF features would not substantially affect groundwater supplies, groundwater table levels, or groundwater recharge, and the direct impact would be less than significant.

There could be the potential for indirect impacts to occur if a substantial amount of surface or groundwater were removed from the Northern Merced area and redirected into a different groundwater basin. However, the Program does not involve development or management of water supplies. Water supply impacts associated with build-out of the 2030 General Plan were evaluated and considered in both the 2030 General Plan Draft EIR and the 2016 Water Master Plan Mitigated Negative Declaration and Initial Study (City of Merced 2017b) and are incorporated by reference into this Draft EIR.

The 2016 Water Master Plan Mitigated Negative Declaration and Initial Study proposes a MM calling for the WWTRF to use recycled water to mitigate for potentially significant groundwater overdraft as a result of water demands forecasted in the 2016 Water Master Plan. As described in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, the 2017 Wastewater Collection System Master Plan (2017 WCSMP) evaluated effluent reuse options, determining that the City needed to maintain flexibility in wastewater collection and effluent discharge, and ultimately determining that the use of recycled water at the WWTRF is not feasible. Specifically, the 2017 WCSMP determined that recycled water did not maintain the flexibility, and thus, the City evaluated other options to address groundwater overdraft, including through an agreement with MID to supplement water in North Merced, and to allow for reduced pumping, rather than using recycled water. This would help alleviate groundwater pumping impacts in the City, as addressed and further analyzed in the 2017 WCSMP. Additionally, the 2016 Water Master Plan included the MM for recycled water because the potentially significant impact was related to direct growth inducing impact from reasonable build-out of the 2030 General Plan. The Program itself, as discussed throughout this Draft EIR, is growth-accommodating rather than growth-inducing. The Program itself would not result in direct impacts related to groundwater recharge, and therefore, it is not analyzed further in this Draft EIR. Therefore, it is not anticipated that there would be an indirect substantial decrease or interference with groundwater recharge such that sustainable groundwater management would be impeded. The impact would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-2

Level of Significance After Mitigation: Less than Significant

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Impact HYD-2 Findings

Impact HYD-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-2 Mitigation Required: MM HYD-2

Impact HYD-2 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-3 **Potential to 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:**

- **Result in substantial erosion or siltation on- or off-site;**
- **Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;**
- **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**
- **Impede or redirect flood flows.**

Impact HYD-3 Analysis
Combined Program/Proposed Project Impacts

Construction

Construction activities associated with the Program, such as trenching, excavation, or earthwork, would disturb the ground surface and potentially alter drainage patterns if not stabilized properly post-construction. Trenching, excavation, and earthwork would be required for the placement of pipelines, pump stations, WWTRF expansions, and other associated appurtenances for the proposed Projects or future Program components. These activities would occur throughout the Program Study Area over the reasonable build-out, which could cause adverse effects to drainages and flood flows and result in potentially significant impacts. Creek crossing locations for the proposed Projects are shown in Figures 2.3-2, 2.3-4, and 2.3-5 in Section 2.0, Project Description; however, the crossings are not anticipated to be significantly impacted because projects associated with the Program would use trenchless technologies to avoid direct impacts with creeks while crossing them. Additionally, roadside drainages occur throughout much of the Program Study Area, which may result in impacts associated with equipment and pipe storage as pipelines are constructed.

As discussed under Impact HYD-1 above, MM GEO-1 would be required to prepare and implement an Erosion Control Plan and SWPPP, which would stabilize disturbed soils. As described above, a SWPPP is required for all construction activities that would disturb greater than 1 acre of ground surface and would include year-round BMPs to prevent erosion and sedimentation from occurring. This measure would also include stabilization of disturbed soils post-construction, which would prevent redirecting of flood flows and long-term erosion within the Program Study Area. It is anticipated that creek and culvert crossings (See Figures 2.3-2, 2.3-4, and 2.3-5 for creek crossings) for the Northern and Southern Trunk Sewer Projects would be accomplished by trenchless installation methodologies, which would minimize potential impacts to surface waters by eliminating direct work within the water course and thereby avoiding the potential impact. However, if crossing were to involve open-cut trenching, stabilization and regrading of disturbed soils required under MM HYD-1 and MM GEO-1 would minimize potential impacts by implementing the BMPs and SWPPP measures described above to contain loose sediment and construction byproducts subject to discharge. Therefore, temporary impacts related to the alteration of drainages or the addition of impervious surfaces

that would impede or redirect flood flows or otherwise contribute to runoff within the Program Study Area would be less than significant with mitigation incorporated.

Operation

Once constructed, the majority of Program components would be located underground and would not substantially add to the impervious surfaces in the area. Above-ground Program components, such as the pump station associated with the Northern Trunk Sewer or WWTRF facilities would be located on relatively small footprints (i.e., less than about 2,000 square feet for the pump stations and within the WWTRF boundary) and would be sited and designed to not substantially impede or redirect flood flows. Although the expansion of the WWTRF would result in new impervious surfaces, these impacts would occur within the existing WWTRF property line in previously disturbed areas and would not result in potentially significant impacts. Any new structures, pathways, or cement surfaces within the expanded WWTRF would be graded in such a manner to allow runoff into storm drainages or to the surrounding lands, maintaining groundwater recharge. Similarly, the new pump station associated with the Northern Trunk Sewer would be graded to allow for runoff into the local roadside drainages in the area and would not result in substantial erosion, substantially increase the rate or amount of runoff, or impede or redirect flood flows in the area. Therefore, impacts related to the alteration of drainage patterns, the addition of impervious surfaces, or creating or contributing substantially to surface runoff as a result of the WWTRF expansions and pump stations would be less than significant.

Therefore, impacts related to the alteration of drainage patterns, the addition of impervious surfaces, or creating or contributing substantially to surface runoff as a result of implementation the Program or the proposed Project would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM HYD-1 and MM GEO-1

Level of Significance After Mitigation: Less than Significant

Impact HYD-3 Findings

Impact HYD-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact HYD-3 Mitigation Required: MM HYD-1 and MM GEO-1

Impact HYD-3 Overall Level of Significance after Mitigation: Less than Significant

Impact HYD-4 In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation.

Impact HYD-4 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

In addition to the flood risk discussed under Impact HYD-3 above, implementation of the Program and associated above-ground components, such as the pump stations, could be at risk from flood inundation resulting from levee or dam failure. Portions of the Program Study Area boundaries are located within the inundation areas of the Bear Reservoir Dam and Lake Yosemite Dam. Both the Bear Reservoir Dam and Lake Yosemite Dam are earthen dams and are subject to greater variability in embankment materials, therefore these dams are at greater risk from breakage from ground shaking, overtopping, erosion, and other structural design flaws. Breakage of dams is very unlikely due to existing regulations for structural stability of dams, including the regular maintenance and inspection that is required for any jurisdiction that owns and operates a dam. Specifically, FEMA has developed guidelines that encourage strict safety standards of dams including safety risk management protocols, flow requirements, and earthquake design and evaluation (FEMA 2020). Although dam failures are extremely rare, a disaster such as a large earthquake or terrorist attack could still occur, thus requiring special planning and consideration if development or associated utility infrastructure were to be placed in the inundation zone of a dam.

Inundation caused by breakage or overtopping of one of these dams could cause increased pollutants in the Program Study Area if inundation flows would mix with or otherwise interact with sewage or materials present within the wastewater collection system. Pipelines would be installed underground, and construction equipment located above-ground during pipeline installation would only be present within the Program Study Area temporarily during active construction. Once the pipelines are constructed, they would operate entirely underground and would not require staffing, therefore, they would not expose people or structures to impacts associated with failure of a levee or dam. Therefore, impacts related to the of facilities within the Program Study Area that could be subject to inundation zones from levee or dam failure would be less than significant.

Pump stations would house operational equipment and materials as described in Section 2.0, Project Description, and Section 3.8, Hazards, Hazardous Materials, and Wildfires. These above-ground Program components could potentially be located within inundation zones from rupture or overtopping of the Bear River Reservoir Dam or Lake Yosemite Dam, as well as be subject to possible inundation from surrounding FEMA-identified flooding zones. These structures and associated equipment and materials could be placed within these flood hazard zones. However, these structures would be relatively small (i.e., a maximum of 2,000 square feet), designed to withstand inundation (similar to existing wastewater collection system facilities in the Program Study Area), and would be built in conformance with California Build Code standards and Chapter 17.48 (Flood Damage Prevention) of the City of Merced Municipal Code standards, which require a development permit to be obtained before any construction within an area of special flood hazard. Conformance with Chapter 17.48 of the City's Municipal Code specifically requires that all new construction of structures within a special flood hazard zone be floodproofed so that the below base flood level of the structure is watertight and with walls that are substantially impermeable to the passage of water, have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy, and be certified by a registered professional engineer or architect so that the standards of the Municipal Code are met. Additionally, materials and equipment of any future Program components would be designed to withstand inundation if within the inundation

zone and would ensure that materials are properly stored in accordance with materials safety regulations and run a low-risk of the release of pollutants. Therefore, in the unlikely event that inundation should occur in the vicinity of any proposed Project or future Program facilities, conformance to the California Building Code and City's Municipal Code standards would result in a less than significant impact from release of pollutants.

The expansion of the WWTRF would be located outside dam inundation areas, and therefore, there would be no impact related to an increased flood hazard from inundation of Bear River Dam or Lake Yosemite Dam.

Additionally, the Program Study Area is not in the vicinity of an ocean and thus, is not at risk for experiencing tsunamis, and there are no large enough lakes within the Program Study Area to produce seiches that could cause substantial damage to Program components. Therefore, there would be no impact related to tsunamis or seiches from Program-related inundation.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact HYD-4 Findings

Impact HYD-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HYD-4 Mitigation Required: None Required

Impact HYD-4 Overall Level of Significance After Mitigation: Less than Significant

Impact HYD-5 Potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Impact HYD-5 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

Applicable water quality control and sustainable groundwater management plans in the Program Study Area include the Merced IRWMP, the City's UWMP, and the Merced GWMP. Additionally, the Merced Irrigation-Urban GSP submitted to DWR in January 2020 would also apply to the Program Study Area.

A conflict would occur if the Program or the proposed Projects were to conflict with or obstruct any specific goals, policies, or objectives outlined within these plans. Section 3.9.2, Regulatory Framework, discusses the applicable goals, policies, or objectives of these respective plans, which focus on protection of the quality and quantity of water and groundwater resources. As discussed in Impact HYD-1 and Impact HYD-2, implementation of the Program would not result in significant impacts to water quality or groundwater resources with the implementation of mitigation. Impacts from construction and operation of the Program would not substantially affect surface water or groundwater resources within the Program Study Area or surrounding area. Therefore, the potential for the Program to conflict with

or obstruct implementation of water quality control plans or sustainable groundwater management plans would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

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Impact HYD-5 Findings

Impact HYD-5 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact HYD-5 Mitigation Required: None Required

Impact HYD-5 Overall Level of Significance After Mitigation: Less than Significant

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3.9.5 Hydrology and Water Quality Mitigation

Mitigation Measure GEO-1: Prepare and Implement an Erosion Control and Stormwater Pollution Prevention Plan

See Section 3.6, Geology, Soils, and Minerals.

Mitigation Measure HYD-1: Avoid/Minimize Potential Impacts from Construction Material Release

Prior to construction, the Contractor shall develop a Spill Prevention and Contingency Plan (SPCP) for the Program. The plan shall include but would not be limited to the following:

- Containment and cleanup equipment (e.g., absorbent pads, mats, socks, granules, drip pans, shovels, and lined clean drums) shall be at the staging areas and construction sites for use, as needed;
- Staging area where refueling, storage, and maintenance of equipment occur shall not be located within 100 feet of drainages to reduce the potential for contamination by spills;
- Construction equipment shall be maintained and kept in good operating condition to reduce the likelihood of line breaks or leakage;
- No refueling or servicing shall be done without absorbent material (e.g. absorbent pads, mats, socks, pillows, and granules) or drip pans underneath to contain spilled material. If these activities result in an accumulation of materials on the soil, the soil shall be removed and properly disposed of as hazardous waste;
- If trenchless methods (i.e., Horizontal Directional Drilling, jack and bore, or microtunneling) are infeasible near water features, the applicable federal, state, and local regulations would apply and all necessary permits shall be obtained for work within a waterway prior to the start of construction;
- If a spill is detected, construction activities shall immediately cease in the area, and the procedures described in the SPCP shall be immediately enacted to safely contain and remove spilled materials;

- Spill areas shall be restored to pre-spill conditions, as practicable; and
- Spills shall be documented and reported to the City within and appropriate resource agency personnel.

Mitigation Measure HYD-1 Implementation

Responsible Party: The City shall require the construction Contractor develop and implement the SPCP for all construction activities. This mitigation measure shall be referenced in the Contract Documents bid for the Program.

Timing: The SPCP shall be implemented prior to and during all phases of construction.

Monitoring and Reporting Program: Evaluation of the SPCP shall be conducted by the City, and any spills shall be documented and kept on file at City offices.

Standards for Success: Prevention of construction materials spills in all construction sites.

Mitigation Measure HYD-2: Construction Dewatering Management Plan

Water generated by dewatering activities shall be used where possible for construction activities such as compaction and dust control. This shall ensure that the water infiltrates rather than running offsite to storm drain systems or receiving waters. In order to reduce the potential for water from dewatering activities impacting the water quality of nearby waterways, the City shall require that the selected contractor develop a dewatering management plan prior to construction which shall include the following measures:

- Non-contaminated water shall be discharged to land for infiltration when:
    - The water contains sediment, but is not contaminated with other pollutants;
    - The water does not run-off from the land to storm drain systems, to creek beds (even if dry), or other surface waters;
    - Permission for infiltration is acquired from the property owner;
    - The discharge is authorized or permitted by the Central Valley Regional Water Quality Control Board (RWQCB), if applicable; and
    - If a permit, such as a RWQCB Low Threat Discharge Permit, were required, temporary onsite storage of water removed from trenches, excavations, etc. shall be obtained, and water removed at drainage crossings or creeks may be temporarily stored onsite and allowed to settle prior to discharge back to the waterway.
- The dewatering management plan shall outline a dewatering schedule and water quality monitoring process.
- The dewatering management plan shall include emergency contingency plans if unanticipated contaminants are observed in the discharge or flooding occurs resulting in cessation of water pumping.

As required by the State Water Code, all dewatering wells shall be constructed in accordance with the California Well Standards and must be permitted and inspected. After use, each dewatering well shall be properly destroyed in accordance with the California Well Standards and permitted and inspected, as required by the Merced County Environmental Health Department.

Mitigation Measure HYD-2 Implementation

Responsible Party: The City and chosen contractor

Timing: Prior to construction

Monitoring and Reporting Program: City review and approval of monitoring plan

Standards for Success: Compliance with monitoring plan, dewatering permits, and prompt and complete incident reports to the City and RWQCB.

3.9.6 Abbreviations

af	acre feet
amsl	above mean sea level
BAT	Best Available Technology Economically Achievable
BMPs	best management practices
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
City	City of Merced
CVRWQCB	Central Valley Regional Water Quality Control Board
CWA	Clean Water Act
CWC	California Water Code
DWR	Department of Water Resources
EIR	Environmental Impact Report
FEMA	Federal Emergency Management Agency
FIRMs	Flood Rate Insurance Maps
GSA	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan
GWMP	Groundwater Management Plan
HDD	Horizontal Directional Drilling
IRWMP	Integrated Regional Water Management Plan
lbs/day	pounds per day
MAGPI	Merced Area Groundwater Pool Interests
Mgal/d	million gallons per day
MID	Merced Irrigation District
MIUGSA	Merced Irrigation-Urban Groundwater Sustainability Agency
MM	Mitigation Measure
NFIP	National Flood Insurance Program
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System

Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SGMA	Sustainable Groundwater Management Ac
SPCP	Spill Prevention and Contingency Plan
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
USC	United States Code
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirement
WWTRF	Wastewater Treatment and Reclamation Facility
2017 WCSMP	2017 Wastewater Collection System Master Plan
2018 Basin Plan	2018 Water Quality Control Plan for the Sacramento and San Joaquin River Basins
2030 General Plan	Merced Vision 2030 General Plan

3.9.7 References

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Merced Integrated Regional Water Management Plan (Merced IRWMP). 2018. http://www.mercedirwmp.org/. Accessed December 2018.

Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA). Website: http://www.miugsa.org/. Accessed July 2020.

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3.10 LAND USE AND PLANNING

3.10.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Physically divide an established community.
- 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.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to land use and planning that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible.

3.10.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives relating to land use and planning that are relevant to the Program.

3.10.2.1 Federal and State

There are no federal or state requirements related to land use and planning that are applicable to the Program.

3.10.2.2 Local

Merced Vision 2030 General Plan

The City of Merced (City) 2030 General Plan, adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to land use and planning and the Program, including the following:

Goal Area L-3: Urban Growth and Design

- **Policy L-3.7.** Implement policies and principals to conform to the intent of the San Joaquin Valley Regional Blueprint.

Goal Area P-1: Public Facilities and Services

- **Policy P-1.1.** Provide adequate public infrastructure and services to meet the needs of future development.
- **Policy P-1.2.** Utilize existing infrastructure and public service capacities to the maximum extent possible and provide for the logical, timely and economically efficient extension of infrastructure and services where necessary.

Goal Area P-4: Wastewater

- **Policy P-4.1.** Provide adequate wastewater collection, treatment and disposal capacity for existing and projected future needs.

San Joaquin Valley Blueprint

The San Joaquin Valley Blueprint (SJVB) is an association of local governments in the eight-county San Joaquin region. Its members include the Fresno Council of Governments, the Kern Council of Governments, the Kings County Association of Governments, the Madera County Transportation Commission, the Merced County Association of Governments, the San Joaquin Council of Governments, the Stanislaus Council of Governments, and the Tulare County Association of Governments.

The SJVB is not a policy document and does not approve or prohibit growth in the region, but suggests general land uses and locations for growth. The SVJB analyzes transportation and land use and provides suggestions for how cities and counties should grow based on 12 Smart Growth Principles. The principles that relate to the Program with respect to land use include the following:

- Make development decisions predictable, fair, and cost-effective;
- Preserve open space, farmland, natural beauty, and critical environmental areas; and
- Support actions that encourage environmental resource management.

City of Merced Municipal Code

The City's zoning ordinance includes eleven residential classifications, seven commercial zones, two industrial zones, four reserve zones, one public/government zone, and open space/park zones. The purpose of these zones is to translate the broad 2030 General Plan land use categories into detailed land use classifications that are applied to properties with much greater precision than the 2030 General Plan. Additionally, the zoning ordinance includes a number of special districts that have been established to provide areas for special uses and require special consideration by the Planning Commission and City Council.

Merced County Local Agency Formation Commission

The City's Specific Urban Development Plan/Sphere of Influence (SUDP/SOI) is a boundary surrounding the City that is intended to represent the ultimate area into which the City may expand and extend public services. The 2017 Wastewater Collection System Master Plan (2017 WCSMP) considered the reasonable build-out conditions within the SUDP/SOI and the 2017 WCSMP Plan Area is aligned with these planning boundaries. The Merced County Local Agency Formation Commission (LAFCO) must approve the adoption of a sphere of influence boundary and changes to the exiting sphere boundaries.

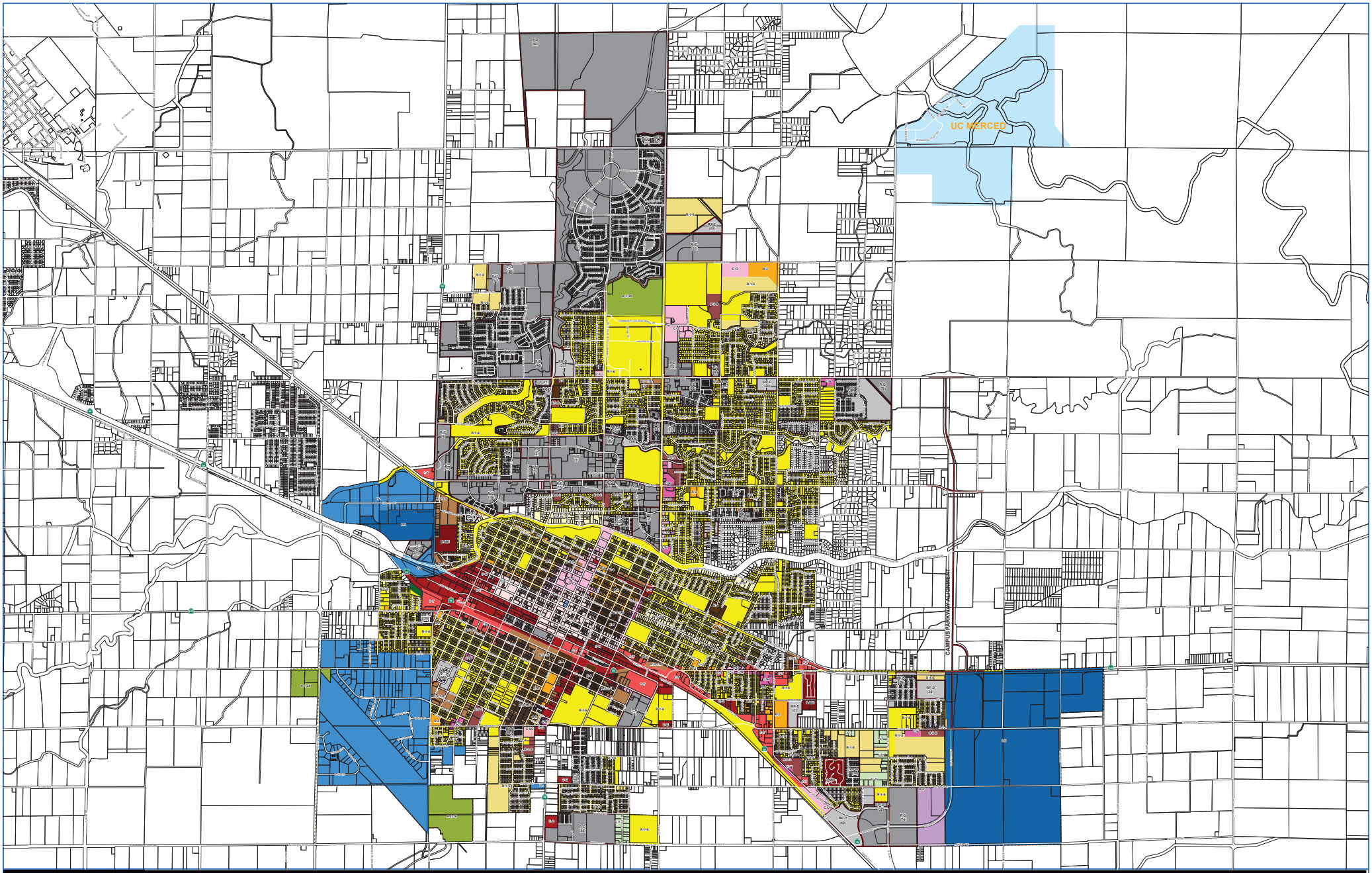
The policies of LAFCO require a development plan and a plan for the extension of services to be submitted with every application for a boundary change, and that would be submitted with any application for annexation. Other policies discourage the annexation of prime agricultural land when significant areas of non-prime agricultural land are already available, and encourage the development of vacant/infill areas within cities before the annexation and development of fringe areas. Additional policies encourage city annexations that reflect a planned, logical, and orderly progression of urban expansion and promote efficient delivery of urban services (City of Merced 2010).

3.10.3 Environmental Setting

The Program Study Area is located within Merced County within the larger Central Valley region of California. The City was incorporated in 1889, and the Program Study Area consists of a mix of residential, commercial, industrial, and public land uses. The City is largely centered around Main Street, which runs northwest to southeast through the City. Agricultural land surrounds much of the Program Study Area around the City limits, with a large portion of open space just to the northeast of the UC Merced Campus. Newer development occurs mostly within the northern portion of the City and Program Study Area, while older, more established neighborhoods dominate much of the southern City limits.

The topography of the Program Study Area is characterized by flat land, approximately 155 to 180 feet above mean sea level (amsl) while the climate is typical of the Central Valley with average daily temperatures of 48 degrees Fahrenheit (°F) in January to 95°F in July. Average annual rainfall is approximately 12 inches, with January being the wettest month of year (City of Merced 2010).

Zoning designations within the City include agricultural, residential, planned development, commercial, public parking, manufacturing, and urban transition (Figure 3.10-1). Land use designations within the City include agriculture, residential, industrial, commercial, public, school, and open space (Figure 3.10-2).



Stantec

CITY LIMITS

R-1-20	LOW DENSITY RESIDENTIAL
R-1-10	LOW DENSITY RESIDENTIAL
R-1-6	LOW DENSITY RESIDENTIAL
R-1-5	LOW DENSITY RESIDENTIAL
R-2	LOW MEDIUM DENSITY RESIDENTIAL
R-3-2	MEDIUM DENSITY RESIDENTIAL
R-3-1.5	HIGH MEDIUM DENSITY RESIDENTIAL
R-3	HIGH DENSITY RESIDENTIAL
R-MH	MOBILE HOME DISTRICT
LR	LIMITED RESIDENTIAL
B-P	BUSINESS PARK
C-G	GENERAL COMMERCIAL DISTRICT
C-N	NEIGHBORHOOD COMMERCIAL DISTRICT
C-T	THOROUGHFARE COMMERCIAL DISTRICT
C-O	OFFICE COMMERCIAL DISTRICT
C-C	CENTRAL COMMERCIAL DISTRICT
C-SC	COMMERCIAL SHOPPING CENTER
RP-D	RESIDENTIAL PLANNED DEVELOPMENT
P-D	PLANNED DEVELOPMENT
I-R	INDUSTRIAL ADMIN & RESEARCH DISTRICT
I-L	LIGHT INDUSTRIAL DISTRICT
I-H	HEAVY INDUSTRIAL DISTRICT
P-PK	PUBLIC PARKING DISTRICT
A-1-20	RESTRICTED AGRICULTURAL
A-T-5	AGRICULTURAL TRANSITION ZONE
U-T	URBAN TRANSITION

1,200 600 0 1,200 Feet

10/15/2019

Figure 3.10-1
Zoning

City of Merced - Draft Environmental Impact Report

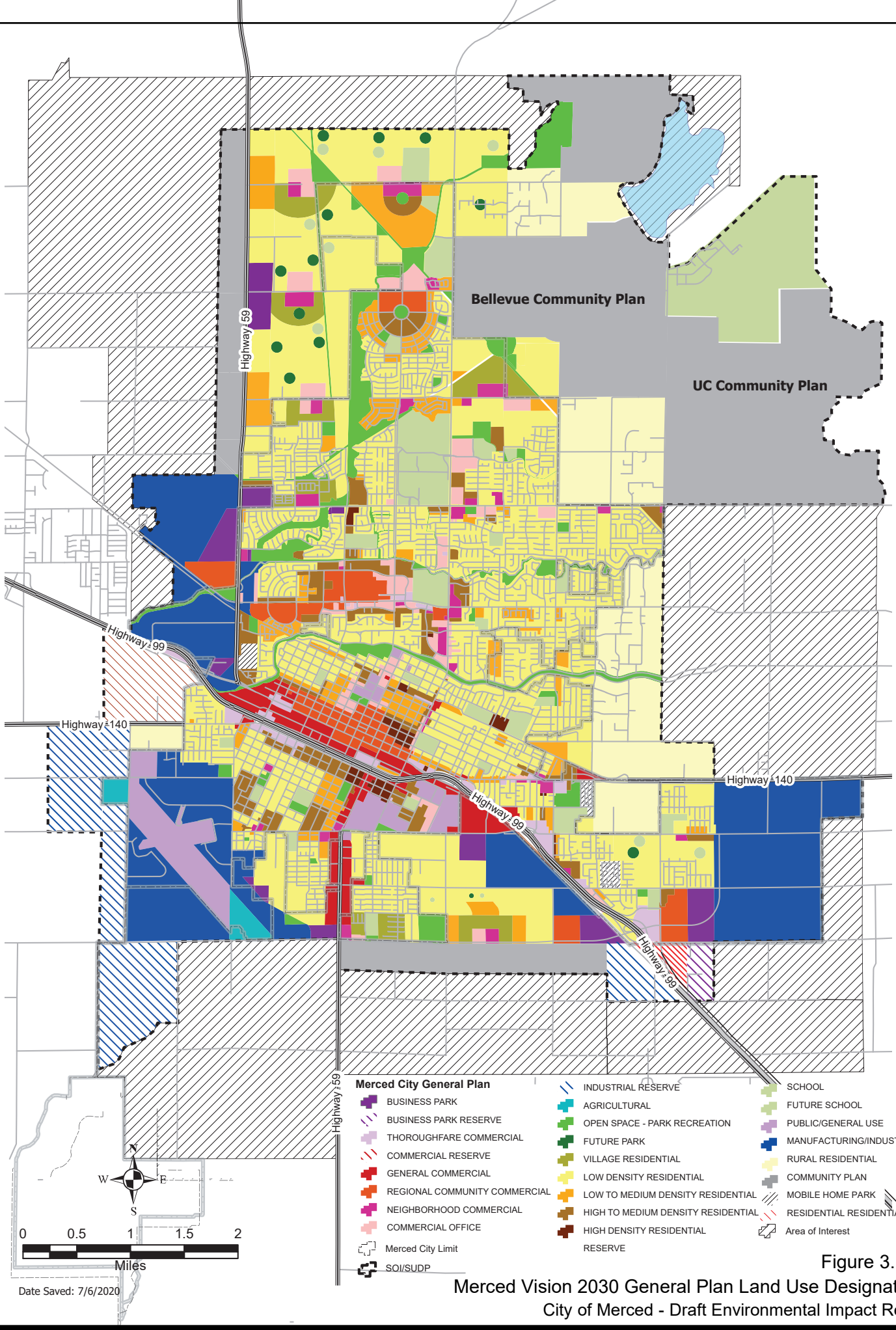


Figure 3.10-2
Merced Vision 2030 General Plan Land Use Designations
City of Merced - Draft Environmental Impact Report

3.10.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to land use and planning. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.10.4.1 Impact Analysis

Impact LAND-1 Potential to physically divide an established community.

Impact LAND-1 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

Construction and operation of the wastewater sewer and treatment infrastructure under the Program would not require above ground facilities with the potential to divide an existing or proposed community. Indirectly, the growth-accommodating nature of the Program has the potential to support the planned development of the City's SUDP/SOI which would involve development of new roadways and communities that if not planned for could potentially physically divide an established community; however, this growth and development was previously analyzed in the 2030 General Plan and found not to be significant. At reasonable build-out, most of the Program components would be located underground and would have little to no affect effect on aboveground communities or roadways. The few aboveground facilities, such as the Northern Trunk Pump Station or other potential pump stations or air release valves, would have limited footprints (approximately 2,000 square feet or less) and would be located on undeveloped sites at locations that would not physically divide any established communities. The existing communities within the City would continue to be served by improvements identified within the Program and would maintain City services. Therefore, implementation and operation of the Program would have no potential to physically divide and established community. There would be no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact LAND-1 Findings

Impact LAND-1 Overall Level of Significance Prior to Mitigation: No Impact

Impact LAND-1 Mitigation Required: None Required

Impact LAND-1 Overall Level of Significance After Mitigation: No Impact

Impact LAND-2 Potential to 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.

Impact LAND-2 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

The following analysis considers the Program's potential to conflict with applicable land use plans and policies and regulatory compatibility.

Consistency with the Merced Vision 2030 General Plan

The 2030 General Plan outlines a plan for land use development within the SUDP/SOI that the Program is designed to serve. This planning is done by a series of land use and zoning designations set forth by the City as shown on Figures 3.10-1 and 3.10-2 (See Section 3.10.3, Environmental Setting). The 2017 WCSMP was developed to identify a plan of implementation to meet the wastewater collection system needs of these land uses proscribed by the 2030 General Plan for reasonable build-out conditions. Given that the Program was developed to accommodate implementation of the 2030 General Plan it is generally consistent with the overall intent.

Additionally, Table 3.10-1 provides a cursory review of applicable 2030 General Plan goals and policies and provides a brief evaluation of the Program's consistency with the goal or policy. Resource specific goals and policies are reviewed and analyzed in more detail, where necessary, in their respective chapters throughout this Draft EIR (as referenced within the table). As shown in Table 3.10-1, the Program would be consistent with all applicable goals and policies; therefore, impacts would be less than significant.

Table 3.10-1: Consistency with the Merced Vision 2030 General Plan Goal and Policies

Policies	Would the Program be Consistent with the Policy?
Goal Area UE-1: Urban Expansion • A Compact Urban Form • Preservation of Agriculturally Significant Areas • Efficient Urban Expansion	
UE-1.1. Designate areas for new urban development that recognize the physical characteristics and environmental constraints of the planning area. • The City of Merced is situated in an area which contains physical characteristics and environmental constraints that would be adversely impacted by a poor urban expansion policy. It is in the long-term interest of the City to promote urban expansion policies which protect and promote avoidance of sensitive environmental and resource areas.	**Yes.** The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. No indirect effects related to unplanned development as a result of implementation of the Program would occur.
UE-1.2. Foster compact and efficient development patterns to maintain a compact urban form.	**Yes.** The Program was developed based on growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. No indirect effects

Policies	Would the Program be Consistent with the Policy?
• Through the promotion of compact urban form, the City of Merced can achieve several important environmental and community planning goals. Through the concentration of urban development within the City's SUDP/SOI, impacts on surrounding agricultural resource lands can be reduced and important prime soils preserved. Additionally, through compact urban development, efficient public transit systems can operate to protect the region's air quality and pedestrian and bicycle use is encouraged. Compact urban development also reduces public infrastructure development and maintenance costs to the City and its residents.	related to unplanned development as a result of implementation of the Program would occur.
UE-1.3. Control the annexation, timing, density, and location of new land uses within the City's urban expansion boundaries.	**Yes.** The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. No indirect effects related to unplanned development as a result of implementation of the Program would occur.
UE-1.4. Continue joint planning efforts on the UC Merced and University Community plans. • The University Community Plan area is planned as an urban area requiring urban services. Consideration has been given to making this area part of the incorporated City of Merced. Cooperative planning efforts will be necessary to ensure the effective development of this area for all interested and affected parties.	**Yes.** The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. The Program includes the UC Merced planning documents in the growth projections. No indirect effects related to unplanned development as a result of implementation of the Program would occur.
UE-1.5. Promote annexation of developed areas within the City's SUDP/SOI during the planning period. • Unincorporated suburban development within the City's SUDP/SOI has resulted in problems of public protection (police and fire) service delivery to residents in addition to posing potential long-term problems to residents with respect to maintenance of on-site water systems and wastewater disposal (septic) systems. Such problems could also threaten the City's future water quality. Also, residents of these areas, while directly impacted by the City's planning decision making process, have no direct voice in municipal affairs. In the long-term interest of both the City and the residents, these unincorporated suburban areas should be annexed to the City of Merced.	**Yes**. The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and evaluated the SUDP/SOI limits within its Program Study Area for areas to provide wastewater services to. The Program is therefore consistent with this policy. No indirect effects related to unplanned development as a result of implementation of the Program would occur.
UE-1.6. Consider expansion of the City's SUDP/SOI boundary for areas within the Area of Interest when certain conditions are met. • Some of the original General Plan Study Areas were found to have constraints which limited their development potential within the current plan timeline. In the interest of flexibility, and to provide interested property owners with some options, certain study areas have been designated as being within the Area of Interest. This area is of interest to the City, as it is likely going to be the location of City expansion in the next general plan update, 20-40 years hence.	**Yes.** The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. No indirect effects related to unplanned development as a result of implementation of the Program would occur.

Policies	Would the Program be Consistent with the Policy?
Goal Area L-3: Urban Growth and Design • Living Environments which Encourage People to Use a Variety of Transportation Alternatives • A Compact Urban Village Design for New Growth Areas • Self-Sustaining, Mixed-Use, Pedestrian-Friendly Neighborhoods • Transit-Oriented Development Adjacent to the High-Speed Rail Station	
L-3.7. Implement policies and principles to conform to the intent of the San Joaquin Valley Regional Blueprint. • In 2006, the eight Councils of Governments in the San Joaquin Valley (representing the counties of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern) came together to develop a coordinated valley vision, the San Joaquin Valley Regional Blueprint. In April 2009, the San Joaquin Valley Regional Policy Council adopted a Preferred Blueprint Growth Scenario and a list of Smart Growth principles to be used by local jurisdictions in updating their General Plans. Conformity to Regional Blueprint plans are likely to be required per California Senate Bill (SB) 375 in the future.	**Yes.** The Program would conform to the policies and principals identified in the SJVB as discussed below under the respective heading in this Impact LAND-1 analysis.
Goal Area T-1: Streets and Roads • An Integrated Road System that is Safe and Efficient for Motorized and Non-Motorized Uses • A Circulation System that is Accessible, Convenient and Flexible • A Circulation System that Minimizes Adverse Impacts upon the Community • A Comprehensive System of "Complete Streets" Which Address All Modes of Transportation	
T-1.4. Promote traffic safety for all modes of transportation • As traffic levels on a street approach the street's effective capacity, and as various factors affect how a roadway functions, safety is also affected. This interrelationship lends itself to some repetition among implementing actions relating to safety.	**Yes.** As discussed in Section 3.15, Transportation, implementation of the Program would not substantially affect transportation during construction or operation. The Program would, therefore, be consistent with this policy.
T-1.8. Use a minimum peak hour Level of Service (LOS) "D" as design objectives for all new streets in new growth areas and for most existing City street except under special circumstances. • As the City grows, traffic volumes will increase significantly. In designing the City's future circulation system, the City has required sufficient rights-of-way be preserved to maintain an adequate level-of-service, a minimum of LOS "D" but typically LOS "C" or better. On some existing roadways, such a standard will most likely not be able to be maintained without widening these roadways and causing great disruption to adjacent properties. The City will strive to maintain the minimum LOS throughout the system, but some exceptions may need to be made.	**Yes.** As discussed in Section 3.15, Transportation, implementation of the Program would not substantially affect transportation during construction or operation. The Program would, therefore, be consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
Goal Area P-1: Public Facilities and Services • Maintenance and Improvement of Merced's Existing Infrastructure • New development Which Includes a Full Complement of Infrastructure and Municipal Public Facilities • Efficient and Cost-Effective Public Service Delivery	
P-1.1. Provide adequate public infrastructure and municipal services to meet the needs of future development. • One of the key elements to promoting a healthy local economy in Merced is the quality of life enjoyed by the City's residents. The quality and availability of urban services and infrastructure is found to be an important measure of urban quality of life. It is understood that facilities and infrastructure not provided by the City is the planning and funding responsibility of other governmental, quasipublic, or private entities.	**Yes.** The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and would provide needed wastewater infrastructure to serve these growth projections.
P-1.2. Utilize existing infrastructure and public service capacities to the maximum extent possible and provide for the logical, timely and economically efficient extension of municipal infrastructure and services where necessary. • It is in the community's interest to maintain an efficient and cost-effective public service delivery system. To this end, the City supports development that utilizes and improves existing infrastructure and service delivery systems as much as possible.	**Yes**. The Program would expand this existing infrastructure, as needed to meet the growth projections identified in the Merced Vision 2030 General Plan which would be utilized by both existing and projected development within the City. The Program is, therefore, consistent with this policy.
P-1.3. Require new development to provide or pay for its fair share of public facility and infrastructure improvements. • New growth and development within the City is accommodated to assure that adequate space is provided to meet future population growth needs. The City will endeavor to provide for cost-effective new infrastructure and public service expansion to serve that growth. It is the City's policy, however, that new development should not create a financial burden for existing City residents and that all new development should be more self-supporting with respect to infrastructure availability, maintenance, and future municipal service provision.	**Yes.** As a part of the current 2017 WCSMP planning process the City has been in the process of evaluating financing options for implementation of Program infrastructure to new development. The City is currently in the process of establishing an assessment district which would provide a mechanism for new developments benefiting from new infrastructure to support the financial costs of its development.
Goal Area P-2: Police and Fire Protection Services • Maximum Crime and Fire Protection Services	
P-2.1. Maintain and enhance public protection facilities, equipment, and personnel to the maximum extent feasible within the resource constraints of the City to serve the City's needs. • Public protection services and facilities are to be maintained in the City of Merced at a level that promotes the health and welfare of the City's residents. The City is committed to assuring that facilities, equipment and staffing levels of its fire and police service units meet the highest standard that can be accommodated within the resource constraints of the City.	**Yes.** The Program would have a less than significant impact on police and protection services, as discussed in Section 3.13, Public Services and Utilities.

Policies	Would the Program be Consistent with the Policy?
Goal Area P-3: Water • An Adequate Water Source, Distribution and Treatment Infrastructure System in Merced	
P-3.1. Ensure that adequate water supply can be provided within the City's service area, concurrent with service expansion and population growth. • According to the Merced Water Supply Plan and the Urban Water Management Plan, the City of Merced currently has adequate water resources and will continue to do so if they are properly managed to meet its future growth needs. The City must continue to work closely with the Merced Irrigation District (MID) in order to ensure that these resources remain stable. The City of Merced is committed to a program of cooperating in the long-term management of the area's water resources and utilizing policies and programs which conserve and manage water use in such a manner as to maintain the potable quality of the City's system and reduce treatment costs on applications which do not require the use of treated water.	**Yes**. The Program would have a less than significant impact on water supply as discussed in Section 3.9, Hydrology and Water Quality, and Section 3.13, Public Services and Utilities.
Goal Area P-4: Wastewater • An Adequate Wastewater Collection, Treatment and Disposal System in Merced	
P-4.1. Provide adequate wastewater collection, treatment and disposal capacity for existing and projected future needs. • Future growth and development will depend on the availability of wastewater system capacity. The City is committed to keeping the City's system current with respect to present and projected future needs of the growing urban area.	**Yes**. The Program was developed based on the growth projections identified in the Merced Vision 2030 General Plan and is therefore consistent with this policy. No indirect effects related to unplanned development as a result of implementation of the Program would occur.
P-4.2. Consider the use of reclaimed water to reduce non-potable water demands whenever practical. • In future years, the urban expansion area of Merced may require the development of expanded wastewater treatment systems as part of a long-term comprehensive wastewater treatment plan. In their design should incorporate beneficial use of treated wastewater. It is necessary that other development components also be planned to incorporate the potential to utilize reclaimed water as a primary or secondary disposal process.	**Yes.** While the 2017 WCSMP evaluated the wastewater collection system and does not consider the treatment or disposal of treated effluent, the 2017 WCSMP does conceptually outline potential effluent disposal methods available to the City. These methods provide options that would allow the use of reclaimed water which could directly or indirectly reduce non-potable water demands. The Program is consistent with this policy.
Goal Area P-6: Solid Waste • Solid Waste Management Services That Accommodate the Local Population Without Causing Significant Damage to Environmental Resources	
P-6.2. Minimize the potential impacts of waste collection, transportation and disposal facilities upon the residents of Merced. • The Merced County Regional Waste Management Authority landfill is located on the western side of the City's expansion area along Highway 59. This facility will most likely be in operation well into the next century and will impact development and growth on the City's northwestern edge. It is in the City's interest to work closely with Merced County Regional Waste Management Authority on solid waste reduction programs and to develop strategies for protecting the existing landfill site from encroachment by non-compatible uses.	**Yes.** Impacts associated with solid waste are less than significant for the Program as identified in Section 3.13, Public Service and Utilities, and therefore, the Program is consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
Goal Area OS-1: Open Space for the Preservation of Natural Resources • Maintenance or Merced's Biological Resources • A High-Quality, Expanding Urban Forest • Preservation of Scenic Corridors and Resources • Improvement and Enhancement of Water Quality	
OS-1.1. Identify and mitigate impacts to wildlife habitats which support rare, endangered, or threatened species. • The Merced SUDP/SOI is known to contain potential habitat for several sensitive wildlife species. Much of this potential habitat is located along riparian corridors of the community's creek system in vernal pools found in the northern part of the City's SUDP/SOI area, and on some agricultural lands throughout the planning area. As a matter of law, the City is required to review development proposals that threaten to impact known sensitive species. As a matter of policy, the City is committed to integrating potential wildlife habitat into the regional park and recreation system to enhance community awareness of the region's wildlife resources and to provide shelter for native plant and animal life of the area.	**Yes.** As discussed in Section 3.4 (Biological Resources) of this Draft EIR, all impacts related to biological resources resulting from construction of the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
OS-1.2. Preserve and enhance creeks in their natural state throughout the planning area. • The urban creek system of Merced provides an important open space element within the City and provides important wildlife habitat. This creek system is also an integral part of the City's drainage system. The City is committed to a policy of preserving and protecting these important open space resources and assuring their continued viability as open space and drainage corridors.	**Yes.** As discussed in Section 3.4, Biological Resources, impacts to creeks and riparian areas are less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
OS-1.3. Promote the protection and enhancement of designated scenic routes. • Historically, the City of Merced has developed along routes and corridors which have come to be part of the City's identity. The City has designated many of these scenic routes for special development review regulation in the past. This practice has served the City well and will be continued into the future.	**Yes**. As discussed in Section 3.1, Aesthetics and Visual Resources, impacts related to scenic resources are considered less than significant. Therefore, the Program is consistent with this policy.
OS-1.4. Improve and expand the City's urban forest. • Early in the development of Merced, trees were planted to provide shelter from wind and summer heat. As a result, the City has a large number of mature trees along its streets, in public places and in private yards and has been designated a "Tree City USA" for over 30 years. The City's urban forest provides valuable wildlife habitat and creates an attractive atmosphere for residents and visitors alike. Additionally, the City's trees have substantially reduced summer heat and glare around paved areas, thereby helping the City maintain a cooler summer average temperature and reduce energy usage. In continuing this tradition, the City of Merced has established policies and programs to protect, maintain and expand its urban forests.	**Yes.** As discussed in Section 3.4, Biological Resources, impacts to trees resulting from the Program would be less than significant. Therefore, the Program is consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
OS-1.5. Preserve and enhance water quality. • Water has become one of the most important resources for determining a region's ability to grow and prosper. California has enacted several major laws which require local communities to address the complicated issue of resources. The City of Merced has adopted policies addressing the conservation of urban water use and a development strategy to meet future water needs (see Section 5.2.3 [of the 2030 General Plan]). The final element in the City's comprehensive water strategy is the preservation of water quality. It should be noted that these policies are directed towards enhancing or implementing the many existing water quality regulations which affect the City and its residents.	**Yes.** As discussed in Section 3.9, Hydrology and Water Quality, impacts related to water quality resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
Goal Area OS-2: Open Space for the Managed Production of Resources • Protection of Regional Agricultural Resources	
OS-2.1. Protect agricultural areas outside the City's SUDP/SOI from urban impacts. • Regional agricultural cropland provides an economic base for the City of Merced, and the long-term economic health of the City is directly linked to conserving the productive capacity of regional farmland. To this degree, the City has established urban expansion policies directing urban growth away from "prime" agricultural soils. Policies are also needed to protect farmland along the urban perimeter and to promote open space policies which protect farmland and the farming industry.	**Yes.** As discussed in Section 3.2, Agricultural and Forestry Resources, impacts related to agricultural areas resulting from the Program would be less than significant. Therefore, the Program is consistent with this policy.
Goal Area OS-4: Open Space for Public Health and Safety • A Safe Environment for Merced's Citizens	
OS-4.1. Preserve open space areas which are necessary to maintaining public health and safety. • Areas within the City which may represent a substantial risk to public health and safety have historically been designated for open space uses which may permit limited public or private use but generally reduce potential exposure of the public to potential health hazards. The City is committed to continuing to protect public health, where practical, by limiting the potential for public exposure through the sound application of open space practices and policies.	**Yes**. As discussed in Section 3.14, Recreation, impacts to recreational resources, including open space, resulting from the Program are less than significant. Therefore, the Program is consistent with this policy.
Goal Area OS-5: Conservation of Resources • Conservation of Water Resources • Preservation and Protection of Soil Resources	
OS-5.1. Promote water conservation throughout the planning area. • Water is a finite resource in the Central San Joaquin Valley and is an essential ingredient to the region's continued agricultural production capacity as well as a vital element in the continued growth of the Merced Metropolitan Area. The City, in conjunction with the Merced Irrigation District, has studied the long-term needs for water and concluded that water conservation must be part of any successful long-term water development strategy. For this reason, the City is committed to continue its water conservation efforts and expand on those efforts where necessary.	**Yes.** As discussed in Section 3.9, Hydrology and Water Quality, water required during construction would be minimal and no water would be required for operations of the wastewater collection system post-construction. Therefore, the Program is consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
OS-5.2. Protect soil resources from the erosive forces of wind and water. • Merced is situated on some of the finest soil resources found in the Central San Joaquin Valley. Some of these soils are of a silty-loam texture and highly vulnerable to erosion from wind and water. Wind erosion contributes to the region's PM10 and PM 2.5 air quality problems, as discussed in the Sustainable Development Chapter (8) of this General Plan, and water erosion can contribute to sedimentation of the region's surface water drainage system. In all cases, the loss of soil through erosive forces of nature degrades the productive capacity of the land and contributes to regional environmental problems.	**Yes.** As discussed in Section 3.7, Geology, Soils and Mineral Resources, impacts related to soil erosion, both during and post-construction for the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
Goal Area SD-: Air Quality and Climate Change • Clean Air with Minimal Toxic Substances and Odor • Clean Air with Minimal Particulate Content • Effective and Efficient Transportation Infrastructure • Coordinated and Cooperative Inter-Governmental Air Quality Programs • Reduction in the Generation of Greenhouse Gases (GHG) from New Development	
SD-1.1. Accurately determine and fairly mitigate the local and regional air quality impacts of projects proposed in the City of Merced. • The environmental assessment process required under the [CEQA] is by far the most important tool for local government to communicate with other agencies and the public on the air quality impacts of development within a community. CEQA, however, has only limited applicability with respect to development review and approval. The law focuses on "Discretionary" projects, as opposed to "administrative" development proposals. As a result, large scale developments, which typically require "discretionary" permits are often subjected to CEQA mitigation that is not required of "administrative" projects. While consistent application of CEQA can make a difference in project-level air quality impacts, uniform air quality standards for all projects could make a significant contribution toward limiting regional, cumulative air quality impacts.	**Yes.** As discussed in Section 3.3, Air Quality and Greenhouse Gases, impacts related to air quality resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
SD-1.5. Provide public facilities and operations which can serve as a model for the private sector in implementation of air quality programs. • City and county governments are often the largest employers in a jurisdiction and operate large vehicle fleets. While it is recognized that the City of Merced has very limited resources with which it can play any meaningful role in supporting private sector energy conservation efforts, the City can pursue policies and programs which may have private sector applicability. In this respect, the City may take a leadership role in implementing employer-based trip reduction programs and fleet operator programs to reduce the City's emissions, demonstrate cost effective energy management techniques, and save public money.	**Yes**. As discussed in Section 3.3, Air Quality and Greenhouse Gases, impacts related to air quality resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
SD-1.6. Reduce emissions of PM_{10} and other particulates with local control potential. • The levels of PM_{10} and $PM_{2.5}$ (particulate matter less than 10 and 2.5 microns in diameter) exceed state and federal health-based standards. The San Joaquin Valley is classified as a serious non-attainment area for PM_{10} under the federal criteria. Because of this classification, the Air District is subject to a series of federal mandates aimed at achieving federal ambient air quality standards. Control efforts for sources under the jurisdiction of cities and counties can significantly reduce these emissions.	**Yes.** As discussed in Section 3.3, Air Quality and Greenhouse Gases, impacts related to air quality, and specifically emissions of PM_{10}, resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
Goal Area SD-2: Cultural Resources • A Diverse and Rich Historic and Cultural Resource Environment • A Long-Term Community Historic Preservation/Improvement Program	
SD-2.1. Identify and preserve the City's archaeological resources. • It is thought that the San Joaquin Valley was inhabited in the late Pleistocene and early Holocene period, dating from perhaps as early as 12,000 years before the present. Prior to EuroAmerican arrival, the San Joaquin Valley was occupied by Yokuts Indian populations. The Yokuts settlement system was characterized by principal villages on terraced areas adjacent to watercourses. Knowledge of these early inhabitants is limited. It is likely that the streams traversing the Merced Planning Area served as settlements for Yokuts and it is a State policy to preserve and protect the archaeological resources of the region.	**Yes**. As discussed in Section 3.5, Cultural Resources and Tribal Cultural Resources, impacts related to archaeological resources resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
SD-2.2. Identify and preserve the City's historic and cultural resources. • The City of Merced contains many fine examples of its early development. Historic buildings, tree plantings, and other improvements serve to give the City a special character which is unique in the San Joaquin Valley. The City of Merced is dedicated to preserving, protecting and enhancing its historic and cultural resources.	**Yes.** As discussed in Section 3.5, Cultural Resources and Tribal Cultural Resources, impacts related to archaeological resources resulting from the Program would be less than significant with mitigation incorporated. Therefore, the Program is consistent with this policy.
Goal Area SD-3: Energy Resources • Sustainable Energy Resource Use in the City of Merced	
SD-3.1. Promote the use of solar energy technology and other alternative energy resources. • Merced is located in an area that can benefit from the use of solar energy technology and other alternative energy resources to lower household heating and cooling costs.	**Yes.** The Program doesn't prevent or directly require the use of solar technology or other alternative energy resources; however, the energy demands of the infrastructure identified in the Program (i.e. the WWTRF expansion and new pump stations) could be powered by renewable energy resources. Additionally, the WWTRF currently has the ability to use methane gas from the biosolids drying process.

Policies	Would the Program be Consistent with the Policy?
Goal Area N-1: Noise • Protection of City residents from the harmful and Annoying Effects of Exposure to Excessive Noise • Protection of the Economic Base of the City by Preventing Incompatible Land Uses from Encroaching upon Existing or Planned Noise-Producing Uses • The Application of State or the Art Land Use Planning Methodologies in Areas of Potential Noise Conflicts.	
N-1.3. Reduce equipment noise levels.	**Yes.** As discussed in Section 3.11, Noise and Vibrations, impacts related to noise from construction and operations of the Program would be less than significant with mitigation incorporated. Therefore, the Program would be consistent with this policy.
N-1.6. Mitigate all significant noise impacts as a condition of project approval for sensitive land uses.	**Yes**. As discussed in Section 3.11, Noise and Vibrations, impacts related to noise from construction and operations of the Program would be less than significant with mitigation incorporated. Therefore, the Program would be consistent with this policy.
Goal Area S-2: Seismic Safety • Reasonable Safety for City Residents from the Hazards of Earthquake and Other Geologic Activity	
S-2.1. Reduce the potential danger from earthquake and seismic-related activity from existing buildings where necessary.	**Yes.** As discussed in Section 3.7 , Geology, Soils, and Mineral Resources, impacts related to earthquakes and seismic-related activity resulting from the Program would be less than significant. All current California Building Code (CBC) specifications related to structural stability would be used in the design of the Program components. Therefore, this policy is consistent with this policy.
S-2.2. Encourage the improvement of all public facilities and infrastructure such as natural gas, fuel, sewer, water, electricity, and railroad lines and equipment with up-to-date seismic safety features.	**Yes.** As discussed in Section 3.7, Geology, Soils, and Mineral Resources, impacts related to earthquakes and seismic-related activity resulting from the Program would be less than significant. All current CBC specifications related to structural stability would be used in the design of the Program components. Therefore, this policy is consistent with this policy.
Goal Area S-3: Flooding • Protect People and Property for Flood Risk	
S-3.3. Maintain essential City services in the event of flooding or dam failure.	**Yes.** As discussed in Section 3.9, Hydrology and Water Quality, impacts related to flooding resulting from the Program would be less than significant. Therefore, the Program would be consistent with this policy.
S-3.4. Locate and design essential facilities to minimize flood risk	**Yes.** As discussed in Section 3.9, Hydrology and Water Quality, impacts related to flooding resulting from the Program would be less than significant. Therefore, the Program would be consistent with this policy.

Policies	Would the Program be Consistent with the Policy?
Goal Area S-4: Fire Protection • Fire and Hazardous Material Safety for the Residents of the City and For Those Working in Fore Suppression	
S-4.2. Maintain a reasonable level of accessibility and infrastructure support for fire suppression, disaster, and other emergency services.	**Yes.** As discussed in Section 3.8, Hazards, Hazardous Materials, and Wildfires, and Section 3.13, Public Services and Utilities, impacts related to emergency services and infrastructure would be less than significant. Therefore, the Program would be consistent with this policy.
Goal Area S-5: Airport Safety • A Safe Airport Environment Both Above and On the Ground	
S-5.2. Prevent the encroachment of potential hazards to flight within the Airport's airspace.	**Yes.** As discussed in Section 3.8, Hazards, Hazardous Materials, and Wildfires, impacts related interference with airport operations would be less than significant with mitigation incorporated. Therefore, the Program would be consistent with this policy.

Notes:
CBC = California Building Code
CEQA = California Environmental Quality Act
EIR = Environmental Impact Report
GHG = greenhouse gas
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter
PM_{10} = particulate matter less than 10 microns in diameter
SUDP/SOI = Specific Urban Development Plan/Sphere of Influence
2017 WCSMP = 2017 Water Collection System Master Plan
WWTRF = wastewater treatment and reclamation facility

Consistency with City of Merced Zoning Ordinance

The City's Zoning Ordinance requires that a zoning designation applied to a project site must be consistent with the General Plan and the anticipated used of the project site. Because this Program consists of public infrastructure improvement and upgrades to achieve the reasonable build-out projections identified in the 2030 General Plan, the Program would be compatible with the designated land uses within the City's SUDP/SOI. Therefore, there would be no impact.

Consistency with the San Joaquin Valley Blueprint

Implementation of the Program would not include housing or commercial buildings so key principals related to housing within the SJVB do not apply to the Program. However, the Program would not conflict or prevent the implementation of the following principals in this document:

- Preserve open space, farmland, natural beauty, and critical environmental areas; and
- Support actions that encourage environmental resource management.

Therefore, the Program would be consistent with the SJVB, and there would be no impact.

Overall Consistency

An overall review of applicable plans and policies found the Program is consistent and would have no impact. Additionally, consistency analyses were completed in the respective resource's sections, where applicable, throughout Chapter 3.0, Environmental Impact Assessment as referenced in Table 3.10-1. The Program was found to be consistent with these resource-specific plans as well, and therefore, would have no impact.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact LAND-2 Findings

Impact LAND-2 Overall Level of Significance Prior to Mitigation: No Impact

Impact LAND-2 Mitigation Required: None Required

Impact LAND-2 Overall Level of Significance After Mitigation: No Impact

3.10.5 Land Use and Planning Mitigation

No mitigation required.

3.10.6 Abbreviations

AMSL	Above Mean Sea Level
CBC	California Building Code
CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental Impact Report
GHG	Greenhouse Gases
LAFCO	Local Agency Formation Commission
LOS	Level of Service
MMs	Mitigation Measures
MID	Merced Irrigation District
NOP	Notice of Preparation
SJVB	San Joaquin Valley Blueprint
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
WWTRF	Wastewater Treatment and Reclamation Facility
2017 WCSMP	2017 Wastewater Collection System Master Plan

3.10.7 References

City of Merced. 2010. Merced Vision 2030 General Plan Draft Program Environmental Impact Report. https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183. Accessed June 2018.

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Harnish, Mintier. September 2010. San Joaquin Valley Blueprint Planning Process Summary Report. http://valleyblueprintorg.alias.strangecode.com/files/SJVBR_Summary_Final_2010-09-22.pdf. Accessed October 2018.

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3.11 NOISE AND VIBRATION

3.11.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential noise- and vibration-related impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- 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 or other agencies.
- Generation of excessive groundborne vibration or groundborne noise levels.

The following potential impact related to hazardous noise levels is discussed in Section 3.8, Hazards, Hazardous Materials, and Wildfires:

- For a project located within the vicinity of a private airstrip or an airport land use plan, or where such a plan has not been adopted within two miles of a public airport or public use airport, would the project expose people residing or working in the Project area to excessive noise levels.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to noise and vibration that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible.

3.11.2 Regulatory Framework

This section discusses the Federal, State regulations and local policies and objectives related to noise and vibration that are relevant to the Program.

3.11.2.1 Federal

Federal, state, and local agencies regulate different aspects of environmental noise and vibration. Generally, the Federal Government sets standards for transportation-related noise and vibration sources closely linked to interstate commerce. These include aircraft, locomotives, and trucks but are not generally applicable to non-transportation related type projects. However, while not directly applicable, the federal standards for vibration can be helpful to the evaluation of construction vibration impacts associated with construction equipment used for implementation of the Program.

Federal Transit Authority Vibration Standards

The Federal Transit Authority (FTA) has adopted vibration standards that are used to evaluate potential building damage impacts related to construction activities. The vibration damage criteria adopted by the FTA are shown in Table 3.11-1.

Table 3.11-1: Construction Vibration Damage Criteria

Building Category	Peak Particle Velocity (PPV) (in/sec)
Reinforced-Concrete, steel or timber (no plaster)	0.5
Engineered concrete and masonry (no plaster)	0.3
Non-engineered timber and masonry buildings	0.2
Buildings extremely susceptible to vibration damage	0.12

Source: FTA 2018

The FTA has also adopted standards associated with human annoyance for groundborne vibration impacts for three land use categories: 1) High Sensitivity; 2) Residential; and 3) Institutional. Table 3.11-2 describes these three categories as well the associated vibration thresholds associated with human annoyance for these categories.

Table 3.11-2: Groundborne Vibration Impact Criteria for General Assessment

Land Use Category	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB	65 VdB	65 VdB
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Source: FTA 2018

Notes:

1. More than 70 events per day
2. 30-70 events per day
3. Fewer than 30 events per day

VdB = vibration decibels

3.11.2.2 State

The state government sets noise standards for transportation noise sources such as automobiles, light trucks, and motorcycles. Noise sources associated with industrial, commercial, and construction activities are generally subject to local control through noise ordinances and general plan policies. Local general plans identify general principles intended to guide and influence development plans.

State of California General Plan Guidelines – Noise Elements

The State of California General Plan Guidelines (Governor's OPR 2017) establishes guidelines for the preparation of local general plan noise elements, including a sound level/land use compatibility chart that categorizes, by land use, outdoor day/night noise level (L_{dn}) ranges in four categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable). For many land uses, there are overlapping L_{dn} ranges for two or more

compatibility categories. Table 3.11-3 lists the normally acceptable range and conditionally acceptable range of L_{dn} values in decibels (dB) for various types of land uses.

Table 3.11-3: State of California General Plan Acceptable Noise Range Guidelines

Land Use[a]	General Plan Acceptable Noise Range	
	Normally Acceptable Range	Conditionally Acceptable Range
Low-Density Residential	less than 60 dB	55–70 dB
High-Density Residential	less than 65 dB	60–70 dB
Educational and Medical Facilities	less than 70 dB	60–70 dB
Office and Commercial	less than 70 dB	68–78 dB

Notes:

a. Not all land use types are included here. A general overview of various land use types has been provided for context purposes. All full list of land uses specific to the City of Merced is provided in Table 3.11-7.

dB = decibel

When noise levels are in the conditionally acceptable range, new construction should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation requirements are included in the design.

These overlapping L_{dn} ranges are intended to indicate that local conditions (existing sound levels and community attitudes toward dominant sound sources) should be considered in evaluating land use compatibility at specific locations.

California Department of Transportation

The California Department of Transportation's (Caltrans') Transportation and Construction Vibration Guidance Manual does not contain official Caltrans standards for vibration. However, this manual provides guidelines that can be used as screening tools for assessing the potential for adverse vibration effects related to structural damage and human annoyance. This is meant to provide practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. The vibration criteria established by Caltrans for assessing human annoyance and structural damage are shown in Tables 3.11-4 and 3.11-5 respectively.

Table 3.11-4: Vibration Annoyance Potential Criteria Guidelines

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Severe	2.0	0.4

Notes:
Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
in/sec = inches per second
PPV = peak particle velocity
Source: Caltrans 2004, 2013

Table 3.11-5: Vibration Damage Potential Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structure	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Notes:
Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
in/sec = inches per second
PPV = peak particle velocity
Source: Caltrans 2013

3.11.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to noise, including the following:

Goal Area N-1: Noise

- **Policy N-1.3.** Reduce equipment noise levels.

- **N-1.3.a.** Limit operating hours for noisy construction equipment used in the City of Merced.
- **N-1.3.b.** Review City functions (e.g. construction, refuse collection, street sweeping, tree trimming) to insure that noise generated by equipment has been reduced to the lowest practicable level.
- **N-1.3.c.** Include maximum noise level permitted for City equipment purchases and construction contracts.

- **Policy N-1.5.** Coordinate Planning Efforts so that Noise-Sensitive Land Uses are not Located Near Major Noise Sources
  - **N-1.5.f.** As feasible, require noise barriers and/or increased setbacks between heavy circulation corridors and noise-sensitive land uses.

Table 3.11-6: Exterior Noise Level Performance Standards for New Projects Affected by or Including Non-Transportation Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L_{eq}, dB	55	45

Notes:
dB = decibel
L_{eq}= equivalent noise level

Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises (e.g., humming sounds, outdoor speaker systems). The City can impose noise level standards that are more restrictive than those specified above based upon determination of existing low ambient noise levels. Fixed noise sources which are typically of concern include, but are not limited to the following: The types of uses which may typically produce the noise sources described above include but are not limited to: industrial facilities including pump stations, trucking operations, tire shops, auto maintenance shops, metal fabricating shops, shopping centers, drive-up windows, car washes, loading docks, public works projects, batch plants, bottling and canning plants, recycling centers, electric generating stations, race tracks, landfills, sand and gravel operations, and athletic fields.

General Requirements for an Acoustical Analysis
(Modifications may be approved at the discretion of the Director of Development Services)

An acoustical analysis prepared pursuant to the Noise Element should:

A. Be the financial responsibility of the applicant.

B. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

C. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources.

D. Estimate existing and projected cumulative (20 years) noise levels in terms of Ldn or CNEL and/or the standards of Table 3.11-6, and compare those levels to the adopted policies of the Noise Element.

E. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.

F. Estimate noise exposure after the prescribed mitigation measures have been implemented.

G. Describe a post-project assessment program that could be used to evaluate the effectiveness of the proposed mitigation measures.

The above Implementing Actions will be used in City Planning efforts in order to ensure that noise sensitive land uses are not located adjacent to major noise sources or if they are, that the noise impacts are minimized as much as possible, using the standards described above.

- **Policy N-1.6.** Mitigate all significant noise impacts as a condition of project approval for sensitive land uses.
    - **N-1.6.a.** Where noise mitigation measures are required to achieve the standards of Tables 3.11-6, the emphasis of such measures should be placed upon site planning and project design. The use of noise barriers should be considered a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.
    - **N-1.6.b.** Where noise-sensitive land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding the performance standards of Table 3.11-6, an acoustical analysis may be required as part of the environmental review process so that noise mitigation may be included in the project design.

Additionally, the 2030 General Plan Noise Element also includes a land use compatibility chart which is shown in Table 3.11-7:

Table 3.11-7: Community Noise Exposure Compatibility by Land Use Category

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dB)						
	50	55	60	65	70	75	80
Residential							
Transient lodging Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Area, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dB)						
	50	55	60	65	70	75	80
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, and Agricultural							

Key		
	Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are or normal conventional construction, without any special noise requirements
	Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.
	Normally Unacceptable	New construction or development should be discouraged. In new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
	Clearly Unacceptable	New construction or development clearly should not be undertaken.

City of Merced Noise Ordinance

The City Municipal Code (Section 10.40, Truck Routes) includes designated truck routes that are to be used within the City to avoid unnecessary noise in incompatible areas. These truck routes avoid the major residential areas and are limited to major roadways within the City. Figure 2.4-4 shows these truck routes.

County of Merced Noise Ordinance

The noise standard for the Merced County Code (Code 18.41.070) apply to unincorporated areas of Merced County. Section 18.41.070 of this ordinance includes the following provisions:

- Noise generated by mechanical equipment, buzzers, bells, loud speakers or other noise generating devices shall comply with the noise standards below at any boundary line of the parcel, except fire protection devices, burglar alarms and church bells. The following general plan standards for unacceptable noise levels shall apply:

  A. If the proposed use is adjacent to property that is zoned for residential use, the maximum noise level shall not exceed 65 A-weighted decibels (dBA) L_{dn} or 75 dBA maximum A-weighted noise level (L_{max}) at the property line.

  B. If the proposed use is adjacent to a parcel that is not zoned for residential land use, the maximum noise level at the property line shall not exceed 70 dBA L_{dn} or 80 dBA L_{max} at the property line.

C. The maximum noise level for uses receiving noise shall be 65 dBA L_{dn} for uses in Residential Zones and 70 dBA L_{dn} for Institutional, Commercial, Industrial and Agricultural Zones4.

- Elevated Noise Level During Construction. During construction, the noise level may be temporarily elevated. To minimize the impact, all construction in or adjacent to urban areas shall follow the following procedures for noise control: Construction hours shall be limited to the daytime hours between seven a.m. and six p.m., and all construction equipment shall be properly muffled and maintained.

3.11.3 Environmental Setting

3.11.3.1 Noise Baseline and Terminology

Table 3.11-8 defines common terminology and metrics used throughout this section for easy reference and Table 3.11-9 outlines typical noise levels for common noise sources to provide perspective on Program noise levels compared to common noise sources.

Table 3.11-8 Definition of Acoustical Terms

Term	Definition
Decibel (dB)	Unit of measurement of sound level.
Decibel A-Weighted (dBA)	A unit of measurement of sound level corrected to the A–weighted scale, as defined in ANSI S1.4–1971 (R1976), using a reference level of 20 micropascals (0.00002 Newtons per square meter).
A–Weighted Scale	A sound measurement scale, which corrects the pressures of individual frequencies according to human sensitivities. The scale is based upon the fact that the region of highest sensitivity for the average ear is between 2,000 and 4,000 Hz. Sound levels are measured on a logarithmic scale in decibels, dB. The universal measure for environmental sound is the A–weighted sound level, dBA.
Hertz (Hz)	Unit of measurement of frequency, numerically equal to cycles per second.
Loudness	A listener's perception of sound pressure incident in his ear.
L_{01}, L_{10}, L_{50}, L_{90}	The A–weighted noise levels that are exceeded 1 percent, 10 percent, 50 percent, and 90 percent of the time during the measurement period.
Equivalent Noise Level (L_{eq})	Also, called the equivalent continuous noise level. It is the continuous sound level that is equivalent, in terms of noise energy content, to the actual fluctuating noise existing at the location over a given period, usually one hour. L_{eq} is usually measured in hourly intervals over long periods in order to develop 24–hour noise levels.
Community Noise Equivalent Level (CNEL)	The CNEL is a measure of the cumulative noise exposure in the community, with greater weights applied to evening and nighttime periods. This noise descriptor is the equivalent noise level over a 24–hour period mathematically weighted during the evening and night when residents are more sensitive to intrusive noise. The daytime period is from 7:00 a.m. to 7:00 p.m.; evening from 7:00 p.m. to 10:00 p.m.; and nighttime from 10:00 p.m. to 7:00 a.m. A weighting factor of 1 dB is added to the measured day levels defined as 7 a.m. to 7 p.m., evening levels (7 p.m. to 10 p.m.) have a weighting factor of three and 10 dB to the nighttime levels (10 p.m. to 7 a.m.). The weighted levels over a 24–hour period are then averaged to produce the single number CNEL rating.
Day/Night Noise Level (L_{dn})	The same as CNEL except that the evening time period is not considered separately, but instead is included as part of the daytime period. Measurements of both CNEL and L_{dn} in the same residential environments reveal that CNEL is usually slightly higher (by less than 1 dB) than L_{dn} due to the evening factor weighting.

Term	Definition
L_{min}, L_{max}	The minimum and maximum A–weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 3.11-9: Typical Sound Levels of Common Noise Sources

Decibels	Description
130	Threshold of pain
120	Jet aircraft take-off at 100 feet
110	Riveting machine at operators' position
100	Shotgun at 200 feet
90	Bulldozer at 50 feet
80	Diesel Locomotive at 300 feet
70	Commercial jet aircraft interior during flight
60	Normal conversational speech at 5-10 feet
50	Open office background level
40	Background level within a residence
30	Soft whisper at 2 feet
20	Interior of recording studio

Source: City of Merced 2012

The existing noise environment in a project area is characterized by the area's general level of development because the level of development and ambient noise levels tend to be closely correlated. Areas that are not urbanized are relatively quiet, while areas that are more urbanized are nosier because of roadway traffic, industrial activities, and other human activities.

The measurement of any sounds level requires language used specifically for the measurement of acoustical conditions. Decibel or dB is the preferred unit used to measure sound levels using logarithmic scale to account for the large range in audible sound intensities. A general rule for dB scale is that a 10-dB increase in sound is perceived as a doubling of loudness by the human ear (FHWA 2017). For example, a 55-dB sound level would sound twice as loud as a 45-dB sound level. The average healthy person cannot detect differences of 1 dB, whereas a 5-dB change is clearly noticeable. Several sound measurement descriptors are used to assess the effects of sound on the human environment. These include the equivalent sound level, which is the level of a constant sound that has the same sound energy as the actual fluctuating sound. It is similar to the average sound level. The day-night sound level, L_{dn}, is similar to the 24-hour L_{eq}; except that a 10-dB penalty is added to sound levels between 10 p.m. and 7 a.m. to

account for the greater sensitivity of people to sound at night. The CNEL also places a weighted factor on sound events occurring in the evening hours. The L_{90} value is the sound level (L) that is exceeded 90 percent of the time and is often used to describe the background or residual sound level.

Existing ambient noise levels and predicted noise levels associated with reasonable build-out within the Program Study Area were analyzed in the Draft EIR for the 2030 General Plan (City of Merced 2010). Existing noise levels within the Program Study Area were set forth in the 2030 General Plan Draft EIR and vary based on location and time of day, but generally range from 45 dBA to 79 dBA, with an average of 62 dBA (City of Merced 2010). Similarly, at reasonable build-out, the 2030 General Plan Draft EIR estimated noise levels would also vary based on location within the City but would range from 52 dBA to 81 dBA, with an average of 66.5 dBA (City of Merced 2010). Due to the relatively flat topography of the region, noise tends to travel further when unobstructed by structures.

3.11.3.2 Vibration

Operation of heavy construction equipment, particularly pile driving and other impact devices such as pavement breakers, create seismic waves that radiate along the surface of the Earth and downward into the Earth. These surface waves can be felt as ground vibration. Vibration from operation of this equipment can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance would result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes would decrease with increasing distance.

Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second [in/sec]) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (PPV). Table 3.11-4 summarizes vibration annoyance potential criteria guidelines suggested by Caltrans, while Table 3.11-5 summarizes vibration damage potential criteria guidelines suggested by Caltrans.

Existing groundborne vibration levels within the Program Study Area include heavy-duty vehicular traffic on local roadways, railway operations from the Union Pacific Railroad (UPRR) and the Burlington Northern/Santa Fe (BNSF) railroad tracks, as well as airport activities from the Merced Regional Airport (City of Merced 2012).

3.11.3.3 Sensitive Receptors

Noise-sensitive receptors are typically defined as land uses that are more sensitive to noise than others. These can include residential, school, library, and hospital uses, which often require concentrating, sleeping, or other activities that require a quiet atmosphere.

The Program would largely be built within the City's Specific Urban Development Plan/Sphere of Influence (SUDP/SOI), which includes urban, rural, commercial, residential, and industrial areas. Sensitive receptors, including homes, schools, parks, hospitals, and commercial businesses, are located throughout the area. The City generally tends to be situated around Main Street, which runs in a northwest to southeast direction. Typically, older residential and commercial development exists in the southern limits of the Program Study Area, while newer development and

commercial buildings exist moving northward. The extreme northern areas within the Program Study Area remain largely undeveloped and currently consist of open and rural areas, with planned development in the future.

3.11.3.4 Airports and Airstrips

There is one airport within the Program Study Area, the Merced Regional Airport, which is located in the southwest corner of the City. The Castle Airport, which is located approximately 3 miles to west of State Route (SR) 59, is not directly within the Program Study Area; however, portions of this airport's designated safety zones and noise contours overlap with the Program Study Area (Figure 3.8-1).

The Merced Regional Airport is a publicly owned facility that provides both commercial air and freight air cargo services for the City of Merced, as well as the surrounding areas. The Castle Airport, which was once the location of the Castle Air Force Base, has since been converted to civilian use. The 2030 General Plan land uses surrounding both of these airports generally consist of industrial designations to be consistent with the Merced County Airport Land Use Compatibility Plan and Federal Aviation Administration (FAA) recommendations regarding potential hazards (Merced County Airport Land Use Commission 2012; City of Merced 2012).

3.11.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to noise and vibration. When an impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.11.4.1 Impact Analysis

Impact NOS-1	**Potential to generate 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 or other agencies.**

Impact NOS-1 Analysis
Program Impacts

Construction

Temporary noises would be generated during the construction of the Program components through use of heavy vehicles and equipment needed to construct Program components like new pipelines, pump stations, and Wastewater Treatment and Reclamation Facility (WWTRF) expansion facilities. Construction noise would be generated intermittently as development occurs throughout the SUDP/SOI consistent with reasonable build-out of the 2030 General Plan. Program construction noise impacts would occur over the reasonable build-out planning horizon, would be distributed and dispersed throughout the Program Study Area, and would be localized and temporary to individual projects. Additionally, the majority of Program pipeline features would be located within transportation corridors identified within the 2030 General Plan where noise attenuation measures are required for development projects that would limit exposure from Program construction within those same roadway corridors.

Implementation of the Program could generate a significant impact if these temporary increases in ambient noise levels were in excess of standards established in the 2030 General Plan or the City or County Noise Ordinance (See Section 3.11.2.3, Local). The 2030 General Plan Draft EIR considered these potential construction activity noise impacts associated with reasonable build-out of the SUDP/SOI, concluding that typical construction equipment's generation of maximum noise levels (ranging from 80 to 89 dBA Lmax at a distance of 50 feet) would not have a significant impact to ambient noise levels (City of Merced 2010). The 2030 General Plan EIR also evaluated increased truck traffic on area roadways as a result of construction activities and transporting heavy materials and equipment to and from constructions sites but states that the implementing actions identified in the Noise Element limit impacts to less than significant. The 2030 General Plan Draft EIR concludes that the noise increase for construction activities would be of short duration, and likely occur primarily during daytime hours and would thereby be less than significant (City of Merced 2010). The evaluation of the 2030 General Plan Draft EIR is incorporated by reference into this section. The Roadway Construction Noise Model (RCNM) was run for comparative purposes to determine the estimated noise levels from typical Program construction equipment. The results of the RCNM are shown in Table 3.11-10 (ranging from 76.5 to 85 dBA L_{max} at a distance of 50 feet).

Table 3.11-10: Program Roadway Construction Noise Model Typical Construction Equipment

Equipment	Acoustical Use Factor (%)	Sound Level at Receptor					
		(25 Feet)		(50 Feet)		(100 Feet)	
		L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}
Equipment with Frequent or Regular Usage							
Chain Saw	20	89.7	82.8	83.7	76.7	77.7	70.7
Backhoe	40	83.6	79.6	77.6	73.6	71.5	67.6
Excavator	40	86.7	82.8	80.7	76.7	74.7	70.7
Front End Loader	40	85.1	81.2	79.1	75.1	73.1	69.1
Dump Truck	40	82.5	78.5	76.5	72.5	70.4	66.5
Generator	50	86.7	83.6	80.6	77.6	74.6	71.6
Grader	40	91.0	87.0	85.0	81.0	79.0	75.0
Paver	50	83.2	80.2	77.2	74.2	71.2	68.2
Pumps	50	87.0	84.0	80.9	77.9	74.9	71.9
Compactor	20	89.3	82.3	83.2	76.2	77.2	70.2
Estimated Maximum Noise Level Frequently Used Equipment[1]		**96.3**	**92.2**	**90.2**	**86.1**	**84.2**	**80.1**

Equipment	Acoustical Use Factor (%)	Sound Level at Receptor					
		(25 Feet)		(50 Feet)		(100 Feet)	
		L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}
Equipment with Sporadic or Intermittent Usage							
Impact Pile Driver	20	107.3	100.3	101.3	94.3	95.2	88.3
Blasting	1	100	80.0	94.0	74.0	88.0	68.0
Jackhammer	20	94.9	87.9	88.9	81.9	82.9	75.9
Pavement Scarifier	20	95.5	88.5	89.5	82.5	83.5	76.5
Estimated Maximum Noise Level Infrequently Used Equipment[1]		**108.4**	**100.8**	**102.4**	**94.8**	**96.4**	**88.8**

Notes: 1. This row is provided to estimate total maximum noise levels at a given time and distance during normal construction activities that would occur under the Program. Because decibels are logarithmic units, sound pressure levels cannot simply be added or subtracted through ordinary arithmetic (i.e. adding and subtracting) to get a total maximum. Instead, a logarithmic equation is used to estimate the maximum noise levels associated with use of all construction equipment based on the percentage of acoustical use.

L_{eq} = equivalent noise level

L_{max} = maximum noise level

Source: FHWA 2019

As the results in Table 3.11-10 show, the maximum (L_{max}) noise typical construction equipment would generate ranges from 82.5 to 91 dBA L_{max} at 25 feet, 76.5 to 85 dBA L_{max} at 50 feet, and 70.4 to 79 dBA L_{max} at 100 feet for individual pieces of frequently used equipment and could range from 94.9 to 107.3 dBA L_{max} at 25 feet for infrequently used equipment (see Table 3.11-9 for common noise comparisons). To estimate maximum noise generation with multiple pieces of equipment operating at the same time, a logarithmic equation was used which factored in all equipment operating based on a set acoustical use factor to provide an estimated maximum noise generation range up to 96.3 L_{max} dBA at 25 feet, 90.2 L_{max} dBA at 50 feet, and 84.2 L_{max} at 100-feet for regularly used equipment with maximum generations of 108.4 L_{max} dBA at 25 feet for infrequently used equipment. These estimated maximum noise levels are similar to those contemplated in the 2030 General Plan Draft EIR that were found to have a less than significant; however, ambient noise levels within the City range between 60 and 80 dBA at 100 feet, as identified in the 2030 General Plan EIR. The 2030 General Plan calls for a 55 L_{eq} dBA hourly daytime performance standard activities and the 45 L_{eq} dBA nighttime performance standard in addition to the standards set for community noise exposure compatibility shown in Table 3.11-7. Thus there is a potential for Program construction activities to substantially increase localized ambient noise levels and MM NOS-1, Noise and Vibration Reduction Measures, and MM NOS-2, Notification and Coordination with Noise Sensitive Receptors, would be required to implement best management practices for noise reduction as well as require notification and coordination with sensitive receptors of construction activities occurring.

MM NOS-1 would incorporate noise-reduction measures to limit construction activities to daytime hours. This measure would include construction equipment muffling and shielding, locating fixed construction equipment, and staging areas away from sensitive receptors, and installation of construction noise barriers to block sound

transmission near noise-sensitive land uses. MM NOS-2 would include notification and coordination with noise-sensitive receptors within 500 feet of proposed construction activities. MM NOS-1 and MM NOS-2 include measures that help meet the City's performance standards as required by the 2030 General Plan and reduce any potential for significant impact to less than significant. These measures are also consistent with the City and County Noise Ordinances which require use of designated truck routes and allow elevation of noise levels during construction with the incorporation of noise control measures limiting construction to daytime hours of 7 a.m. to 6 p.m. and proper maintenance and muffling of construction equipment. Construction activities associated with implementation of the Program would be temporary, would follow truck routes for equipment deliveries, and would not occur all in one location at one time, and with the implementation of MM NOS-1 and MM NOS-2, would not substantially increase temporary or permanent ambient noise levels in violation of a plan or policy. Therefore, with implementation of MM NOS-1 and MM NOS-2, impacts related to construction noise would be reduced to a less than significant level.

Operation

Operation of the Program would not involve substantial additional noise within the City. The increase in operational truck trips under reasonable build-out of 2030 General Plan SUDP/SOI was contemplated in the 2030 General Plan Draft EIR for the entire City roadway network and found to be less than significant (City of Merced 2010). The Program would equate to approximately 10 additional trips per year for the trunk sewer infrastructure and pump stations and approximately two additional truck trips per day for maintenance of the upgraded WWTRF, including truck trips associated with hauling of biosolids. Noise generated from these additional truck trips would be consistent with existing conditions of both the existing wastewater collection system as well as existing traffic noise throughout the Program Study Area and would not introduce a substantial source of temporary or permanent noise. Thus, no standards would be exceeded, and the impact would be less than significant.

However, public service facility activities can produce noise which affects adjacent sensitive land uses (City of Merced 2010). These noise sources can be continuous and may contain tonal components which have a potential to annoy individuals who live nearby. In addition, noise generation from fixed noise sources may vary based upon climatic conditions, time of day and existing ambient noise levels. The 2030 General Plan and Draft EIR, considers these potential effects from permanent fixed noise sources such as pump stations and lift stations and sets performance standards for proposed new noise-producing uses and concludes that the implementing actions identified in the Noise Element limit impacts to less than significant. However, operational noise from the addition of new or upsized pump stations could result in the addition of noise from pumps or generators greater than 5 dBA above ambient conditions allowed by the implementing actions, potentially significantly impacting sensitive receptors if nearby. New pump stations typically have operational noise generated from pumps themselves that range from 90 to 100 dBA, if not enclosed (Environmental Protection Department 2005). The pumps associated with the new infrastructure are anticipated to be subterranean and also within the enclosed pump station building, which dampens external noise levels by 20 to 50 dBA (Environmental Protection Department 2005). The enclosed nature of these pump stations would therefore reduce noise levels to approximately 70 to 80 dBA (if a 20 dBA reduction is achieved) or 40 dBA to 50 dBA (if a 50 dBA reduction is achieved). Therefore, because operational noise could exceed more than 5 dBA of the exterior noise thresholds identified in the 2030 General Plan (55 dBA during the daytime, and 45 dBA during the nighttime and community noise exposure compatibility standards in Table 3.11-7), and because these new pump stations or pump station upgrades would be placed within City-owned parcels or rights-of-way and residential growth areas identified in the 2030 General Plan could occur directly around these new or upgraded pump stations, a potentially significant impact could occur to nearby residents if not designed appropriately. As such, to

ensure that design conditions reduce perceptible noise levels outside the pump station properties, MM NOS-3 would be required to reduce noise from pumps and generators. These noise reduction measures would utilize Best Available Technology (BAT) to reduce noise generated from pump station operations to acceptable levels as identified in the 2030 General Plan, therefore, reducing potential operational impacts to a less than significant level. Further, the nearest sensitive receptor to the WWTRF is approximately 1,700 feet away from the WWTRF, any increases in noise at the WWTRF would be barely (if at all) perceptible to this sensitive receptor due to attenuation distances, and therefore, would not result in any impacts related to operational noise. Therefore, the operational noise impacts associated with implementation of the Program components would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM NOS-1, MM NOS-2, and MM NOS-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

Numerous sensitive receptors would be located within 25 feet of construction activities, including residences and businesses along Thornton Road, Dickenson Ferry Road, Mission Avenue, Cardella Road, Yosemite Avenue, Bellevue Road, Central Yosemite Highway, Iron Stone Drive, Snelling Highway, and G Street. As shown in Table 3.11-10, these sensitive receptors could be subject to noise levels at an L_{max} of 97.3 dBA at 25 feet; however construction would only occur within 25 feet of any one sensitive receptor for a short period of time, likely no more than one day, considering the rate of pipeline placement (approximately 250 to 500 feet per day). Additionally, although not anticipated, more intensive construction equipment could be required for construction of the new trunk sewer infrastructure. Portions of the trunk sewer infrastructure may also avoid or minimize noise impacts by being installed with trenchless technologies near residential receptors. This may particularly be the case along the Northern Trunk alignment, which would require trenchless installation technologies to cross railroad and highway facilities. The drilling associated with trenchless technologies would generate localized noise levels consistent with those of Table 3.11-10 but would likely reduce the total number of receptors exposed. As shown in Table 3.11-10, construction activities could reach a L_{max} of 108.4 dBA at 25 feet or 96.4 dBA at 100 feet if more intensive construction equipment, such as an impact pile driver, jackhammer, blasting, or pavement scarifier, would be required (e. to remove rocks, pavement, or other dense materials). These pieces of equipment could be required during removal of large rocks, placement of structures (such as the pump station associated with the Northern Trunk Sewer) or when scarifying pavement. As described for the Program, MM NOS-1 and MM NOS-2 would be implemented to reduce exterior noise levels to ambient levels by implementing noise-reduction measures and notifying sensitive receptors within 500 feet of any upcoming construction activities. Implementation of these measures would reduce potential impacts to noise from construction of the new trunk sewer infrastructure to a less than significant level.

Operation

As discussed for the overall Program above, operational noise from implementation of the new trunk sewer infrastructure would include approximately 10 additional truck trips a year associated with operation of the new trunk

sewer infrastructure, as well as muffled noise associated with operations of the new enclosed pump station for the Northern Trunk Sewer. The additional truck trips would not cause substantial noise increases that would be perceptible to the human ear and would be consistent with the existing ambient traffic noise within the City. However, as discussed for the Program above, operational noise associated with the Northern Trunk Sewer pump station could cause a potentially significant impact prior to mitigation for current or future residential sensitive receptors in this area. Specifically, the new pump station would be located on a City-owned parcel or right-of-way in a rural agricultural portion of the Program Study Area with limited nearby sensitive receptors. However, based on build-out projections identified within the 2030 General Plan, communities within this area could be built in the future, which could be built on properties surrounding the selected pump station site. The 2030 General Plan Draft EIR accounts for the potential exposure by proscribing implementation measures to reduce potential noise exposure, however, due to the uncertainty associated with the future development, MM NOS-3 would be required to reduce exceedances of the 2030 General Plan ambient noise thresholds. Therefore, MM NOS-3 would be required to implement noise reduction standards for this new pump station and reduce potential operational noise impacts to acceptable levels identified within the 2030 General Plan, and thus to a less than significant level. Operational noise associated with the New Trunk Sewer infrastructure would, therefore, be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM NOS-1, MM NOS-2, and MM NOS-3

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction

Similar to the Program discussion above, the expansion of the WWTRF would involve construction activities that could generate noise that could exceed the performance standards identified in the 2030 General Plan. However, the nearest sensitive receptor to the WWTRF is approximately 0.33 miles (approximately 1,700 feet) north of the WWTRF. Construction noise based on this distance is shown in Table 3.11-11 below.

Table 3.11-11: Wastewater Treatment and Reclamation Facility Roadway Construction Noise Model Typical Construction Equipment

Equipment	Acoustical Use Factor (%)	Sound Level at Receptor (1,700 Feet)	
		L_{max}	L_{eq}
Chain Saw	20	53.1	46.1
Backhoe	40	46.9	43.0
Excavator	40	50.1	46.1
Front End Loader	40	48.5	44.5

Equipment	Acoustical Use Factor (%)	Sound Level at Receptor (1,700 Feet)	
		L_{max}	L_{eq}
Dump Truck	40	45.8	44.5
Generator	50	50.0	47.0
Grader	40	54.4	50.4
Paver	50	46.6	43.6
Pumps	50	50.3	47.3
Compactor	20	52.6	45.6
Estimated Maximum Noise Level Frequently Used Equipment[1]		**60.6**	**56.3**

Notes:

[1] This row is provided to estimate total maximum noise levels at a given time and distance during normal construction activities that would occur under the Program. Because decibels are logarithmic units, sound pressure levels cannot simply be added or subtracted through ordinary arithmetic (i.e. adding and subtracting) to get a total maximum. Instead, a logarithmic equation is used to estimate the maximum noise levels associated with use of all construction equipment based on the percentage of acoustical use.

L_{eq} = equivalent noise level

L_{max} = maximum noise level

Source: FHWA 2019

The expansion of the WWTRF would result in a L_{max} of 60.6 (representing an extremely conservative assumption that all the equipment in Table 3.11-11 would be operated at the same time), which would exceed the daytime noise standards identified in the 2030 General Plan of 55 dBA. Therefore, similar to the Program discussion above, MM NOS-1 and MM NOS-2 would be required to reduce this potentially significant impact of exceedance of the 2030 General Plan threshold to a less than significant level. MM NOS-1 would include noise reduction measures to limit construction activities to daytime hours, measures for construction equipment muffling and shielding, locating fixed construction equipment and staging areas away from sensitive receptors, and installation of construction noise barriers to block sound transmission near noise-sensitive land uses (if applicable). MM NOS-2 would include notification and coordination with noise-sensitive receptors within 500 feet of proposed construction activities. Therefore, impacts would be less than significant with mitigation incorporated.

Operation

Operational noise associated with the expansion of the WWTRF would be similar to existing conditions and would not result in a substantial change from ambient noise levels. The additional approximately two truck trips per day associated with removal of biosolids from the WWTRF and general operational activities at the WWTRF would increase operational noise slightly; however, these additional trips would be periodic and would not be perceptible to

the human ear because they would blend with the existing traffic on the local roadways. Therefore, operational noise associated with the expansion of the WWTRF would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM NOS-1 and MM NOS-2

Level of Significance After Mitigation: Less than Significant

Impact NOS-1 Findings

Impact NOS-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact NOS-1 Mitigation Required: MM NOS-1, MM NOS-2, and MM NOS-3

Impact NOS-1 Overall Level of Significance After Mitigation: Less than Significant

Impact NOS-2 Potential to generate excessive groundborne vibration or groundborne noise levels.

Impact NOS-2 Analysis

Program Impacts

Construction

During construction of the Program components, equipment that could generate groundborne vibrations, such as excavators, loaders, backhoes, and loaded trucks, could be used within 25 feet of sensitive receptors. Vibrations are considered barely perceptible at 0.04 in/sec PPV and strongly perceptible at 0.9 in/sec PPV for transient sources (Caltrans 2004). Additionally, extremely fragile historic buildings are considered to experience potential damage from vibration at 0.12 in/sec PPV, and modern industrial/commercial buildings are considered to experience potential damage from vibration at 2.0 in/sec PPV (Caltrans 2013).

Construction of the Program would employ conventional activities, and the equipment and techniques used would not cause excessive groundborne vibration; however, pipeline installation could have a maximum range of 0.003 to 0.210 in/sec PPV from use of the vibratory compactor/roller within 25 feet of a sensitive receptor (See Table 3.11-12).

Table 3.11-12: Construction Equipment Related to Groundborne Vibration

Type of Equipment	PPV at 25 feet	PPV at 50 feet	PPV at 100 feet	Level at Which Human Annoyance Could Occur
Large Bulldozer	0.089	0.031	0.011	0.1
Loaded Trucks	0.076	0.027	0.010	0.1
Small Bulldozer	0.003	0.001	0.000	0.1

Type of Equipment	PPV at 25 feet	PPV at 50 feet	PPV at 100 feet	Level at Which Human Annoyance Could Occur
Vibratory Hammer	0.070	0.025	0.009	0.1
Vibratory Compactor/roller	0.210	0.074	0.026	0.1

Note:
PPV = peak particle velocity
Source: FTA 2006

Where construction is required within 25 feet of a sensitive receptor, vibration levels would fall between the barely perceptible range to distinctly perceptible range with the use of a vibratory compactor/roller (see Table 3.11-5 and Table 3.11-12). Although human annoyance could occur in the distinct locations where a vibratory compactor/roller is required within 25 feet of a residence or other sensitive receptor, these construction activities would be intermittent and temporary. However, the likelihood of construction work that could reach a maximum PPV of 0.210 near 25 feet of a sensitive receptor being required would be limited and would more likely include PPV ranges between 0.001 and 0.074 at 50 feet and 0.004 to 0.026 at 100 feet, which would not exceed any potential structure damage threshold or human annoyance threshold. Additionally, due to the linear nature of much of the program construction activities (i.e., pipeline placement), construction activities within any one location would be limited to several days to a week given the rate of placement (200 to 500 feet per day), and it is not anticipated that vibration impacts from construction activities would be significant or would exceed an annoyance thresholds or potential structural damage thresholds. However, because human annoyance thresholds could be exceeded and could thus result in a potentially significant impact, MM NOS-1 would be required and would incorporate noise and vibration reduction measures to limit construction activities to daytime hours, locating fixed construction equipment and staging areas away from sensitive receptors, and installation of construction noise and vibration barriers to block sound transmission near noise-sensitive land uses which would successfully mitigation potential impacts. Additionally, MM NOS-2 would be implemented and would include notification and coordination with noise-sensitive receptors within 500 feet of proposed construction activities. Therefore, impacts related to groundborne vibrations from construction would be considered less than significant with mitigation incorporated.

Operation

Operation of the Program would not result in operational groundborne vibrations impacts because of the absence of sensitive receptors and groundborne vibration-generating activities. Once constructed, the new pipelines would be located underground and would not result in any vibrations that would be perceptible to sensitive receptors. Additionally, operation of the pump stations and WWTRF expansion components would not result in any substantial vibrations. Therefore, there would be no impact.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM NOS-1 and MM NOS-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction and Operation

Similar to the discussion under the Program impacts above, the construction of the new trunk sewer infrastructure would involve the use of conventional construction equipment, which could produce groundborne vibrations within 100 feet of construction activities. Pipeline installation could have a maximum range of 0.003 to 0.210 PPV from use of the vibratory compactor/roller within 25 feet of a sensitive receptor (See Table 3.11-12); however, pipeline installation would more likely include PPV ranges between 0.001 and 0.074 at 50 feet and 0.004 to 0.026 at 100 feet. However, because vibration levels could reach a level where human annoyance could occur, this would result in a potentially significant impact prior to mitigation. To reduce potential impacts from vibration, specifically the use of a vibratory compactor/roller, MM NOS-1 and MM NOS-2 would be implemented. Construction activities would not exceed any potential structure damage threshold or human annoyance threshold due to the distance of vibratory construction activities from sensitive receptors and duration of such construction activities near any one sensitive receptor given the rate of pipeline placement and distance from sensitive receptors. Operationally, the new trunk sewer infrastructure would not result in substantial increases in vibrations from the new upgraded water collection infrastructure. The new pump station associated with the Northern Trunk Sewer would be located in an enclosed structure, and vibrations would not be perceptible outside of the structure. Therefore, impacts associated with groundborne vibrations from construction and operation of the new trunk sewer would be less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM NOS-1 and MM NOS-2

Level of Significance After Mitigation: Less than Significant

Proposed Project: Existing WWTRF Expansion Impacts

Construction and Operation

The expansion of the WWTRF would involve construction activities that could generate vibration levels similar to that described for the Program above; however, there are no sensitive receptors within 500 feet of the WWTRF. Since vibration dissipates to a barely perceptible level after 100 feet (as shown in Table 3.11-12), impacts related to groundborne vibration associated with the expansion of the WWTRF during both construction and operation would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

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Impact NOS-2 Findings

Impact NOS-2 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact NOS-2 Mitigation Measure: MM NOS-2

Impact NOS-2 Overall Level of Significance After Mitigation: Less than Significant

3.11.5 Noise and Vibration Mitigation

Mitigation Measure NOS-1: Noise and Vibration Reduction Measures

The City shall require the construction contractor to implement the following measures, as applicable, during construction of the Program components:

- Construction activities shall aim to meet current City General Plan ambient noise level requirements outlined in Table N-1 of 55 dBA for daytime activities and 45 dBA for nighttime activities community noise exposure compatibility standards shown in Table 3.11-7 where feasible.
- Construction activities shall be limited to between 7:00 a.m. and 6:00 p.m. Monday through Saturday to avoid noise-sensitive hours of the evenings and nights. Construction activities shall be prohibited on Sundays and holidays, except by the contractor obtaining prior approval from the City. Notification of Sunday or holiday construction noise and vibration within 500 feet of a sensitive receptors shall occur, consistent with MM NOS-2.
- Prior to any nighttime construction activities (if required), the construction contractor shall secure any necessary noise waivers form the City and comply with any terms and conditions of the waiver.
- Sensitive receptors (residences, schools, hospitals, etc.) within 500 feet of Project construction activities shall be identified to obtain addresses. Notification of construction noise and vibration within 500 feet of a sensitive receptors shall occur, consistent with MM NOS-2.
- Construction equipment noise shall be minimized by muffling and shielding intakes and exhaust on construction equipment (per the manufacturer's specifications) and by shrouding or shielding impact tools.
- Construction contractors shall locate fixed construction equipment (such as compressors or generators) and construction staging areas as far as possible from nearby sensitive receptors, including residences, schools, and hospitals.
- Construction barriers between noise sources and noise-sensitive land uses shall be used to block sound transmission where prolonged noise levels would exceed City standards.
- If construction were to occur near a school, the construction contractor shall coordinate the most noise- and vibration-producing construction activities with school administration to limit disturbance to the campus.

Mitigation Measure NOS-1 Implementation

Responsible Party: The contractor.

Timing: Throughout all construction activities.

Monitoring and Reporting Program: The contractor shall prepare a monthly noise report that shall be submitted to and kept on file by the City. The monthly noise report shall include when and where construction activities occurred and any notes on compliance with the specifications of this mitigation measure. This noise report shall be submitted in conjunction with MM NOS-2 below.

Standards for Success: Noise and vibration from construction activities does not exceed noise standards identified in the 2030 Merced Vison General Plan or the structural damage and human annoyance thresholds in the Caltrans Transportation and Construction Vibration Guidance Manual. (See Section 3.11.2, Regulatory Framework)

Mitigation Measure NOS-2: Notification and Coordination with Noise Sensitive Receptors

The City shall require the construction contractor to notify landowners and occupants of occupied properties (residences, schools, commercial businesses) within 500 feet of construction areas of the construction schedule, in writing at least two weeks prior to groundbreaking. The construction contractor shall designate a Noise Complaint Coordinator who will be responsible for responding to complaints regarding construction noise. The Coordinator shall ensure that reasonable measures are implemented to correct any problems. A contact telephone number for the Coordinator shall be posted at the construction site and included in the written notification of the construction schedule sent to surrounding properties.

Mitigation Measure NOS-2 Implementation

Responsible Party: The City and chosen contractor.

Timing: Written notice provided to occupied residences, business, and schools within 500 feet of construction activities at least two weeks prior to groundbreaking activities.

Monitoring and Reporting Program: The Contractor shall submit a monthly noise report of any noise complaints to the City. This monthly noise report shall include a write up of any complaints received and the follow up regarding how the complaint was resolved.

Standards for Success: Noise complaints during construction are minimized, and any complaint that is submitted is fully responded to in a timely manner throughout construction activities.

Mitigation Measure NOS-3: Implement Standards for Noise Reduction of Pump Stations

The City shall consider residential and sensitive noise receptors in the pump station site selection process and where feasible, shall site new facilities in nonresidential areas. If pump station siting is required within residential areas (either currently residential or identified as residential within the 2030 Merced Vison General Plan), siting preference shall be given to those sites furthest away from sensitive receptors. All new pump stations shall be enclosed. New and upgraded pump station equipment (such as pumps and intermittently used back-up generators) shall be designed and constructed in accordance with Best Available Technology (BAT) noise attenuation measures. Pump station design shall include a current General Plan consistency analysis to estimate the noise levels of selected equipment at the pump station property boundary and shall include as many of the following noise control measures or BAT necessary to reduce those noise levels to meet the standards identified in the current General Plan. Potential BAT noise reduction measures may include, but are not limited to, the following:

- Subterranean placement of submersible pump equipment;
- Use of acoustical louvers to absorb and reduce noise from motors;
- Placement of acoustical panels on the pump station building walls to absorb noise;
- Placement of noise barriers;

- Use of acoustic lagging or damping materials;
- Use of vibration isolation mounts.

Mitigation Measure NOS-3 Implementation

Responsible Party: The City.

Timing: Noise generation calculations and reduction measures shall be identified and incorporated into project design.

Monitoring and Reporting Program: The City shall document sensitive receptor considerations for new pump station siting and include these considerations as design criteria. The City shall review the modeled noise calculations and prescribed reduction BAT measures for consistency with the City's current General Plan prior to approving pump station design.

Standards for Success: Operational noise shall be reduced below the noise standards identified in the current City General Plan.

3.11.6 Abbreviations

BAT	Best Available Technology
BNSF	Burlington Northern/Santa Fe
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Merced
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	Decibel A-Weighted
EIR	Environmental Impact Report
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
L	sound level
Leq	Equivalent Noise Level
Ldn	Day/Night Noise Level
Lmin	minimum A–weighted noise level
Lmax	maximum A–weighted noise level
MMs	Mitigation Measures
NOP	Notice of Preparation
PPV	Peak Particle Velocity
RCNM	Roadway Construction Noise Model
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence

UPRR	Union Pacific Railroad
VdB	Vibration Decibels
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.11.7 References

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3.12 POPULATION AND HOUSING

3.12.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- 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); or
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to population and housing that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible.

3.12.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives that are related to population and housing and are relevant to the Program.

3.12.2.1 Federal

There are no federal or state laws pertaining to population and housing that are applicable to the Program.

3.12.2.2 Local

Merced Vision 2030 General Plan

The City of Merced's (City's) Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to population and housing, including the following:

Goal Area UE-1: Urban Expansion

- **Policy UE-1.2**. Foster Compact and Efficient Development Patterns to Maintain a Compact Urban Form.
- **Policy UE-1.3.** Control the Annexation, Timing, Density, and Location of New Land Uses Within the City's Urban Expansion Boundaries.
- **Policy UE-1.4**. Continue Joint Planning Efforts on the UC Merced Campus and University Community Plans.

- **Policy UE-1.5**. Promote Annexation of Developed Areas Within the City's Specific Urban Development Plan /Sphere of Influence (SUDP/SOI) During the Planning Period.
- **Policy UE-1.6.** Consider Expansion of the City's SUDP/SOI boundary for Areas within the Area of Interest when Certain Conditions are Met.

3.12.3 Environmental Setting

The Program Study Area is located in the Central Valley of California, approximately 100 miles southeast of Sacramento, 50 miles northwest of Fresno, and 115 miles southeast of San Francisco. According to the United States Census Bureau (USCB) since the City was incorporated in 1889, the population has grown to approximately 83,081 people in 2017 (USCB 2017). The 2030 General Plan includes population estimates and approximate growth projections from 2000 to 2030, which are shown in Table 3.12-1.

Table 3.12-1: Population Estimates and Projections, 2000-2030

	2000	2010	2015	2020	2025	2030
Merced	63,893	80,985	89,400	97,700	106,800	116,800
Merced County	210,554	258,495	307,300	340,800	377,400	417,200

Source: City of Merced 2010

As further stated in the 2030 General Plan, the projected population within the City of Merced SUDP/SOI would be approximately 155,000 by 2030 (City of Merced 2010).

Housing within the City included 27,446 total units in 2010, with 24,899 of those units classified as occupied and 2,547 of those units classified as vacant during the 2010 Census (USCB 2010). Additionally, employment within the City includes a range of industries, including agriculture, education, and construction. Table 3.12-2 shows the breakdown of employment industries and number of workers in each industry.

Table 3.12-2: City of Merced Employment by Industry

Industry	Number of People
Agriculture, Forestry, Fishing, and Hunting, and Mining	1,173
Construction	1,272
Manufacturing	2,387
Wholesale Trade	691
Retail Trade	2,466
Transportation and Warehousing, and Utilities Information	923
Finance. Insurance, Real Estate, and Rental and Leasing	954
Professional, Scientific, Management, Administrative, and Waste Management Services	1,859
Educational, Health, and Social Services	5,624
Arts, Entertainment, Recreation, Accommodation, and Food Services	1,695
Other Services	989

Industry	Number of People
Public Administration	1,323

Source: City of Merced 2010

3.12.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to population and housing. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.12.4.1 Impact Analysis

Impact POP-1 **Potential to 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).**

Impact POP-1 Analysis

Combined Program/Proposed Project Impacts

Construction

Implementation of the Program would not displace existing housing or substantial numbers of people and would not require construction of replacement housing because Program facilities (i.e., pipelines), would mainly be located in existing and future roadways and existing facilities (i.e., the existing WWTRF property), and/or located on land that would accommodate new facilities (i.e., pump stations) so as to not displace existing populations. This would be aimed to serve planned population growth identified within the 2030 General Plan. The Program would not directly induce population growth by constructing new homes or businesses. Construction workers needed for implementation the Program would likely be served by the existing construction workforce within the City (See Table 3.12-2) and would not require construction workers from outside of the area to move into the City. Therefore, direct construction impacts would be less than significant.

Operation

A project would indirectly induce growth if it would remove an obstacle to unplanned growth and development. This could occur through removing a constraint or adding an additional public service. The Program is considered growth accommodating and not growth inducing through the construction and operation of new and expanded wastewater collection infrastructure to accommodate growth projections identified in the 2030 General Plan. Specifically, the 2030 General Plan Draft EIR analyzed a 3 percent growth rate for planning purposes, with additional directly induced growth from the addition of the University Community, Castle Farms Community Plan Areas, and other planning areas to the City's SUDP/SOI (City of Merced 2010). The analysis in the 2030 General Plan EIR concludes that future infrastructure would be required to accommodate this future growth, and because the 2030 General Plan includes policies and standards to regulate future growth that would be allowed under the 2030 General Plan in an orderly and planned manner, the 2030 General Plan would not result in a substantial unexpected population growth. Therefore,

the 2017 Wastewater Collection System Master Plan (WCSMP), and thus the Program, were developed based on these growth projections of the 2030 General Planto allow for long-term planned growth within the City. Therefore, the Program would not induce growth beyond the levels of growth already analyzed and approved in the 2030 General Plan, and there would be a less than significant impact to population growth.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact POP-1 Findings

Impact POP-1 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact POP-1 Mitigation Required: None Required

Impact POP-1 Overall Level of Significance After Mitigation: Less than Significant

Impact POP-2 Potential to displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

Impact POP-2 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

Implementation of the Program would not displace substantial numbers of existing people or housing. No development that would require substantial displacement of people or housing is proposed as part of the Program. To the contrary, the 2017 WCSMP sets forth a plan to accommodate future housing needs within the Program Study Area. Additionally, projected growth identified in the 2030 General Plan is anticipated to occur within infill locations and undeveloped parcels which would accommodate people requiring housing and would not be affected by implementation of the Program. Program components would be constructed and operated occur within these areas to accommodate this projected growth. Implementation of the Program would have no impact on displacement of a substantial number of existing housing units or people.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact POP-2 Findings

Impact POP-2 Overall Level of Significance Prior to Mitigation: No Impact

Impact POP-2 Mitigation Required: None Required

Impact POP-2 Overall Level of Significance After Mitigation: No Impact

3.12.5 Population and Housing Mitigation

No mitigation required.

3.12.6 Abbreviations

CEQA	California Environmental Quality Act
EIR	Environmental Impact Report
MMs	Mitigation Measures
NOP	Notice of Preparation
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
USCB	United States Census Bureau
WCSMP	Wastewater Collection System Master Plan
2030 General Plan	Merced Vision 2030 General Plan

3.12.7 References

City of Merced. 2010. Merced Vision 2030 General Plan Draft Program Environmental Impact Report. https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183. Accessed October 2018.

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3.13 PUBLIC SERVICES AND UTILITIES

3.13.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- 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;
    - Police protection;
    - Schools;
    - Parks; or
    - Other public facilities
- Require or result in the relocation or construction of new or expanded water, wastewater, or stormwater drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.
- Have sufficient water supply available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.
- 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.
- 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.
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to public services and utilities resources that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible and necessary.

3.13.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives that relate to public services and utilities resources and are relevant to the Program.

3.13.2.1 Federal

Clean Water Act

The Federal Water Pollution Control Act (33 United States Code [USC] 1251 et seq.), otherwise known as the Clean Water Act (CWA), sets forth national goals that waters shall be “fishable, swimmable” waters (CWA Section 101 (a)(2)). To enforce the goals of the CWA, the United States Environmental Protection Agency (USEPA) established the National Pollutant Discharge Elimination System (NPDES) program. NPDES is a national program for regulating and administering permits for discharges to receiving waters, including non-point sources. Under Section 1251 (b) of the CWA, Congress and USEPA must recognize and preserve the primary responsibilities and rights of states concerning the reduction of pollution in water resources.

Safe Drinking Water Act (1974)

The Safe Drinking Water Act was established in 1974 to protect the quality of drinking water in the United States. This law focuses on all waters actually or potentially designed for drinking use, whether from aboveground or underground sources.

The state has expanded the federal requirements through passage of an Antidegradation Policy – State Water Board Resolution 68-16 ("Statement of Policy with Respect to Maintaining High Quality Waters in California"). Resolution 68-16 has been approved by the USEPA to be consistent with the federal antidegradation policy.

3.13.2.2 State

Porter Cologne Water Quality Control Act

The State of California established the State Water Resources Control Board (SWRCB), which oversees the nine RWQCBs, through the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Through the enforcement of the Porter Cologne Act, the SWRCB determines the beneficial uses of the waters (surface and groundwater) of the state, establishes narrative and numerical water quality standards, and initiates policies relating to water quality. The SWRCB, and more specifically, the RWQCB, is authorized to prescribe Waste Discharge Requirements (WDRs) for the discharge of waste, which may impact the waters of the state. Furthermore, the development of water quality control plans, or Basin Plans, are required by the Porter-Cologne Act to protect water quality. The SWRCB issues both general construction permits and individual permits under the auspices of the federal NPDES program.

California Integrated Waste Management Act

To minimize the amount of solid waste that must be disposed of by transformation (i.e., recycling) and land disposal, the State Legislature passed the California Integrated Waste Management Act of 1989 (Assembly Bill [AB] 939), effective January 1990. According to AB 939, all cities and counties are required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Solid waste plans are required to explain how each city’s AB 939 plan will be integrated within the respective county’s plan. They must promote (in order of priority) source reduction, recycling and composting, and environmentally safe transformation, and land disposal. Cities and counties that do not meet this mandate are subject to $10,000-per-day fines.

California Constitution, Article X

Article X (10), Section 2, of the California Constitution recognizes the need to put the state's water resources to maximum beneficial use:

> *It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare.*

Uniform Fire Code

The Uniform Fire Code (UFC) contains regulations relating to construction, maintenance, and use of buildings. Topics addressed in the code include fire department access, fire hydrants, automatic storage and use, provisions intended to protect and assist fire responders, industrial processes, and many other general and specialized fire-safety requirements for new and existing buildings and their surrounding premises. The code contains specialized technical regulations related to fire and life safety.

California Health and Safety Code

State fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, include regulations for building standards (as also set forth in the California Building Code [CBC]), fire protection and notification systems, fire protection devices such as extinguishers and smoke alarms, high-rise building and childcare facility standards, and fire suppression training.

Utilities – Protection of Underground Infrastructure

California Government Code Sections 4216-4216.9, "Protection of Underground Infrastructure" requires an excavator to contact a regional notification center (e.g., Underground Services Alert or Dig Alert) at least 2 days prior to excavation of any subsurface installations. Anyone seeking to begin a project that could damage underground infrastructure can call Underground Service Alert, the regional notification center for Northern California. Underground Service Alert will notify the utilities that may have buried lines within 1,000 feet of the Program components. Representatives of the utilities are then notified and are required to mark the specific location of their facilities within the work area prior to the start of Program construction activities in the area.

3.13.2.3 Local

Merced Municipal Code

Section 17.62 (Public Facilities Impact Fees) of the Merced Municipal Code states that, to implement the goals and objectives of the City of Merced's Merced Vision 2030 General Plan (2030 General Plan) and to mitigate the impacts caused by future development in Merced, certain public facilities must be or have been required to be constructed, and/or compensation measures must be or have been required to be taken to offset resources lost due to the future development. The City Council has determined that public facilities impact fees and/or compensation measures are needed to finance these public facilities and to pay for each development's fair share of the construction costs of

these improvements and/or the costs of the compensation measures. In establishing the fees, the City Council has found the fees to be consistent with the 2030 General Plan and pursuant to Government Code Section 65913.2, has considered the effects of the fee with respect to the City of Merced's (City's) housing needs as established in the Housing Element of the 2030 General Plan.

A public facilities impact fee is established on issuance of building permits for development in the City to pay for municipally owned public facilities, including but not limited to fire stations, police stations, community recreation facilities, traffic-related improvements, and bikeways facilities.

Merced Vision 2030 General Plan

The 2030 General Plan, adopted January 3, 2012 (City of Merced 2012), contains several policies that directly or indirectly pertain to public services and utilities, including the following:

Goal Area P-2: Police and Fire Protection Services

- **Policy P-2.1.** Maintain and enhance public protection facilities, equipment, and personnel to the maximum extent feasible within the resource constraints of the City to serve the City's needs.

Goal Area P-3: Water

- **Policy P-3.1.** Ensure that adequate water supply can be provided within the City's service area, concurrent with service expansion and population growth.

Goal Area P-4: Wastewater

- **Policy P-4.1.** Provide adequate wastewater collection, treatment and disposal capacity for existing and projected future needs.
- **Policy P-4.2.** Consider the use of reclaimed water to reduce non-potable water demands whenever practical.

Goal Area P-6: Solid Waste

- **Policy P-6.2.** Minimize the potential impacts of waste collection, transportation, and disposal facilities upon the residents of Merced

Goal Area S-4: Fire Protection

- **Policy P-4.2.** Maintain a reasonable level of accessibility and infrastructure support for fire suppression, disaster, and other emergency services.

City of Merced Urban Water Management Plan

Urban Water Management Plans (UWMPs) are required under the California Water Code to be completed every five years by urban water suppliers within the state. These UWMPs are designed to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. The 2015 UWMP

for the City was completed in November 2017 in conjuncture with other water planning efforts completed such as the City's 2030 General Plan, the Merced Area Groundwater Pool Interests, the Water Master Plan Update, the Merced Groundwater Basin Groundwater Management Plan Update, and the Merced Integrated Regional Water Management Plan (City of Merced 2017).

3.13.3 Environmental Setting

3.13.3.1 Wastewater

Wastewater collection and treatment in the Program Study Area is or is planned to be provided by the City. The wastewater collection system handles wastewater generated by residential, commercial, and industrial uses in the City.

The City's Wastewater Treatment and Reclamation Facility (WWTRF), located in the southwest part of the City about 2 miles south of the Merced Airport, has periodically been expanded and upgraded to meet the needs of the City's growing population and new industry. As discussed in Section 2.0, Project Description, the City's WWTRF has a capacity of 12 million gallons per day (Mgal/d). This Draft EIR for the City's 2017 Wastewater Collection System Master Plan (2017 WCSMP) considers the expansion of the wastewater collection system from current capacity to approximately 35 Mgal/d to accommodate the reasonable build-out identified and analyzed in the 2030 General Plan.

The current treated effluent is disposed of in several ways depending on the time of year. Most of the treated effluent (75 percent average) is discharged to Hartley Slough throughout the year. The remaining treated effluent is delivered to a land application area and the on-site City-owned wetland area south of the treatment plant.

3.13.3.2 Water

The City is the only water purveyor for uses within the City boundaries. The City uses groundwater exclusively, drawing water from 20 wells with a combined capacity of 49,500 gallons per minute (gpm). The active wells are fully operational and used on a regular basis for water supply within the City (City of Merced 2017). Well depths range from 161 to 800 feet, and individual capacities of the operating wells range from 1,000 gpm to 4,000 gpm. The depth of the City's wells suggests that the City is primarily drawing water from the deep aquifer associated with the Mehrten formation, a significant aquifer in terms of water supply. The wells are arrayed in a mile grid system supplying 16-inch mains on a mile grid and 12-inch mains on a one-half mile grid. This strategy for well siting is intended to minimize the potential for local drawdown of groundwater from pumping operations.

Instead of a centralized water treatment plant, water is treated at the wellhead with disinfection and fluoridation systems and distributed through a transmission system with the help of well pumps. The City has a storage capacity of approximately 1.4 million gallons in four elevated storage tanks. These facilities provide average daily demand, meet peak urban level conditions, and provide for adequate flows to end users (City of Merced 2017).

3.13.3.3 Solid Waste

The solid waste disposal for the City is managed by the Merced County Solid Waste Regional Agency. Merced County and its six incorporated cities jointly own and operate two active solid waste landfill facilities, the Highway 59

Landfill serving the eastern end of the County and the Billy Wright Landfill serving the western end of the County. Both of these facilities are permitted to accept municipal solid waste.

The City provides all waste collection and transport services within the City limits, processing approximately 60,000 tons per year. Commercial and industrial solid waste collection services are provided up to six times per week. It is anticipated that the Highway 59 Landfill approximately 2 miles north of the City would accommodate solid waste generated from Program construction activities. Permitted waste types at the Highway 59 Landfill are Class III, nonhazardous solid waste, inert wastes, and nonfriable asbestos. Currently, this landfill has a permitted capacity to accept a maximum of 1,500 tons per day (tpd) of solid waste; however, the landfill is currently under preliminary review for a new permit package to increase the permitted capacity from 1,500 tpd to 3,000 tpd over incremental periods from 2019 to 2035 (CalRecycle 2019). The estimate closure date is 2055 (CalRecycle 2019).

Additionally, the Synagro Central Valley Compost Facility is located approximately 22 miles from the WWTRF and is permitted to accept 355 tpd of materials with a maximum permitted capacity of 149,100 cubic yards per year (CalRecycle 2020).

3.13.3.4 Electrical Services

Two public utility providers provide electrical service to customers within the Program Study Area: the Merced Irrigation District (MID) and Pacific Gas and Electric Company (PG&E). MID, under the authority of the California Water Code, has the authority to operate as an electric utility. During the past 70 years, MID has provided wholesale power to PG&E. Historically, MID has served the general area from the City of Livingston to the City of Atwater. MID has expanded its power delivery area in recent years, and in 2000, it completed the extension of its network to the City of Merced with a series of overhead and underground lines.

PG&E delivers approximately 81,923 million kilowatt-hours (kWh) of electricity to its 13 million customers throughout the 70,000-square-mile service area in Northern and Central California. The Wilson Substation, which is located immediately south of State Route 140 and west of Tower Road, is one of PG&E's substations serving the City. Two parallel transmission lines originate from this substation and extend to the northwest: a 115-kilovolt (kV) line, called the Wilson-Atwater, and a 230-kV line called the Belotta-Harndon.

3.13.3.5 Telecommunications Service

The Program Study Area is located in the service area of AT&T, which would provide telephone communications service to the Program Study Area (i.e., at the WWTRF facility). AT&T provides telecommunications services, including local, long distance, and digital subscriber line to the City.

Cable television services are provided by Comcast, who is in the process of renovating local facilities to offer high speed internet access through the cable system and other products.

3.13.3.6 Schools

The City includes four school districts, the Merced City School District, Merced Union High School District, Weaver Union School District, and the McSwain Union School District, all of which contain a number of individual schools, which are shown on Figure 3.8-1 in Section 3.8, Hazards and Hazardous Materials.

3.13.3.7 Police Protection

Police protection for the Program Study Area is provided by the City of Merced Police Department. There are three separate police districts with three main police stations located at the following locations:

- District 1 – North Station at 1109 Loughborough Drive (serves area north of Bear Creek);
- District 2 – Central Station at 611 West 22nd Street (serves area between Highway 99 to the south and Bear Creek to the north); and
- District 3 – South Station at 470 West 11th Street (serves area south of Highway 99).

The Police Department employs a combination of sworn officers, non-sworn officers, and unpaid volunteers. The service standard is approximately 1.32 sworn officers per 1,000 population. Police stations and patrols are staffed 24 hours a day, seven days a week. Approximately 111 sworn officers are employed at the City of Merced Police Department. Services provided by the Merced Police Department include patrol and crime prevention, special weapons and tactical negotiations, domestic violence, bomb squad services, K-9 units, bicycle patrols, mounted patrols, and identification and fingerprinting services (City of Merced 2010, 2012).

3.13.3.8 Fire Protection

The Program Study Area is within the service area of the Merced Fire Department. There are currently five fire stations located within the City including the following:

- Station 51 at 99 East 16th Street;
- Station 52 at Merced Municipal Airport;
- Station 53 at 800 Loughborough Drive;
- Station 54 at 1425 East 21st Street; and
- Station 55 at the intersection of Parsons Avenue and Silverado.

Fire service personnel are typically assigned on a three-platoon work schedule, which provides the City coverage 24 hours a day, seven days a week. This around the clock coverage is staffed with approximately 54 full-time staff (15 Captains, 18 Engineers, and 21 Firefighters), three Battalion Chiefs, two Division Chiefs, one Chief, and two Secretaries. The Department equipment includes first-line engine companies, ladder companies, reserve engines and ladder trucks, airport emergency vehicles and other miscellaneous vehicles such as rescue boats and trailers. According to the Draft EIR completed for the 2030 General Plan, the City's service protection rating is considered to be well above average (City of Merced 2010).

3.13.3.9 Parks and Recreation

The City has approximately 238 acres of developed parks, which are scattered around the City and include mini parks, neighborhood parks, community parks, school parks, special use areas, urban plazas, athletic parks, and linear parks. Historically, the City has used the standard of having 5 acres of park space for every thousand residents, with supplemental areas such as Lake Yosemite and school grounds that provide additional open space not included in the 5 to 1,000 ratio. In addition to the parks located within the City, there is also an extensive bicycle system, which covers approximately 13 miles and crosses through four creek corridors and numerous City roadways

with expansion planned. Other minor recreational facilities including sports fields, gymnasiums, pool space, and tennis courts are less used by the general public within the City (City of Merced 2010).

3.13.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to public services and utilities. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.13.4.1 Impact Analysis

Impact PUB-1	**Potential to 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;** • **Police protection;** • **Schools;** • **Parks; or** • **Other public facilities**

Impact PUB-1 Analysis
Combined Program/Proposed Project Impacts

Police and Fire Protection

Construction

The Program would not include or require new fire departments or police stations or the expansion of existing fire and police protection facilities. Implementation of the Program would not directly induce population growth in the region that would require expanded fire or police protection facilities. Construction activities would involve a temporary increase in employees. However, employment opportunities associated with the construction of the Program would be assumed to be filled by the local workforce and would not result in an increased housing demand (See Section 3.12, Population and Housing, for more details).

Operation

Operation of the Program would no require new full-time employees to operate; therefore, implementation of the pipelines, pump stations, and associated appurtenances would not require new fire or police facilities to maintain response ratios, service ratios, or other measures of performance. The WWTRF expansion may involve a minimal increase in staff to accommodate future expansion (up to 35 Mgal/d). The number of staff would be minimal (ranging from 2 to 10 additional workers) compared with baseline staff numbers and would not present a substantial increase in workers to the WWTRF facility. Further, operational activities associated with the facilities would not require fire

department or police services. As such, because Program components would not result in the significant permanent increase in residences or populations, no increase in the need for new fire or police protection facilities would occur, and there would be no impact.

In addition to direct impacts related to implementation of the Program, the Program could also result in indirect impacts of new infrastructure allowing for the development of unplanned growth which could place a strain on other public resources. The Program, however, is designed to accommodate growth planned within the 2030 General Plan and evaluated in the 2030 General Plan EIR. Because the growth is planned, it is anticipated that other City services are planned in relation and the proposed Program would not initiate an indirect substantial adverse impact requiring additional public facilities or more fire or police protection services. The analysis in the 2030 General Plan EIR concluded that with compliance with General Plan policies, implementation actions, and with payment of in-lieu fees by developers, impacts related to fire and police protection services would be less than significant under reasonable build-out. Therefore, the Program would not induce growth beyond the levels of growth already planned, analyzed, and approved in the 2030 General Plan, and there would be a less than significant impact to fire and police protection services.

Schools

Construction and Operation

Similar to the police and fire protection discussion above, implementation of the Program would not directly induce population growth in the region. A minimal number (estimated 2 to 5) of new employees would be required to operate Program components, including new pipelines, pump stations, and WWTRF facilities; therefore, there would be very little demand for new housing units that could generate school-age children. No new schools would need to be built in order to maintain acceptable performance objectives. Additionally, as discussed above, because the 2017 WCSMP used growth projections that were discussed and analyzed in the 2030 General Plan, no indirect impacts related to development would result from implementation of the Program. As such, the Program would not require the construction of new schools, and no impacts from school construction would occur.

Parks and Other Public Facilities

Construction and Operation

Similar to the police and fire protection discussion above, implementation of the Program would not include any park, recreation, or other public facilities and would not directly induce population growth in the City's Specific Urban Development Plan/Sphere of Influence (SUDP/SOI). A minimal number (estimated 2 to 5) of new employees would be required to operate new wwtrf facilities; therefore, there would be limited demand for new housing units that could generate the demand for new or expanded recreational or other public facilities. Additionally, as discussed above, because the 2017 WCSMP used growth projections that were discussed and analyzed in the 2030 General Plan, no indirect impacts related to development would result from implementation of the Program. As such, because implementation of the Program would not require the construction of new recreational or other public facilities, no impact would occur.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact PUB-1 Findings

Impact PUB-1 Overall Level of Significance Prior to Mitigation: No Impact

Impact PUB-1 Mitigation Required: None Required

Impact PUB-1 Overall Level of Significance After Mitigation: No Impact

Impact PUB-2 **Potential to require or result in the relocation or construction of new or expanded water, wastewater, or stormwater drainage, electrical power, natural gas, or telecommunications facilities or expansion of existing facilities, the construction or relocation of which could cause significant environmental effects.**

Impact PUB-2 Analysis

Combined Program/Proposed Project Impacts

Construction and Operation

Implementation of the Program would result in the construction and operation of wastewater collection system facilities including pipelines, pump stations, associated appurtenances, and upgrades to the existing WWTRF. These facilities do not involve the construction of new or expanded water, stormwater drainage, electrical power, natural gas, or telecommunications facilities. This EIR analyzes the environmental impacts associated with implementation and operation of the Program in order to accommodate growth projections identified in the 2030 General Plan. As discussed throughout this document, all potential environmental impacts associated with the construction and operation for the Program would be reduced to a less than significant level with mitigation incorporated. Furthermore, any additional energy requirement needed for operation of the Program components, including the new pipelines, pump stations, or the expansion of the WWTRF, would incorporate appropriate energy efficiency standards as identified and analyzed in Section 3.7, Greenhouse Gases and Energy Resources. Therefore, implementation of the Program would result in a less than significant impact to relocation or construction of new or expanded water, wastewater, stormwater drainage, electrical power, natural gas, and telecommunications facilities.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact PUB-2 Findings

Impact PUB-2 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact PUB-2 Mitigation Required: None Required

Impact PUB-2 Overall Level of Significance After Mitigation: Less than Significant

Impact PUB-3 Potential to have sufficient water supply to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

Impact PUB-3 Analysis

Combined Program/Proposed Project Impacts

Construction

Construction of the Program, including the pipelines, pump stations, and WWTRF expansion components, and associated appurtenances would require water for dust control, clean-up, soil compaction, and testing of the system. The water demand during construction would be served by the City's existing municipal water supply, which consists of 20 active wells that collectively produce over an average of 49,500 gpm (City of Merced 2017). The average water truck can hold 2,000 to 4,000 gallons of water, which would be used daily during earth-moving activities, and approximately 2,000 gallons of water would be required per acre of disturbed soil for fugitive dust control. The existing supply would have sufficient capacity to serve the Program components throughout construction activities. Therefore, the Program would have sufficient water supply to serve the projected and reasonably foreseeable future development during normal, dry, and multiple dry years and therefore would result in a less than significant impact.

Operation

Operation of the Program would not require additional water supplies. Similar to the discussion above indirect impacts of the Program providing new growth-accommodating infrastructure could result in significant impacts to water supplies if that growth were unplanned. The new, unplanned growth could indirectly result in the new homes and thus increase the demand for water supplies and infrastructure beyond what was planned. However, as mentioned previously, the Program is designed to accommodate the planned growth set forth in the 2030 General Plan and that growth was analyzed in the 2030 General Plan EIR. The analysis in the 2030 General Plan EIR evaluated water supply impacts and the need for water supplies to meet reasonable build-out. Because the 2017 WCSMP, and thus the Program, were developed to accommodate the planned growth set worth in the 2030 General Plan the Program would not induce indirect impacts related to water supplies. Therefore, the Program would not induce growth beyond the levels of growth already analyzed and approved in the 2030 General Plan, and there would be a less than significant impact to water supplies. Therefore, there would be no operational impacts from the Program to water supplies.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact PUB-3 Findings

Impact PUB-3 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact PUB-3 Mitigation Required: None Required

Impact PUB-2 Overall Level of Significance After Mitigation: Less than Significant

Impact PUB-4 Potential to 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.

Impact PUB-4 Analysis

Combined Program/Proposed Project Impacts

Construction

Construction activities associated with the Program could potentially cause a temporary increase in wastewater generation from dewatering activities (e.g. if groundwater is encountered during excavations or trenching activities and requires discharge) and for hydraulic testing that would be required of the new and upgraded pipelines. The wastewater generated from dewatering activities would be tested and treated, if necessary, and may be used for other construction activities, such as dust control. Wastewater generated by any hydraulic testing would be transported to the WWTRF once testing is complete. The wastewater generation would be temporary and would not place a demand on the WWTRF service capacity beyond what has been currently permitted. Therefore, the impact from construction activities would be less than significant.

Operation

The Program aims to meet reasonable build-out of the City's SUDP/SOI as identified in the 2030 General Plan. Current capacity of the WWTRF would be expanded from 12 Mgal/d to 35 Mgal/d in order to accommodate reasonable growth identified, planned, and analyzed in the 2030 General Plan. As such, environmental impacts associated with the implementation of the Program are discussed throughout this EIR and are either considered less than significant or include mitigation to reduce any potential impacts to a less than significant level. The Program would not result in inadequate capacity to serve the projected demand in addition to existing commitments and therefore the impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact PUB-4 Findings

Impact PUB-4 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact PUB-4 Mitigation Required: None Required

Impact PUB-4 Overall Level of Significance After Mitigation: Less than Significant

Impact PUB-5 Potential to generate 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.

Impact PUB-5 Analysis
Combined Program/Proposed Project Impacts

Construction

Construction activities associated with implementation of the Program would result in a temporary increase in solid waste, such as pavement removal, excess or unsuitable spoils, excess concrete, and excess excavated materials. This waste would be accumulated over the duration of the construction of the Program components, including for the new pump stations, pipelines, and WWTRF expansion activities, and would periodically be hauled offsite, thus not impacting the landfill all at once. Based on the remaining capacity, it is expected that the Highway 59 Landfill would have sufficient capacity to receive solid waste generated during construction of the Program. Some Program components are anticipated to be completed as needed to accommodate reasonable build-out, which based on recent estimates would be approximately 2045. The Highway 59 Landfill has capacity to receive solid waste through 2055, which should accommodate waste generated by these components over time. Additionally, excavated materials during pipeline placement would be stockpiled and reused onsite to backfill the trench. This would limit the amount of excavated materials hauled offsite from construction activities. Therefore, construction impacts from the Program components related to the generation of waste in excess of state or local standards or in excess of local infrastructure capacity would be less than significant.

Operation

Operation of the Program would largely involve the storage, transport, and treatment of wastewater, and thus would not generate solid waste during operation. The increase in biosolids generated at the WWTRF is discussed in further detail under the WWTRF heading below. Therefore, the impact would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

As discussed in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, the expansion of the WWTRF would involve an increase in biosolid generation from the current 14,800 pounds per day (lbs/day) at 12 Mgal/d to 43,050 lbs/day at the reasonable build-out of the facility to 35 Mgal/d. This is almost a tripling of biosolids production; however, as stated in Section 2.3.2.3, Existing Wastewater Treatment and Reclamation Facility Projects, biosolids generated at the WWTRF are currently applied to 580 acres of City-owned agricultural areas south of the WWTRF. It is anticipated that biosolids would continue to be land-applied to the agricultural areas onsite. However, there are any number of factors that could warant transport of biosolids to offsite locations. In the event biosolids require disposal other than direct land application they could be hauled to the Synagro Central Valley Compost Facility (located approximately 22 miles from the WWTRF), which has both the capacity and permitted waste classification to accept such materials (CalRecycle 2020). Therefore, operational impacts associated with the WWTRF expansion would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact PUB-5 Findings

Impact PUB-5 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact PUB-5 Mitigation Required: None Required

Impact PUB-5 Overall Level of Significance After Mitigation: Less than Significant

Impact PUB-6 Potential to comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Impact PUB-6 Analysis

Combined Program/Proposed Project Impacts

Construction

The City is currently in compliance with the State of California's 50 percent waste diversion goal, and implementation of the Program would comply with this goal. Construction of the Program components would generate debris, including pavement removal, excess or unsuitable spoils, excess concrete, and excess excavated materials. As discussed under Impact PUB-5, some of the excavated material during trenching and pipeline placement would be used as backfill, which would reduce waste generation at the Highway 59 Landfill location. The Program construction activities would be in compliance with both state and local regulations regarding waste from construction. Construction waste is expected to be limited and temporary in nature and would not conflict with any of the applicable goals and regulations. Therefore, the impact would be considered less than significant.

Operation

Operation of the Program would only generate waste at the existing WWTRF through the increase in biosolid production from the increase in treatment capacity of the WWTRF. As discussed in Impact PUB-5, the majority of these biosolids would be land applied to the agricultural areas south of the WWTRF. Any application of these solids at different City owned property would comply with the Merced County biosolids disposal ordinance and 40 Code of Federal Regulations (CFR) Part 503. If City lands are not able to accommodate land application, biosolids may also be transported offsite to the Synagro Central Valley Compost Facility (located approximately 22 miles from the WWTRF), which has both the capacity and permitted waste classification to accept such materials (CalRecycle 2020). Therefore, operational impacts associated with implementation of the Program and compliance with federal, state, and local management and reduction for solid waste would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact PUB-6 Findings

Impact PUB-6 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact PUB-6 Mitigation Required: None Required

Impact PUB-6 Overall Level of Significance After Mitigation: Less than Significant

3.13.5 Public Service and Utilities Mitigation

No mitigation required.

3.13.6 Abbreviations

CBC	California Building Code
CEQA	California Environmental Quality Act
City	City of Merced
CWA	Clean Water Act
EIR	Environmental Impact Report
GPM	Gallons Per Minute
kV	Kilovolt
kWh	Kilowatt-Hours
Mgal/d	Million Gallons Per Day
MID	Merced Irrigation District
MMs	Mitigation Measures
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
PG&E	Pacific Gas and Electric Company
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWRCB	State Water Resources Control Board
TPD	Tons Per Day
WDRs	Waste Discharge Requirements
UFC	Uniform Fire Code
USC	United States Code
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
2017 WCSMP	Wastewater Collection System Master Plan
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.13.7 References

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3.14 RECREATION

3.14.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- 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; or include recreational facilities or require the construction or expansion of recreational facilities which might have adverse physical effect on the environment.

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to recreation that may result from implementation of the Program and identifies mitigation for significant impacts, where feasible.

3.14.2 Regulatory Framework

This section discusses the federal, state regulations and local policies and objectives that related to recreation and are relevant to the Program.

3.14.2.1 Federal

There are no Federal regulations that apply to the Program pertaining to recreation and recreational facilities.

3.14.2.2 State

California Government Code Section 65560(b)

California Government Code section 65560(b) defines "open space land" as any parcel or area of land or water that is unimproved and devoted to an open space use. State law requires that the local general plans include an Open Space element to promote the retention of open space for recreational purposes.

3.14.2.3 Local

The City of Merced Parks and Open Space Master Plan

The City of Merced (City) Parks and Open Space Master Plan is a long-range planning guide for parks and recreation services within the City (City of Merced 2004). This plan contains an assessment of park, open space, and facility needs within the City, as well as recommendations and policies related to acquisition and development and improvements to existing and future park sites. Through the planning efforts completed in this plan and the 2030 population projections of 116,800 people identified in the 2030 General Plan, the City has identified the need to expand the existing park system.

Merced Vision 2030 General Plan

The City of Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to recreation, including the following:

Goal Area OS-4: Open Space for Public Health and Safety

- **Policy OS-4.1.** Preserve open space areas which are necessary to maintaining public health and safety.

3.14.3 Environmental Setting

The Program Study Area includes approximately 238 aces of developed parks which are scattered around the City and surrounding areas. These developed areas include mini parks, neighborhood parks, community parks, school parks, special use areas, urban plazas, athletic parks, and linear parks. Historically, the City has used the standard of having five acres of park space for every thousand residents, with supplemental areas such as Lake Yosemite and school grounds which provide additional open space not included in the 5 to 1,000 ratio. In addition to the parks located within the Program Study Area, there is also an extensive bicycle system which covers approximately 13 miles and crosses through four creek corridors and numerous City roadways with plans for expansion. Other recreational facilities including sports fields, gymnasiums, pool space, and tennis courts are less used by the general public within the City (City of Merced 2010).

3.14.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to recreation resources. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.14.4.1 Impact Analysis

Impact REC-1	**Potential to 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; or include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.**

Impact REC-1 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

Implementation of the Program would allow the City to address existing system deficiencies such as replacement of aging infrastructure, provide new infrastructure to meet the growth projections identified in the 2030 General Plan (i.e. pipelines and pump stations), and expand the existing WWTRF to meet these increased flows. Because the 2017 Wastewater Collection System Master Plan (2017 WCSMP) would be designed to meet these designated growth projections, no indirect effect would occur from the increased sewer capacity that could induce growth beyond these

projections. As identified within the 2030 General Plan, the City's plan to accommodate growth is consistent with that that described in the 2017 WCSMP and the City would continue to implement its policies and ratios governing development and park facilities. Specifically, Section 3.13, Recreation, of the 2030 General Plan EIR concludes that with implementation of 2030 General Plan policies, implementation actions, and with adherence to the guidelines and standards in the City's Park and Open Space Master Plan, as well as with payment of development fees, impacts related to service ratios for parks would be less than significant under reasonable build-out. Compliance with this stipulation in the 2030 General Plan would ensure that future development within the Program Study Area would not create a need for construction or expansion of recreational facilities beyond what was anticipated in the 2030 General Plan. Therefore, because the 2017 WCSMP used the growth projections in the 2030 General Plan as a basis for reasonable build-out assumptions, the Program itself would not result in additional growth beyond what was previously analyzed, and no additional recreation facilities would be required. Additionally, the construction and operation of the Program would not directly or indirectly increase use of or require expansion recreational facilities due to the underground and infrastructure related nature of wastewater systems. Therefore, substantial deterioration of existing parks or other recreational facilities would not occur nor would the expansion or new construction of parks be required as result of the Program activities.

Level of Significance Prior to Mitigation: No Impact

Mitigation Required: None Required

Level of Significance After Mitigation: No Impact

Impact REC-1 Findings

Impact REC-1 Overall Level of Significance Prior to Mitigation: No Impact

Impact REC-1 Mitigation Required: None Required

Impact REC-1 Overall Level of Significance After Mitigation: No Impact

3.14.5 Recreation Mitigation

No mitigation required.

3.14.6 Abbreviations

CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental impact Report
MMs	Mitigation Measures
NOP	Notice of Preparation
WCSMP	Wastewater Collection System Master Plan
2030 General Plan	Merced Vision 2030 General Plan

3.14.7 References

California State Parks. 2005. https://www.parks.ca.gov/pages/795/files/recpolicy.pdf. Accessed September 25, 2017.

City of Merced. 2010. Merced Vision 2030 General Plan Draft Program Environmental Impact Report. https://www.cityofmerced.org/civicax/filebank/blobdload.aspx?BlobID=9183. Accessed June 2018.

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3.15 TRANSPORTATION

3.15.1 Basis for Analysis

The California Environmental Quality Act (CEQA) Guidelines' Appendix G Environmental Checklist was used during the Notice of Preparation (NOP) scoping process (included in Appendix A) to identify the Program components that have the potential to cause a significant impact. The following potential impacts were determined to warrant further evaluation within this Environmental Impact Report (EIR):

- Conflict with a program, plan, ordinance, or policy addressing the circulation systems, including transit, roadway, bicycle and pedestrian facilities
- Conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersection(s) or incompatible uses (e.g. farm equipment))
- Result in inadequate emergency access

The remainder of this section describes the regulatory and environmental setting to support the evaluation of the potential impacts and describes the potential impacts to transportation that may result from implementation of the Program, identifying mitigation for potentially significant impacts, where feasible and necessary.

3.15.2 Regulatory Framework

This section discusses the federal and state regulations and local policies and objectives that related to transportation and traffic and are relevant to the Program.

3.15.2.1 Federal

There are no federal plans, policies, regulations, or laws that are related to transportation and traffic and are relevant to the Program.

3.15.2.2 State

California Department of Transportation

The California Department of Transportation (Caltrans) manages interregional transportation, including the management and construction of the California highway system. In addition, Caltrans is responsible for the permitting and regulation of state roadways. State facilities likely to be used as regional access routes by construction traffic associated with the Program include State Routes (SRs) 99, 59, and 140. Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbance.

Updated CEQA Guidelines and Transportation Impact Evaluations

In December 2018, the California Natural Resources Agency certified and adopted the CEQA Guidelines update package, including the Guidelines section implementing Senate Bill (SB) 743. CEQA Guidelines Section 15064.3 states, “This section describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, vehicle miles traveled (VMT) refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) (regarding roadway capacity), a project's effect on automobile delay shall not constitute a significant environmental impact.” Section 15064.3(b) sets forth criteria for determining the significance of transportation impacts stating the following:

1. Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

2. Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

3. Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

4. Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

From these updated CEQA Guidelines, the Office of Planning and Research (OPR) developed a Technical Advisory on Evaluating Transportation Impacts in CEQA, which contains OPR’s technical recommendations regarding assessment of VMT, thresholds of significance, and mitigation measures (OPR 2018). This Technical Advisory includes a screening threshold of small projects, which states that, “projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact” (OPR 2018).

3.15.2.3 Local

Merced Vision 2030 General Plan

The City of Merced (City) Merced Vision 2030 General Plan (2030 General Plan), adopted January 3, 2012 (City of Merced 2012) contains several policies that directly or indirectly pertain to transportation and traffic, including the following:

Goal Area T-1: Streets and Roads

- **Policy T-1.4.** Promote traffic safety for all modes of transportation.
- **Policy T-1.8.** Use a minimum peak hour Level of Service (LOS) "D" as design objectives for all new streets in new growth areas and for most existing City street except under special circumstances.

City of Merced Municipal Code

Section 17.58.010 (Road Construction Application and Plans) of the City of Merced Municipal Code has the following provisions related to construction within roadways:

A. Whenever a person is required to construct or reconstruct road improvements that have been or will be dedicated to the City, he or she shall first make application to the City engineer for a road construction permit, and submit to the City engineer for approval, construction plans and such specifications and other details as required to describe fully the proposed road construction. The plans shall have been prepared under the supervision of and shall be signed by a qualified engineer registered in the state.

B. Construction plans for the road improvements shall conform to the latest adopted edition of the City's "Standard Designs of Common Engineering Structures Manual", and unless otherwise specified in the ordinance, developed permit, map approval or other entitlement requiring the improvements, shall include the full road width, including curb and gutter.

Section 10.40 (Truck Routes) includes the following designated truck routes through the City:

A. West 13th Street from G Street to V Street;

B. West Highway 140 (Mc Swain Road) from its intersection with V Street to the westerly city limits;

C. West 16th Street from the westerly city limits to G Street;

D. East 16th Street from G Street to Yosemite Parkway;

E. Yosemite Parkway from its intersection with East 16th Street to the easterly city limits;

F. G Street from the northerly city limits to 13th Street;

G. Martin Luther King, Jr. Way from West 16th Street to Childs Avenue;

H. V Street from West 16th Street to West Avenue;

I. Childs Avenue from westerly city limit to Highway 99;

J. West Olive Avenue from Highway 59 to the easterly city limits;

K. Kibby Road from Yosemite Parkway to Childs Avenue;

L. Parsons Avenue from Yosemite Parkway to Childs Avenue;

M. West Avenue from V Street to Childs Avenue;

N. Highway 59 (Snelling Road) from 16th Street to northerly city limits; and

O. M Street from West 16th Street to Olive Avenue.

City of Merced 2013 Bicycle Transportation Plan

The purpose of the City of Merced 2013 Bicycle Transportation Plan is to provide City staff and the local community with a comprehensive, long-range view for the development of bicycle facilities and programs within the City (City of Merced 2013). Implementation of this plan will result in a comprehensive, continuous, and well-maintained bikeway network, which will maximize bicycling benefits. Due to the increase in bicycle use from the University of California, Merced (UC Merced) campus and increases in local groups that are engaged in healthy living initiatives, the City has been focusing on developing a more bicycle-friendly community.

City of Merced Neighborhood Traffic Calming Guidelines

The City of Merced Neighborhood Traffic Calming Guidelines were created to reduce traffic within the problematic streets of the City. The relevant policies within these Guidelines that pertain to the Project are listed below (City of Merced 2008):

- To the extent feasible, through traffic should be routed to Arterial Streets, Regional Routes and Highways, and away from neighborhood streets; and
- Access for emergency vehicles should be preserved at levels that meet City response standards.

Merced County Association of Governments Regional Transportation Plan/Sustainable Communities Strategy

On August 16, 2018, the Merced County Association of Governments (MCAG) adopted the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) for the Merced region (MCAG 2018). The RTP is a long-range planning document that provides the framework for investments in roads, freeways, public transit, bikeways, and other ways that people move around the County. The RTP/SCS includes regional goals and priorities to ensure transportation system efficiency over the next 25 years.

Goals within this document that are applicable to the Program include the following:

1. **Highways, Streets, and Roads:** Provides a safe and efficient regional road system that accommodates the demand for movement of people and goods.

2. **Transit:** Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including transportation for disadvantaged persons.

6. **Active Transportation (Bicycle & Pedestrian):** A regional transportation system for bicyclists and pedestrians. Create a safe, connected, and integrated regional transportation system for bicyclists and pedestrians.

7. **Energy:** Reduce usage of nonrenewable energy resources for transportation purposes.

8. **Air Quality:** Achieve air quality standards set by the United States Environmental Protection Agency (USEPA), and the State Air Resources Board.

14. **Reliability and Congestion:** Achieve a significant reduction in congestion on the National Highway System. Improve the efficiency and reliability of the surface transportation system.

15. **Safety for all Roadway Users:** Achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

16. **System Preservation:** Maintain the existing transportation system in a state of good repair.

3.15.3 Environmental Setting

The transportation system within the Program Study Area is a combination of roadways, bike paths, and a complex public transportation system. Each of element of this transportation system is described in further detail below:

3.15.3.1 Roadways

Currently, three major highways provide regional access to and through the Proposed Study Area include the following:

- SR 99: SR 99 is the primary regional highway in the Merced area. SR 99 provides access north to Sacramento and south to Fresno and Bakersfield. Through Merced, SR 99 is a four- to six-lane freeway, with an average traffic volume in the range of 35,000 to 40,000 vehicles per day. SR 99 is also a major freight corridor, with trucks making up 21 percent of the total traffic of this thoroughfare.

- SR 59: SR 59 is a highway that that extends from SR 152, south to Snelling, a community located north of the City. SR 59 is a two-lane rural highway through Merced, serving between 14,000 and 16,000 vehicles per day. SR 59 is located about 3.5 miles east of the Wastewater Treatment and Reclamation Facility (WWTRF). SR 59 is a significant interregional route of statewide importance and carries most of the truck-transported agricultural goods produced in or transported through the Merced area.

- SR 140: SR 140 is a two-lane, east-west conventional highway providing regional access to Yosemite National Park to the east and extending west past SR 99 and Interstate 5.

Additional important roadways within the City and Program Study Area include G Street and Santa Fe Drive, which have more limited roles in terms of regional access as they connect the City of Merced with the nearby communities of Snelling and Atwater. The City has a well-established local roadway consisting of a 1-mile grid system of major north-south roadways including SR 59, R Street, G Street, and Parsons/Gardner Avenue, as well as major east-west roadways including Olive Avenue, Yosemite Avenue, W Cardella Road, E Cardella Road, and Bellevue Road.

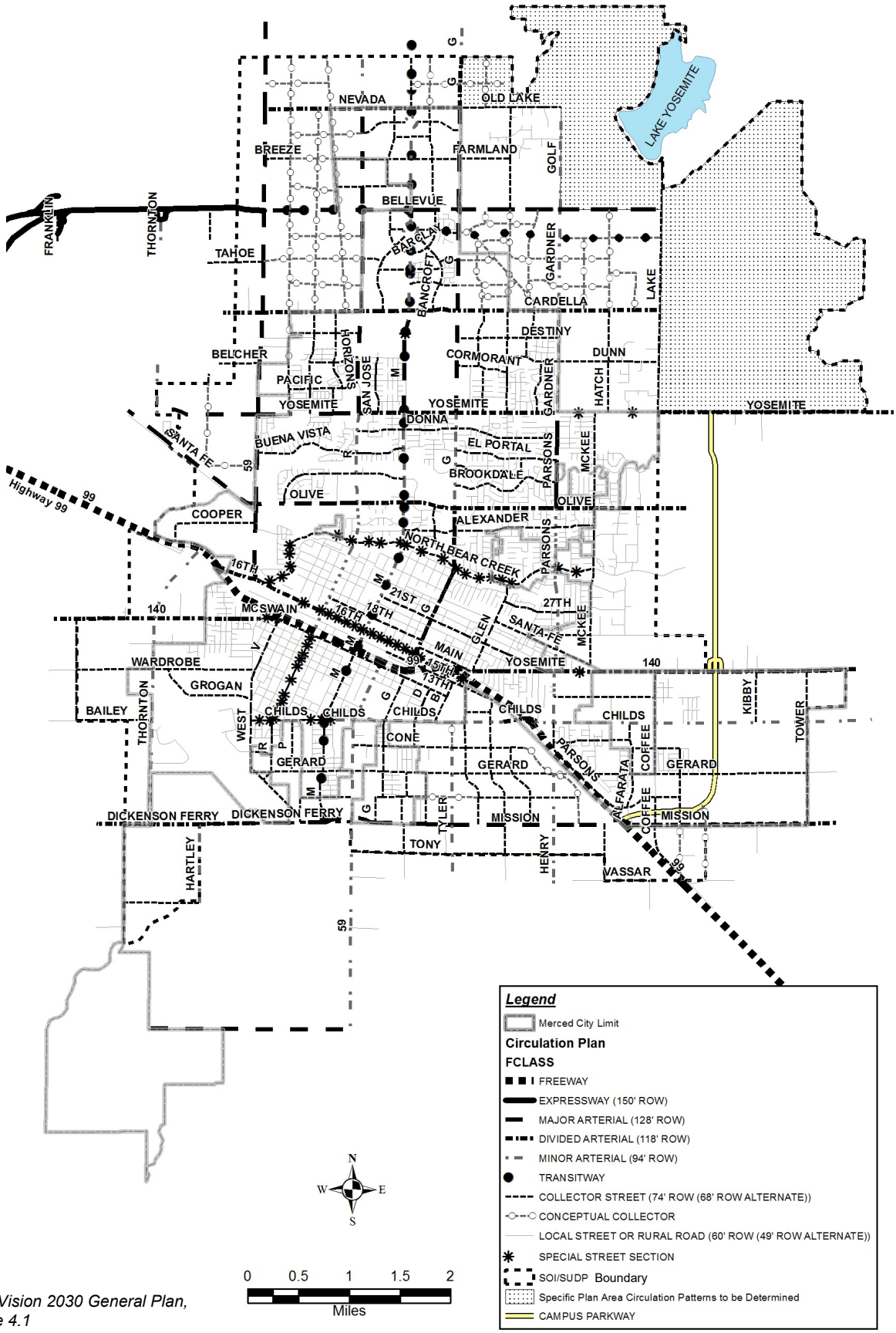
According to the 2030 General Plan, this existing system will be expanded to accommodate future growth, particularly in the northern areas of the City and the Program Study Area.

The LOS thresholds for roadway segments within the Program Study Area are included in Table 3.15-1, and Figure 3.15-1 shows the exiting circulation plan for the City.

Table 3.15-1: Level of Service Thresholds for Roadway Segments

Type of Roadway	Number of Lanes	ADT Level-of-Service Capacity Thresholds				
		A	B	C	D	E
Lane Freeway	4	25,900	42,600	57,800	68,400	76,00
	6	40,000	65,800	89,200	105,600	117,400
	8	54,000	89,000	120,600	142,800	158,800
	10	68,000	112,000	152,200	180,200	200,200
Lane Expressway	2	-	-	16,800	23,200	24,400
	4	-	3,000	27,800	36,000	37,800
	6	-	5,900	38,900	48,900	51,300
	8	-	9,600	60,600	73,500	77,100
Lane Highway	2	2,300	7,600	14,200	20,000	27,400
	4	20,500	33,200	48,000	62,200	70,600
Lane County Road	2	-	-	7,700	15,000	16,100
	4	-	-	18,000	32,200	34,000
Lane Arterial	2	-	-	11,600	16,000	16,800
	4	-	4,100	26,800	33,700	35,400
	6	-	6,600	41,800	50,700	53,200
Lane Collector	2	-	-	4,800	10,300	13,200
	4	-	-	11,300	22,200	26,400

Note:
ADT = average daily traffic
Source: (City of Merced 2012)



Source:
Existing Merced Vision 2030 General Plan, Chapter 4, Figure 4.1

V:\1840\active\184030360 - City of Merced Master Plan\Drawing\graphics\oct_2016\merc_eir_circulation_plan.ai mlm 7-10-2020

Stantec

Figure 3.15-1
Existing Merced Vision 2030 General Plan Circulation Plan
City of Merced - Draft Environmental Impact Report

3.15.3.2 Bicycle and Pedestrian System

Bicycle and pedestrian activity within the City's Specific Urban Development Plan (SUDP)/Sphere of Influence (SOI) is considered by the 2030 General Plan as an important mode of travel due to favorable climate and ease of terrain (i.e., relatively flat) within the area. The City SUDP/SOI currently has a number of Class I off-road bicycle/pedestrian trail systems, with a majority of these trails located along existing waterways (i.e., Bear, Black Rascal, Cottonwood, and Fahrens Creeks). This existing system is planned for expansion with the Merced 2013 Bicycle Transportation Plan to form one complete loop along Bear and Black Rascal Creeks between McKee Road and SR 59. A large sub-route is also planned along Fahrens Creek, to Lake Yosemite and down Lake Road to Black Rascal Creek. Regional access to the UC Merced campus is also planned (City of Merced 2012). In the vicinity of the Northern and Southern Trunk Sewer Projects there is a Class I bike path on Lake Road, a Class II bike lane on Yosemite Avenue, Cardella Road, and G street, and a Class III bike route on Childs Avenue (City of Merced 2013).

Other Transit

Other public, commercial, and private transit systems include public transit (i.e. busses, shuttles, taxis), railway services (i.e., the Union Pacific Railroad [UPRR] and the Burlington Northern/Santa Fe [BNSF]), and air services (i.e., the Merced Regional Airport and Castle Airport). Public transit services are available throughout the City and Program Study Area to varying degrees. Railway and air services are not applicable to the analysis below and therefore are not discussed further.

The Merced Transit System (MTS)/City Shuttle provides services with "The Bus" which provides both local and inter-regional access. The Bus operates on 16 fixed routes as well as demand responsive services during the weekdays and on Saturday (Transit Joint Powers Authority 2019). These routes are located throughout the City, with the majority of the routes located toward the center portion of the City. Several routes are located within roadways that would be utilized for the placement of the Northern and Southern Trunk Sewer Projects. These routes include:

- The Merced - UC route which runs along Yosemite Avenue, Lake Road, and G Street.
- The Merced - M3 route which runs along G street
- The Merced – M3, M4, M5 routes all which run along Childs Avenue

The Bus also connects with the UC Merced student shuttle service, known as "Cat Tracks". Additional public and private transit services, such as Dial-A-Ride, public taxis, and Amtrak are also utilized within the City.

3.15.4 Environmental Impacts

This section analyzes the Program's potential to result in significant impacts to transportation and traffic. When a potential impact was determined to be potentially significant, feasible mitigation measures (MMs) were identified to reduce or avoid that impact.

3.15.4.1 Impact Analysis

Impact TRA-1	**Potential to conflict with a program, plan, ordinance, or policy, addressing the circulation systems, including transit, roadway, bicycle and pedestrian facilities.**

Impact TRA-1 Analysis
Program/Proposed Project Impacts

Construction and Operation

Construction and operation of the Program and Proposed Projects could potentially conflict with the programs, plans, ordinances, or policies described in Section 3.25.2, Regulatory Framework during activities that would interfere with the existing or planned circulation system. These activities result from vehicle trips associated with construction or operation or road closures associated with construction.

Construction of the Program would require vehicle trips associated with both construction worker commutes, material hauling, and equipment transport to and from the sites throughout construction. For the Program construction, these trips would be intermittent and localized to individual project areas; however, the increase in trips per day on local and regional roadways has a limited potential to affect circulation systems by requiring temporary single or double lane road closures, introducing slower movements, and larger turning radii of construction trucks. The number and type of material, equipment, and worker vehicles required for construction of the Program would be dispersed over the long-term planning horizon of reasonable build-out of the 2030 General Plan and would not introduce a significant number of trips to the extent they would conflict with the programs, plans, ordinances, or policies listed in Section 3.15.2, Regulatory Framework. Trips associated with construction of individual projects under the Program are anticipated to be similar or less than those estimated for the proposed Projects (See Chapter 2.0, Project Description, Section 2.4.3, Construction Equipment and Workers, and Appendix B.1). For the proposed Projects, trips would be to places along the Northern Trunk Sewer and Southern Trunk Sewer alignments and to the WWTRF in existing the existing roadways.

Worker trips from construction workers would affect roadways during commute times but would be inconsequential with an addition of on average 10 to 30 workers (with a few short duration concentrated peaks of an approximate maximum of 50 workers) at a particular project site with sites dispersed to different parts of the Program Study Area (if construction happened to be concurrent). Worker trips from operations would be nominal with the potential to add approximately two new workers at the WWTRF on a given day. Truck trips from equipment delivery would be sporadic and focused construction around start-up and completion of individual Projects. Delivery trips would be limited to delivery of the construction equipment assumed necessary and is assumed the proposed Projects would require the maximum number of trips with smaller subsequent projects requiring less equipment. Haul trips associated with construction would be limited and largely associated with construction of pump stations the WWTRF and to a lesser degree possibly pipelines and would occur during the excavation and or building phase utilizing local roadways. During peak excavation or concrete pouring periods, haul trips may generate upwards of 80 trips per day for a very limited periods of time. Haul trips associated with operations are assumed to be approximately two per day and would not substantially impair circulation operation. These additions of construction traffic could temporarily conflict with the programs, plans, ordinances, or policies set forth in the planning documents in Section 3.15.2, Regulatory Framework, by conflicting with service level ratios, increasing wait times for public vehicles, and limiting

pedestrian and bicycle access along these roadways, potentially creating a significant impact prior to mitigation. As such, MM TRA-1, Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan, would be required to ensure that consistency with programs, plans, ordinances, and policies is maintained, and existing traffic conditions are maintained by outlining a plan to reduce construction conflicts through traffic controls, notice, AM and PM peak timing, and coordination by understanding existing traffic data. Therefore, with implementation of MM TRA-1, impacts from construction and operational vehicle trips would be less than significant.

Additionally, construction of the Program facilities could temporarily impact circulation systems; however, the effect of the Program would vary depending on the Program facility type (i.e., whether it's a pump station, pipeline, maintenance, or activities at the WWTRF). Potential impacts would range from intermittent ingress and egress from and to local roadways causing circulation facility impairments to temporary road closures for pipeline construction. The existing roadways are predominantly two-lane rural roads. The roads in north Merced near the UC have bicycle and transit use and facilities with the remainder of the Project areas and the Program Study Area outside the City limits having no developed or devoted bicycle or transit routes (See Section 3.15.3, Environmental Setting). The majority of future Program collector infrastructure is proposed for future roadways and is anticipated to be timed to be constructed prior to installation of the roadways themselves, thus limiting potential road closures and transportation impacts associated with physical construction. Temporary partial or full road closures are anticipated as a part of trunk sewer infrastructure construction along the in-roadway sections of the proposed Northern Trunk Sewer and Southern Trunk Sewer, as well as for future projects under the Program. Impacts from the Northern and Southern Trunk Sewer Projects would mainly occur within Thornton Road and W Dickenson's Ferry Road/Mission Avenue ROWs. These road closures could affect the existing circulation system within the City by obstructing vehicles, pedestrians, and bicycles and preventing adequate access to certain areas along the pipeline alignment. These potential conflicts, while anticipated to be temporary and limited in duration, pose the potential to conflict with the City's plans, ordinances and polices set forth in Section 3.15.2, Regulatory Framework, surrounding safety, access, and circulation. This would be a potentially significant impact. Therefore, in addition to MM TRA-1 planning out detours, traffic controls, and plans to reduce impacts to the circulation system, MM TRA-2 would also be implemented to ensure that the public and emergency service agencies are properly notified of these road closures and access is properly coordinated and maintained for residents, recreationalists, and emergency services, as needed and ensure consistency with the applicable plans, policies, ordinances, and programs. Construction-related transportation impacts for the Program would be less than significant with MM TRA-1 and MM TRA-2 incorporated.

The programs, plans, ordinances, or policies listed in Section 3.15.2, Regulatory Framework were reviewed for potential inconsistencies or incompatibilities with Program activities and all Program construction and operational activities were found to be compatible and result in a less than significant impact (with mitigation where noted). The Program impacts described in the previous paragraphs considered consistency with the following programs, plans, ordinances, or policies:

- **Caltrans Encroachment permit** – **Consistent**. A Caltrans encroachment permit would be obtained for all work within state ROWs.
- **Caltrans oversized loads and hazardous materials -- Consistent**. Transport of construction and operational materials would meet Caltrans requirements.
- **2030 General Plan Circulation Plan – Consistent**. The Program accommodates the planned growth of the general plan where wastewater collection system infrastructure was envisioned within roadways consistent with the 2030 General Plan's Circulation Plan as shown in Figure 3.15-1 to avoid disruptions with other City land uses.

- **2030 General Plan Transportation Policy T-1.8 – Consistent.** MM TRA-1 and MM TRA-2 would set for plans for controlling construction traffic and detours to maintain level of service during temporary interruptions to the extent feasible. Operation of the Program would not significantly contribute to a change of LOS.
- **Merced Municipal Code City Engineer Approval – Consistent.** The Program is proposed and coordinated through the City Public Works Department and City Engineer.
- **Merced Municipal Code Designated Truck Routes – Consistent.** The Program would follow the City's proscribed designated truck routes.
- **2013 Bicycle Transportation Plan, Neighborhood Traffic Calming Guidelines, and MCAG's RTP/SCS – Consistent.** TRA-1 and MM TRA-2 would set for plans for controlling construction traffic and detours to maintain bicycle and pedestrian access during temporary interruptions to the extent feasible. Operation of the Program would not significantly contribute to a change of in pedestrian or bicycle access or routes.

Therefore, with the implementation of MM TRA-1 and MM TRA-2, construction and operation of the Program and proposed Projects would reduce the potential conflict with circulation programs, plans, ordinances, or policies to a less than significant level.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1 and MM TRA-2

Level of Significance After Mitigation: Less than Significant

Impact TRA-1 Findings

Impact TRA-1 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact TRA-1 Mitigation Required: MM TRA-1 and MM TRA-2

Impact TRA-1 Overall Level of Significance After Mitigation: Less than Significant

Impact TRA-2 Potential to conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b).

Impact TRA-2 Analysis

Program Impacts

Construction

As described under the Section 3.15.2, Regulatory Framework, Section 15064.3(a) of the updated CEQA Guidelines shifts transportation impact analysis from a LOS standard to a VMT standard, which refers to the amount and distance of automobile travel attributable to a project and suggests a qualitative analysis to evaluate factors such as the availability of transit, proximity to other destinations for larger construction projects that are not presumed less than significant and don not have models or methods available to estimate the vehicle miles traveled. As described under Impact TRA-1, construction of the Program, would require vehicle traffic associated with construction worker commutes, material hauling, and equipment transport to and from the sites throughout construction. As discussed in the Chapter 2.0, Project Description (Section 2.4.3, Construction Equipment and Workers), it is conservatively assumed that a maximum of 50 workers would be working on construction of Program facilities at any given time; however, realistically a maximum of 10 to 15 construction workers would be working at any given construction site

during Program implementation. It assumed that each worker would generate one round trip per day and that alternative modes or carpools would be used where feasible but may be difficult given the location and lack of transit near construction sites. Materials haul and equipment transport vendor trips would be sporadic throughout the construction activities associated with the Program, with more concentrated trips during excavation and facility construction activities, and very few trips during site preparation and restoration activities.

The Technical Advisory provided by OPR (described in Section 3.15.2, Regulatory Framework) provides that projects with less than 110 trips per day are presumed less than significant (OPR 2018). The Program would result in limited daily construction trips, typically well below this presumption, with some potential intermittent daily peaks during phases of construction such as pouring concrete, excavation of soil, or fill hauling associated mainly with construction of pump stations and WWTRF facilities which could exceed this presumed number of trips for limited durations (estimated to be a day to a couple weeks). Construction activities associated with Program projects are anticipated to be smaller efforts and require less workers, less material hauling, and less equipment deliveries than the estimates for the larger construction effort associated with installing the large backbone trunk sewer and WWTRF infrastructure of the proposed Projects. The proposed Projects are estimated to have an approximate average of 20-30 daily trips with concentrated peak periods estimated at 80 to 130 trips per day[1]. Conservative average round trip distances were considered for these trips ranging from approximately 14 miles for vendor material deliveries, 34 miles for worker trips, and 40 miles for haul trips. While, it is anticipated that generally pipeline, pump station, WWTRF, and associated facilities' construction would generate less than 110 trips per day, it is possible that daily trips could reach up to 130 trips per day for limited duration on larger projects such as the proposed Trunk Sewer Infrastructure Projects. However, even on these max trip days, construction activities would be of limited duration and would likely be the result of multiple crews working at the same time, which, while it would increase daily trips it would shorten the overall construction period reducing the overall VMT by shortening the number of days and miles travelled. Additionally, the viability of substituting transport of construction workers, materials, and equipment by alternative modes of transit is extremely limited and generally unfeasible in a rural area like the Program Study Area. Most projects under the Program would have require fewer trips than the presumed 110 and those occasionally requiring more than 110 would only do so for a very limited duration and would not significantly increase VMT. Therefore, it's not anticipated that construction of the Program would result in a significant increase in VMT and construction impacts associated with the Program would be less than significant.

Operation

Similar to the presumption that projects generating less than 110 trips per year described for construction impacts, operational impacts for proposed Projects are expected to not change significantly from existing conditions. The Program is expected to introduce an approximate maximum of 10 trips per day (1-2 worker trips, occasional maintenance and inspection trips, and an over conservative average of 2 trips per day for hauling biosolids to a disposal site if needed). Consistent with the OPR Technical Advisory, operation of projects and facilities planned in the Program would be well below the threshold of 110 trips per day, therefore, operational transportation impacts associated with the Program would be less than significant (OPR 2018).

[1] These estimates are reflective of daily scenarios and are consistent but differ slightly from estimates prepared specifically for air quality modeling inputs as shown in Appendix B.1.

Summary

As described in the discussion above and in the regulatory setting, Section 2.0, Project Description, and Appendix B.1, the projects implemented under the Program would generally meet the screening threshold of "small project" set forth by OPR's Technical Advisory since they would generate or attract fewer than 110 trips per day. Therefore, the increase in daily trips itself would be less than significant because the Program would not generate greater than 110 trips per day, and as such would be consistent with the CEQA Guidelines transportation impact evaluation and programs, plans, ordinances, and policies under threshold Impact TRA-1.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: New Trunk Sewer Infrastructure Impacts

Construction

As discussed under the overall Program above, construction and operation of the Program would not result in a significant impact to VMT within the area. Both the Northern and Southern Trunk Sewer Projects would result in similar truck trips due to the type and scale of pipeline installations. The new pump station associated with the Northern Trunk Sewer could require more concentrated material haul trips due to the excavation, foundation, and building construction associated with the enclosed structure; however, as described for the Program, these increases in haul trips are only estimated to be 20 trips over the presumed insignificance level and would not substantially result in the increasing VMT as a result of construction. Overall, the proposed Projects are estimated to have an approximate average of 20-30 daily trips with concentrated peak periods estimated at 80 to 130 trips per day[2]

Trips generated during construction would be dispersed throughout the Program Study Area, with trips for the Northern Trunk Sewer Project concentrated in the western limits and along proposed and future Cardella Road and trips for the Southern Trunk Sewer Project concentrated in the southern limits along W Dickenson Ferry Road and E Mission Avenue. Trips associated with the new pump station associated with the Northern Trunk Sewer would be focused to and from the pump station site near Thornton Road and W Cardella Road. The majority of trips would occur in rural areas during non-peak times (hours outside of 7 to 8 AM and 5 to 6 PM) and would have a duration of approximately 2 years or less. Construction associated with the new trunk sewer infrastructure would be temporary and would not exceed 110 truck trips a day and would be consistent with the OPR Technical Advisory and therefore would have a less than significant impact related to construction truck trips.

Operation

Similar to the discussion for the Program, operation of the new trunk sewer infrastructure would only require periodic maintenance along the pipelines, pump station, and associated appurtenances that would not result in a substantial

[2] These estimates are reflective of daily scenarios and are consistent but differ slightly from estimates prepared specifically for air quality modeling inputs as shown in Appendix B.1.

increase in truck trips beyond existing conditions. Therefore, impacts associated with construction and operation of the new trunk sewer infrastructure would be less than significant.

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction

As discussed under the overall Program and similar to the new trunk sewer infrastructure discussion, construction and operation of the Program would not result in a significant impact to VMT. Construction of the WWTRF expansions would likely require 10 to 15 construction workers at any given time and would require an average of 5 to 10 material haul trips per day. Further, each WWTRF expansion would occur as needed until reasonable build-out is achieved, meaning that construction work and related vehicle trips would be spread out over the 10-year planning horizon, with periods of heavier construction trips and periods with no vehicle trips. Overall, periods of construction for the expansions, material, worker, and haul trips would not exceed 110 trips per day and therefore would have a less than significant impact related to VMT.

Operation

Operationally, the WWTRF improvements could result in a total of 621 trips per year (or an average of approximately 2 trips per day). Consistent with the OPR Technical Advisory operation of projects planned in the Program would be well below the threshold of 110 trips per day, therefore, operational transportation impacts associated with the Program would be less than significant (OPR 2018).

Level of Significance Prior to Mitigation: Less than Significant

Mitigation Required: None Required

Level of Significance After Mitigation: Less than Significant

Impact TRA-2 Findings

Impact TRA-2 Overall Level of Significance Prior to Mitigation: Less than Significant

Impact TRA-2 Mitigation Required: None Required

Impact TRA-2 Overall Level of Significance After Mitigation: Less than Significant

Impact TRA-3	**Potential to substantially increase hazards due to a geometric design feature (e.g. sharp curves or dangerous intersection(s) or incompatible uses (e.g. farm equipment)).**

Impact TRA-3 Analysis
Combined Program/Proposed Project Impacts

Construction and Operation

The Program features would not involve significant roadway alterations beyond placement of pipe and replacement of affected pavement, and thus would not increase hazards due to a design feature such as a sharp curve or dangerous intersection. While the pipelines would be placed within the ROW of existing or planned roadways, no change to the exiting design or functionality of the road would occur as a result of the Program. Any disturbed roadways would be repaved back to existing conditions or better and would not result in a long-term change or hazards. Additionally, pump station sites would be located off of the roadways on a privately owned or City ROW parcels and would not result in any hazards to the local roadways in the area. Improvements at the WWTRF would all occur within the existing WWTRF property, which would not result in any increases in hazards or incompatible uses.

Construction of the Program features would involve the hauling of heavy equipment and machinery along public roadways, which could create a hazard to the public by impeding traffic or limiting motorists' line of sight on roadways. Risk would be highest when vehicles and equipment interact with the general public, such as when entering a public ROW while exiting a construction area. This risk could be potentially significant if trucks and construction vehicles were to pull out in front of roadway traffic at a dramatically slower speed or if it were to require traffic to slow suddenly and create potential road hazards Therefore, implementation of MM TRA-1 would minimize any potential hazards by requiring that a traffic control plan be prepared and implemented by the City and/or their contractor for all work affecting local roadways. Additionally, compliance with Caltrans standard specifications applicable to licensing, size, weight, load, and roadway encroachment hauling of any oversized loads, including heavy equipment, would be required during mobilization, construction activities, or demobilization. Therefore, with implementation of MM TRA-1 as well as with compliance of standard regulatory requirements to reduce hazards caused by incompatible roadways uses during construction, impacts would be less than significant.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1

Level of Significance After Mitigation: Less than Significant

Proposed Project: WWTRF Expansion Impacts

Construction and Operation

Similar to the Program discussion above, expansion of the WWTRF would not involve the construction of permanent features that would result in an incompatible use or hazard. The expansion of the WWTRF would occur within the existing property of the WWTRF on previously disturbed land. The WWTRF property is not open for public access and therefore, any upgrades would not result in a hazard to the public.

Similar to those described for the Combined Program and Project impacts, construction activities associated with the expansion of the WWTRF could result in an incompatible use as construction equipment and materials would be entering and exiting the area into the public ROW. This would be a potentially significant impact. As such, similar to the Program discussion above, MM TRA-1 would be required and would ensure that a traffic control plan is prepared

and implemented throughout construction of the WWTRF upgrades. Therefore, impacts associated with the construction of the WWTRF upgrades would be considered less than significant with mitigation incorporated.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1

Level of Significance After Mitigation: Less than Significant

Impact TRA-3 Findings

Impact TRA-3 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact TRA-3 Mitigation Required: MM TRA-1

Impact TRA-3 Overall Level of Significance After Mitigation: Less than Significant

Impact TRA-4 Potential to result in inadequate emergency access.

Impact TRA-4 Analysis

Combined Program/Project Impacts

Construction

Emergency access could be hindered by a significant increase in traffic congestion or temporary road closures. Fire protection, emergency medical services, and police services within the Program area are provided by the Merced Fire Department and the Merced Police Department (see Section 3.13). Depending upon the timing, location, and duration of construction activities, construction of the Program could delay emergency vehicle response times and result in a potentially significant impact. As such, MM TRA-1 and MM TRA-2 would require the preparation and implementation of a traffic control plan that would allow for adequate ingress and egress of traffic, including for emergency personnel, as well as provide proper noticing to emergency response agencies of any detours required during construction activities. Adherence to these mitigation measures would reduce any potential impacts from construction of the Program related to emergency services to a less than significant level.

Operation

Once operational, the majority of the Program components would be located underground and would not result in any ongoing impacts to emergency access. The routine maintenance activities would be sporadic throughout any given year, and as described under Impact TRA-2, would likely only involve one or two trucks on roadways or within City-owned areas (i.e., pump station sites or at the WWTRF site), and would not result in substantial changes to emergency access. Therefore, there would be no operational impacts from the Program related to inadequate emergency access.

Level of Significance Prior to Mitigation: Potentially Significant

Mitigation Required: MM TRA-1 and MM TRA-2

Level of Significance After Mitigation: Less than Significant

Impact TRA-4 Findings

Impact TRA-4 Overall Level of Significance Prior to Mitigation: Potentially Significant

Impact TRA-4 Mitigation Required: MM TRA-1 and MM TRA-2

Impact TRA-4 Overall Level of Significance After Mitigation: Less than Significant

3.15.5 Transportation Mitigation

Mitigation Measure TRA-1: Prepare and Implement a Traffic, Pedestrian, and Bicycle Control Plan

The selected construction contractor and/or the City of Merced shall prepare and implement a Traffic, Pedestrian, and Bicycle Control Plan to the satisfaction of City Traffic Engineer. The Traffic, Pedestrian, and Bicycle Control Plan shall require the review of traffic counts or conduct additional traffic counts on intersections near the proposed Project facilities to establish existing traffic conditions. Based on these traffic counts, the Traffic, Pedestrian, and Bicycle Control Plan shall recommend measures and steps to avoid significant delays or disturbance to existing traffic conditions. The Traffic, Pedestrian, and Bicycle Control Plan shall ensure that acceptable operating conditions on local roadways, freeway facilities, bicycle, and pedestrian facilities are maintained with adequate detours or delays no more than 20 minutes. The Traffic, Pedestrian, and Bicycle Control Plan shall also take into consideration other projects that may being occurring in the same or similar locations as the projects to avoid cumulative traffic impacts. Projects shall require implementation of different measures depending on the Project's site-specific construction details and location within the City. At a minimum, the Traffic, Pedestrian, and Bicycle Control Plan shall include but not be limited to the following:

- Description of trucks including number and size of trucks per day, expected arrival and departure times, truck circulation patterns.
- Description of staging areas including location, maximum number of trucks simultaneously permitted in staging areas, use of traffic control personnel, specific signage.
- Description of street closures and bicycle and pedestrian facility closures including duration, advance warning and posted signage, safe and efficient access routes for emergency vehicles, and use of manual traffic control.
- Description of driveway access plan including provisions for safe vehicular, pedestrian, and bicycle travel; minimum distance from any open trench; special signage; and maintained residential vehicle accesses.
- Identification of hours of construction and hours for deliveries, potentially avoiding the AM and PM peak commute hours to minimize disturbance on traffic flow.
- Compliance with the City of Merced Municipal Code Section 10.40 (Truck Routes), which includes designated truck routes that should be used for any construction-related truck trips.
- Coordination with facility owners or administrators of sensitive land uses such as police and fire stations (including all fire protection agencies), transit stations, hospitals, and schools. Facility owners or operators shall

be notified in advance of timing, location, and duration of construction activities and the locations of detours and lane closures in conformance with MM TRA-2.

- Coordination with local transit service providers, including temporary relocation of bus routes or bus stops in work zones, as necessary.
- Roadway rights-of-way shall be repaired or restored to their original conditions or better upon completion of construction and compliance with the City of Merced Municipal Code Section 17.58.010 (Road Construction Application and Plans) for any road construction within roadways.
- The Traffic, Pedestrian, and Bicycle Control Plan shall contain detailed measures to ensure acceptable levels of traffic flow.

Close coordination with the City through the Traffic, Pedestrian, and Bicycle Control Plan process shall ensure that potential conflicts with traffic, transportation, pedestrians, and bicycles shall be reduced to less than significant levels.

Mitigation Measure TRA-1 Implementation

Responsible Party: The City and chosen contractor

Timing: Development of the Traffic, Pedestrian, and Bicycle Control Plan shall occur prior to the start of construction and be implemented throughout all construction activities.

Monitoring and Reporting Program: The City shall review the Traffic, Pedestrian, and Bicycle Control Plan prior to the start of construction mobilization each year to determine relevance to upcoming construction activities. The City shall monitor and coordinate with the chosen contractor during weekly construction meetings to ensure that the Traffic, Pedestrian, and Bicycle Control Plan is implemented successfully as documented in inspection logs. The Traffic, Pedestrian, and Bicycle Control Plan shall remain on file at the City.

Standards for Success: Traffic impacts and delays resulting from construction activities or conflicting with applicable plans and policies, an increase in hazards due to geometric design, and inadequate emergency access are reduced to a less than significant level.

Mitigation Measure TRA-2: Inform Public and Emergency Service Agencies of Lane Closures and Detours

The City shall inform the public, neighboring schools, and emergency service agencies such as the Merced Police Department and the Merced Fire Department of scheduled lane closures and detours through public outreach such as public meetings and postings in the local newspapers. Proper signage shall be used to direct traffic as identified through the traffic control plan. Unanticipated lane closures and detours shall be minimized to the maximum extent feasible, and both the public and the emergency service agencies shall be informed of closures and detour routes as soon as possible.

Mitigation Measure TRA-2 Implementation

Responsible Party: The City and chosen contractor

Timing: Throughout construction activities

Monitoring and Reporting Program: The City shall monitor implementation of this mitigation measure during construction.

Standards for Success: Safe, efficient travel in within the City is maintained with minimal traffic delays. Conflict with local policies and plans for transportation and traffic, and emergency and public access impacts are reduced at a less than significant level during construction activities.

3.15.6 Abbreviations

BNSF	Burlington Northern/Santa Fe
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental Impact Report
LOS	Level of Service
MCAG	Merced County Association of Governments
Mgal/d	Million Gallons a Day
MMs	Mitigation Measures
NOP	Notice of Preparation
OPR	Office of Planning and Research
ROW	Right of Way
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SB	Senate Bill
SR	State Route
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
UPRR	Union Pacific Railroad
USEPA	United States Environmental Protection Agency
VMT	Vehicle Miles Traveled
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

3.15.7 References

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4.0 ALTERNATIVES

In accordance with California Environmental Quality Act (CEQA) Guidelines Section 15126.6, this chapter of the Environmental Impact Report (EIR) provides the City of Merced's (City's) consideration of reasonable alternatives to the Program. The following sections present the alternatives analysis that the City used to evaluate alternatives compared to the Program and proposed Projects and to select the environmentally superior action alternative. The following sections discuss the methodology and analysis used by the City in selecting alternatives, the alternatives considered, the alternatives considered but rejected from further consideration, and an evaluation of the alternatives for their potential to reduce one or more significant impact of the Program, and finally identify an environmentally superior alternative.

4.1 ALTERNATIVE ANALYSIS

According to the CEQA Guidelines (14 California Code of Regulations [CCR] Section 15126.6(a)), the discussion of alternatives, "shall describe a range of reasonable alternatives to a project, or its location, that would feasibly obtain most or all of the basic objectives of the project but would avoid or substantially lessening the significant effects of the project." It is the responsibility of the Lead Agency to select and publicly disclose the reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. Although, an EIR must contain a discussion of "potentially feasible" alternatives, the ultimate determination whether an alternative is feasible or infeasible is made by the Lead Agency's decision-making body (Public Resources Code [PRC] Section 21081[a][3]).

The CEQA Guidelines indicate that the range of alternatives included in this discussion should be sufficient to allow decision-makers a reasoned choice between alternatives and the proposed project. In determining what alternatives should be considered in the EIR, it is necessary to acknowledge the goals and objectives of a project, the project's significant effects, and unique project considerations, as well as the feasibility of the alternatives. This section outlines the alternative identification selection process and evaluates feasible alternatives following the CEQA Guidelines requirements.

4.1.1 No Project Alternative

CEQA Guidelines Section 15126.6(e)(1) requires that the No Project Alternative be described and analyzed, "to allow decision makers to compare the impacts of approving the project with the impacts of not approving the project." The No Project Alternative analysis is required to discuss "the existing conditions at the time the notice of preparation is published… as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (Section 15126.6(e)(2)).

As directed by the CEQA Guidelines [Section 15126.6(e)(3)(B)], when a project consists of a development project on identifiable property, the "no project" alternative is the circumstance under which the project does not proceed. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, the "no project" consequence should be discussed.

The No Project Alternative assumes that if selected, the Program would not be implemented, the wastewater collection system within the City of Merced would remain operating under existing conditions, and limited connections would be available to future wastewater connections. It also means that developers or others may explore other means to provide sewer service (e.g. septic). None of the environmental impacts identified in Chapter 3.0, Sections 3.1 through 3.15 would occur; however, additional impacts could result from the existing system reaching capacity, aging, or conflicting with the City of Merced Vision 2030 General Plan (2030 General Plan). Furthermore, implementation of the No Project Alternative would not meet any of the Program objectives.

The Program objectives would not be accomplished if the Program were not approved and the No Project Alternative were selected. Implementation of the No Project Alternative would not provide the benefits of improving, upgrading, or replacing the wastewater collection system within the City of Merced. No new infrastructure would be built to convey and treat wastewater under the No Project Alternative, and therefore, the City would not be able to meet the future growth needs projected within the 2030 General Plan. The No Project Alternative would not meet any of the stated Program objectives and would not address the City's need for ensuring a reliable wastewater collection system capable of meeting the increased sewer capacity needs of the area. Additionally, the No Project Alternative would likely encourage other forms of sanitary systems, such as septic, that conflict with Central Valley Regional Water Quality Control Board (CVRWQCB) policy for regionalization of wastewater treatment (Table 4.1-1, Objective #9) (CVRWQCB 2009).

Although no direct environmental impacts would occur from the No Project Alternative, the wastewater collection and treatment system would continue to operate at existing capacity, which would not be sufficient to serve future growth identified in the 2030 General Plan. Currently, the wastewater collection system within the City, including both at the Wastewater Treatment and Reclamation Facility (WWTRF) and throughout the existing pipeline system, is reaching capacity. Keeping the system at this capacity would not allow the City to expand populations or accommodate future growth identified in the 2030 General Plan in any way. This would result in a greater impact to land use and planning and population and housing resources compared to the Program. Additionally, aging infrastructure within the existing collection system could potentially become a hazard and lead to cracks and pipe breakdown if not properly maintained and/or upgraded when needed. This could lead to additional environmental impacts and emergency situations. This could present impacts to air quality, hazards, hazardous materials, and wildfires, hydrology and water quality, public services and utilities, and transportation. If there is a failure(s) of existing facilities, a failure could affect the human environment due to broken pipes or could result in reduced capacity at the existing WWTRF due to things like power outages, floods, breakdowns.

4.1.2 Action Alternatives Considered

The City's methodology for identifying potential action alternatives included consideration of the following: Wastewater Collection System Master Plan (WCSMP) public and stakeholder feedback from City Council meetings and administrative draft iterations and WCSMP input from 2013 to 2017 (City of Merced 2015; 2016; 2017), CEQA Notice of Preparation scoping public and agency written comments (Chapter 1.0), and professional judgement for feasible alternatives that would reduce environmental impacts while still meeting most or all of the Program objectives.

The 2017 WCSMP was developed through multiple iterations and refinements beginning in 2014 (City of Merced 2017). Appendix E provides a detailed overview of the WCSMP alternative development process and the ultimate

selection of the Program and proposed Projects in the 2017 WCSMP (City of Merced 2015; 2016; 2017). Table 1 in Appendix E presents a summary of the identified alternatives considered and illustrates the evolution of alternative concepts and naming throughout the planning process. These sub-alternatives were ultimately developed to form the Program (the proposed Projects), the Campus Parkway Alternative, and the North Merced Satellite Treatment Facility Alternative (as described in the following sub-headings) based on considerations of alternate alignments and growth scenarios within the City's 2030 General Plan Specific Urban Development Plan/Sphere of Influence (SUDP/SOI).

The following list of action alternative concepts were identified by the City as potentially reasonable alternatives to further evaluate their ability to meet Program objectives and assess their feasibility. If they were found to be feasible and meet most the Program objectives, they were then considered for their ability to reduce one or more significant impacts associated with the Program. These action alternatives include the following:

- North Merced Satellite Treatment Facility[1] Alternative
- Decentralized Treatment Facilities Alternative
- Campus Parkway Trunk Alternative
- Recycled Water Reclamation Alternative
- Reduced Build-Out Sewer Capacity Alternative
- Parallel or Upsized Existing System Alternative

The following subsections provide a brief description of each alternative.

4.1.2.1 North Merced Satellite Treatment Facility Alternative

The North Merced Satellite Treatment Facility Alternative was derived as a part of the 2017 WCSMP development. The alternative would consist of building a second wastewater treatment facility in north Merced to accommodate new wastewater associated with development as the area grows to reasonable build-out of the SUDP/SOI. The new facility would require the City to purchase the industrial zoned property located west of the intersection of West Yosemite Avenue and State Route (SR) 59 (Figure 4.1-1). The facility would initially accommodate 4 to 5 million gallons per day (Mgal/d) wastewater flows with plans to expand to a maximum capacity of 14 to 15 Mgal/day at reasonable build-out, while the existing WWTRF would accommodate wastewater flows from the rest of the SUDP/SOI with an initial expansion to 16 Mgal/day and subsequent expansion as reasonable build-out is neared to reach a maximum capacity of 20 Mgal/day. Between the two treatment facilities the alternative would achieve the total 34 to 35 Mgal/day treatment capacity required to meet reasonable build-out conditions under the 2030 General Plan. Additionally, this alternative would require new effluent disposal and/or reuse facilities and discharge permits to serve the new treatment facility.

[1] WCSMP Plan B Alternative, from the 2017 WCSMP

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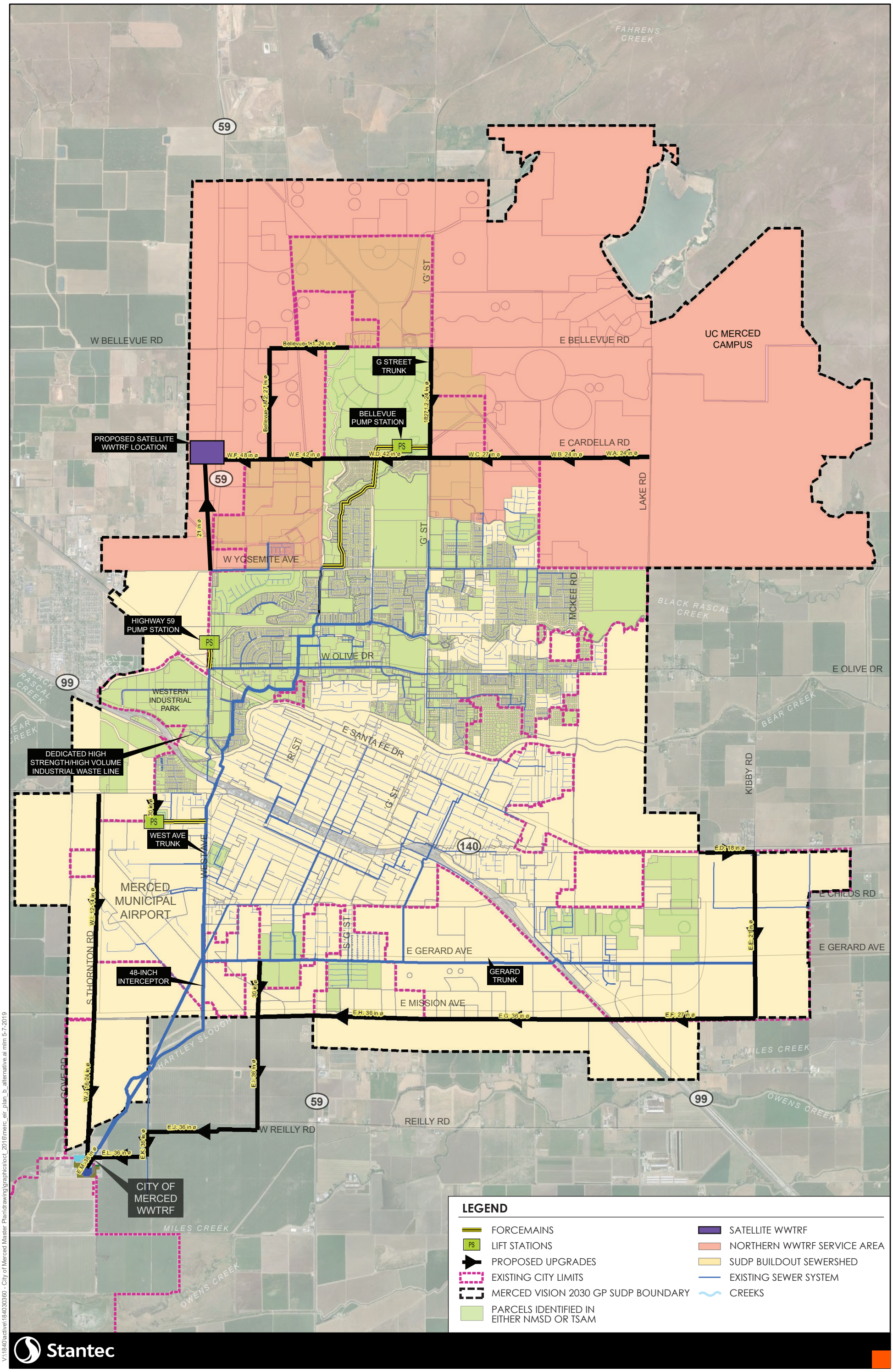


Figure 4.1-1
North Merced Satellite Treatment Facility Alternative
City of Merced - Draft Environmental Impact Report

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Similar to the proposed Projects, the key wastewater collection system trunk pipelines have been identified for the same alignments as the proposed Projects shown on Figure 4.1-1 but exclude the area crossing from north to south Merced with many potential utility and right-of-way (ROW) conflicts like the railroad, highways, and Merced Irrigation District (MID) canals. This alternative would require the construction of a new WWTRF within the City SUDP/SOI, which would result in additional costs and associated long-term maintenance that currently does not exist. This would not fully meet the objective of the Program to achieve the lower overall life-cycle costs for sewer service for anticipated operation and maintenance over the coming decades since it would require operation of a second WWTRF. Additionally, this alternative would require additional land for effluent disposal, which could total approximately 4,550 acres of land. Although this alternative could reduce agricultural use of groundwater in the area through this effluent disposal and could meet most the Program objectives.

Construction impacts of the alternative would be temporary and would be similar in scale to the Program. The location of the alternative would also occur in the City's SUDP/SOI in existing and future ROWs and therefore would result in similar impacts as described under the Program. Although the pipelines under this alternative would follow a slightly different alignment than under the Program, general system upsizing and placement of pipelines throughout the City's SUDP/SOI would still be required under this alternative and would include similar installation methods as described under the Program. Impacts associated with construction would be similar to the Program, with slightly different construction footprints (less area for the Northern Trunk Sewer, no pump station but more area required for an additional treatment facility). Operationally, the alternative would require operation of a second facility, which would increase employees, operational truck routes, and additional effluent discharge and biosolid disposal. Impacts associated with the Northern Trunk Sewer crossing from north Merced to south Merced would be reduced under this alternative since there would be no crossing. This would include a reduced potential to conflict with Caltrans and Union Pacific Railroad (UPRR) ROWs as well as MID canals. It would also require less directional drilling under creeks and waterways, which would have a lesser impact than the Program's already less than significant impact.

New private land would be needed to house the new treatment facility, which could be located on environmentally sensitive areas, resulting in greater impacts to environmental resources. Additionally, operation of the alternative would require additional baseline emissions and operational impacts (i.e., from additional trunk trips) that would not be included under Program. The long-term visual impacts of construction of a new treatment facility could also be greater under this alternative. Further, operation of two WWTRFs would require two Waste Discharge Requirement permits to be obtained from the CVRWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Lastly, the proposed location of the alternative is within the Lake Yosemite inundation zone, and therefore could experience flooding and potential contamination if a dam failure were to occur.

4.1.2.2 Decentralized Treatment Facilities Alternative

The concept of multiple wastewater treatment facilities in the north Merced area was raised by stakeholders during the WCSMP planning process as a potential means to reduce the initial size, cost, and time delays associated with conveying City wastewater to the existing WWTRF. This would be a decentralized system with multiple treatment facilities developed in phases to accommodate anticipated growth within the City. These new WWTRFs would be built in new development areas and would treat the wastewater associated with each new development as they occur.[2] This alternative would require the placement of trunk and collector pipelines using gravity fed systems to the

[2] Due to uncertainty with respect to specific location of future developments, no figure is available to illustrate the location of this alternative.

maximum extent feasible to convey wastewater flows to the new decentralized facilities as well as to the existing WWTRF throughout the City's SUDP/SOI. This alternative would require the individual treatment and permitted disposal of effluent at each new site as well as operations and maintenance associated with each new facility added. Each facility would require a treatment train sufficient to treat the wastewater generated within a particular development area and would be required to meet waste discharge permitting requirements and maintain an individual National Pollutant Discharge Elimination Service (NPDES) permit, or provide reclamation lands on which to reuse treated effluent, as well appropriate discharge permits issued by the CVRWQCB.

The decentralized treatment facilities alternative would not meet the objective to achieve the lower overall life-cycle costs for sewer service for anticipated operation and maintenance over the coming decades (Section 4.1.3, Ability to Meet Basic Program and Project Objectives). Additionally, multiple decentralized facilities would require additional land acquisitions that do not currently exist, which would increase the City's capital investment and also not meet the objective to minimize land use impacts and to use existing publicly owned property to the extent feasible. Constructing multiple decentralized facilities would result in a larger overall footprint and potentially increased risk to wastewater treatment standards, which could lead to greater environmental impacts.

Impacts from pipelines would be reduced under this alternative, which would provide smaller onsite treatment facilities as development occurred. However, impacts related to the facilities from construction and operations would be substantially more than the Program. Stream crossing and ROW impacts would be reduced by this alternative as well as trenching depths. An increased need for localized effluent disposal would also potentially jeopardize water quality. New land would need to be obtained to house the new treatment facilities, which could be located on environmentally sensitive areas, resulting in greater impacts to environmental resources. Additionally, operation of the alternative would include additional baseline emissions and operational impacts (i.e., from additional trunk trips) that would not be included under the Program. The long-term visual impacts of construction of new treatment facilities could also be greater under this alternative. Further, operation of multiple treatment facilities would require multiple Waste Discharge Requirement permits to be obtained from the CVRWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Lastly, the proposed location of the alternative is located within the Lake Yosemite inundation zone (See Figure 3.9-2 in Section 3.9, Hydrology and Water Quality), which could experience flooding and potential contamination if a dam failure were to occur.

4.1.2.3 Campus Parkway Alternative

The Campus Parkway Alternative is a variation on the Eastern Trunk Servicing Concept that was explored during the WCSMP development process described in Appendix E and was based on public input. The alternative would require an additional trunk sewer to be placed outside of the City's SUDP/SOI from the University of California, Merced (UC Merced) Campus to Campus Parkway where it would connect with the existing sewer collection system (Figure 4.1-2). This alternative would involve two phases to reach the reasonable build-out capacity needed and analyzed in the 2030 General Plan.

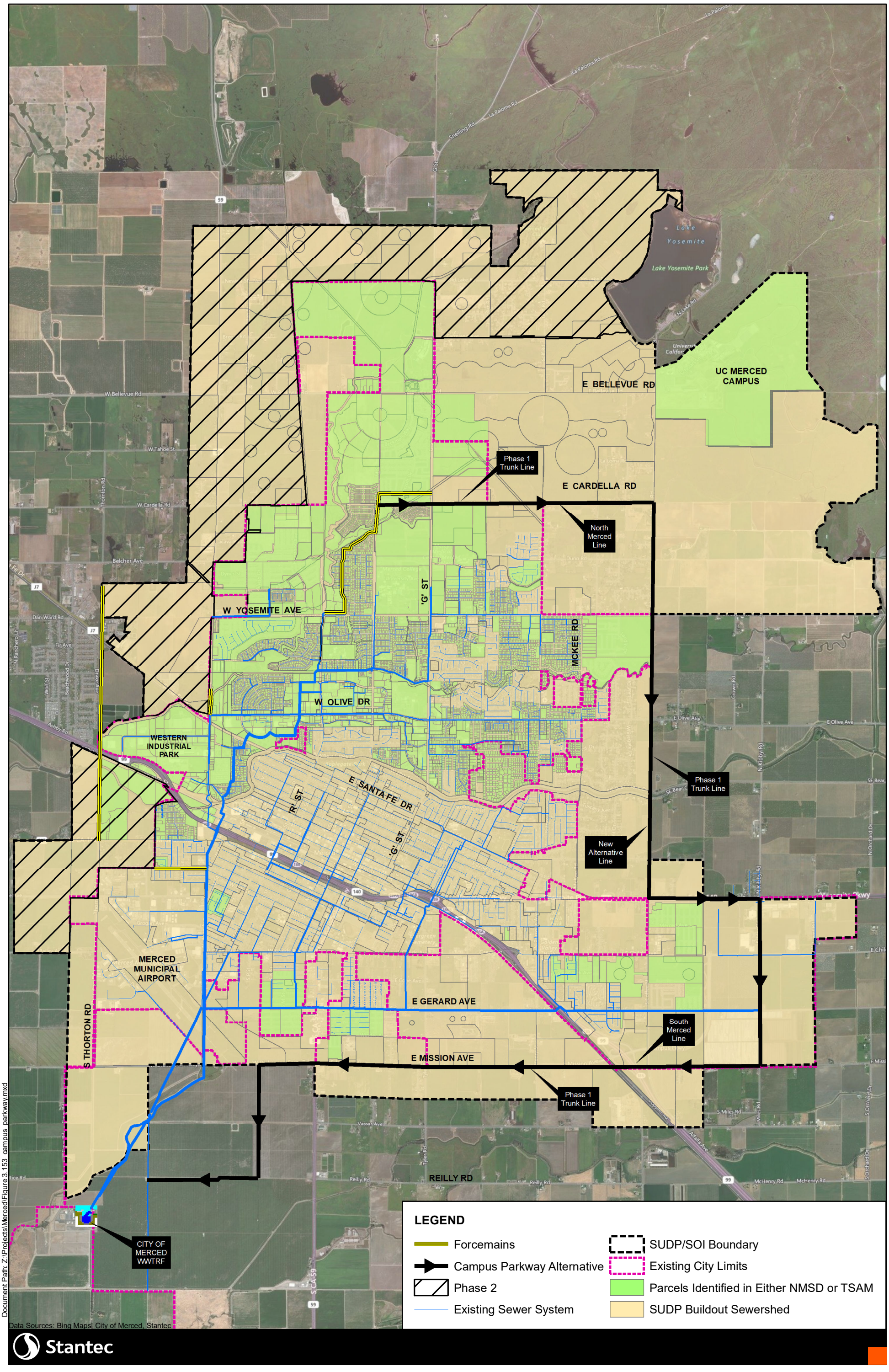


Figure 4.1-2
Campus Parkway Alternative
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Phase 1 of the Campus Parkway Alternative would involve conveyance of wastewater within the Campus Community area, and possibly from additional portions of the service area to flow down through this system and eventually reach the City's existing WWTRF near the southwest portion of the City's SUDP/SOI. Trunk sewers in the north would be reduced in size as flow from the northwestern portion of the service area would be conveyed via this expansion of the existing WWTRF. Expansion of the existing WWTRF would be required to reach the maximum 35 Mgal/d reasonable build-out capacity, similar to the Program.

Phase 2 of this alternative would require additional wastewater infrastructure for the new development in the far north and northwestern portions of the City (partially outside of the City's SUDP/SOI). These additional alternative features would require the installation of pipelines with sufficient capacity to serve the new growth in the area, as well as associated appurtenances and possible pump and lift stations to achieve adequate flow to the existing WWTRF. Service outside the SUDP/SOI would also likely require additional planning and annexation or other approvals to connect to City services.

This alternative would require the placement of pipe through areas outside of the City's current SUDP/SOI, which would necessitate the need for Merced County coordination and approvals. As such, this alternative would not meet the Program objective to minimize land use impacts and use existing publicly owned property to the extent feasible because it could place additional land use restrictions associated with the sewer easement. Additionally, this alternative would require additional creek crossing and disturbance of prime farmland, which could have further environmental impacts when compared to the Program.

Impacts associated with this alternative would generally be similar to those of the Program but on the eastern side of the SUDP/SOI rather than the western. There are more agricultural lands designated as important farmland and Williamson Act contracted lands on the eastern side of the Program Study Area, which would result in this alternative having a greater potential to impact agricultural resources. The alternative would avoid some of the receptors and the airport in western Merced. Additionally, implementation of the Campus Parkway Alternative would require construction of new pipelines outside of the City's SUDP/SOI, which could result in greater impacts to land use and may be inconsistent with the 2030 General Plan. Additional permits and agreements with Merced County would be required for placement and long-term maintenance and operation of these pipelines.

4.1.2.4 Recycled Water Reclamation Alternative

The concept of developing a recycled water system was explored within the 2017 WCSMP and in previous administrative drafts of the WCSMP. This alternative would implement that concept to recharge groundwater use in north Merced by returning effluent from the WWTRF to north Merced through a network of reclaimed water pipes. Based on the evaluation for pipeline placement of the proposed Projects for implementation of the Program, it is assumed that recycled pipelines would follow the same alignments as the proposed Projects and future program collector infrastructure. These recycled water pipelines would likely be required to have appropriate health and safety setbacks from the Program pipelines (approximately a minimum distance of 10 feet or other form of sewer containment such as encased pipes). Recycled water uses and connections within the City would be required under this alternative for areas such as City parks or landscaped areas. Where the Program pipelines gravity flow to the WWTRF, pumping the recycled water back up the system would be required. Pumping would require placement of one or more pumps or lift stations.

This alternative would result in additional environmental impacts related to construction and operation as it would expand and almost double the existing infrastructure planned to serve the City from that required for the Program. The alternative was developed in response to a Notice of Preparation (NOP) comment relating to groundwater impacts and the need for recharge in near the location of groundwater extraction. While this alternative was considered, it would not result in a benefit to the net groundwater condition within the Merced groundwater basin, since the basin is all in one aquifer, and the City's water distribution system benefits the entire City regardless of where the groundwater wells are located.

4.1.2.5 Reduced Build-Out Sewer Capacity Alternative

This alternative considers a reduction in the total maximum reasonable build-out capacity of the Program. The alternative would reduce the scale and magnitude of Program impacts. While the proposed Trunk Sewer Projects would retain their footprint, the pipe and pump sizing could be reduced, and the total amount of infrastructure needed would be less than the Program and would not include the WWTRF Expansion Projects. This alternative would not necessarily change the 2030 General Plan SUDP/SOI boundary, but it would require the City to restrict development to only certain developments or certain densities less than what was planned for in the 2030 General Plan. It is anticipated that this reduced build-out alternative would serve 20 Mgal/d capacity.

This alternative would have similar footprints, operations, and construction activities to the Program (see Program figures in Chapter 2.0). Many potential impacts associated with the Program would still occur but some at a lesser magnitude.

4.1.2.6 Parallel or Upsized Existing System Alternative

The 2017 WCSMP also explored installing parallel sewers adjacent to the main existing trunk lines within the City limits to accommodate interim wastewater flows and to allow for additional sewer connections within north and eastern Merced. This alternative expands on that concept by considering the parallel or upsized trunk lines within the City adjacent to trunk sewers. This alternative would target critically impacted sewers, installing a parallel or upsized trunk sewer within the ROW associated with West Avenue and Olive Avenue and adjacent to or within the ROW of existing sewers at or near capacity as shown on Figure 4.1-3. This alternative would require construction throughout many of the developed areas within the City, would require utility relocations, and would require resolution of conflicts with other utilities and infrastructure. This alternative would be designed to meet reasonable build-out flows identified within the 2030 General Plan and would require parallel pipes or upsized replacement pipes throughout much of the existing system.

Aging pipelines within the existing collection system could potentially become a hazard and lead to cracks and pipe breakdown if not properly maintained and/or upgraded when needed. The alternative's reliance on this infrastructure could result in critical limitations to wastewater services. This could lead to additional environmental impacts and emergency situations.

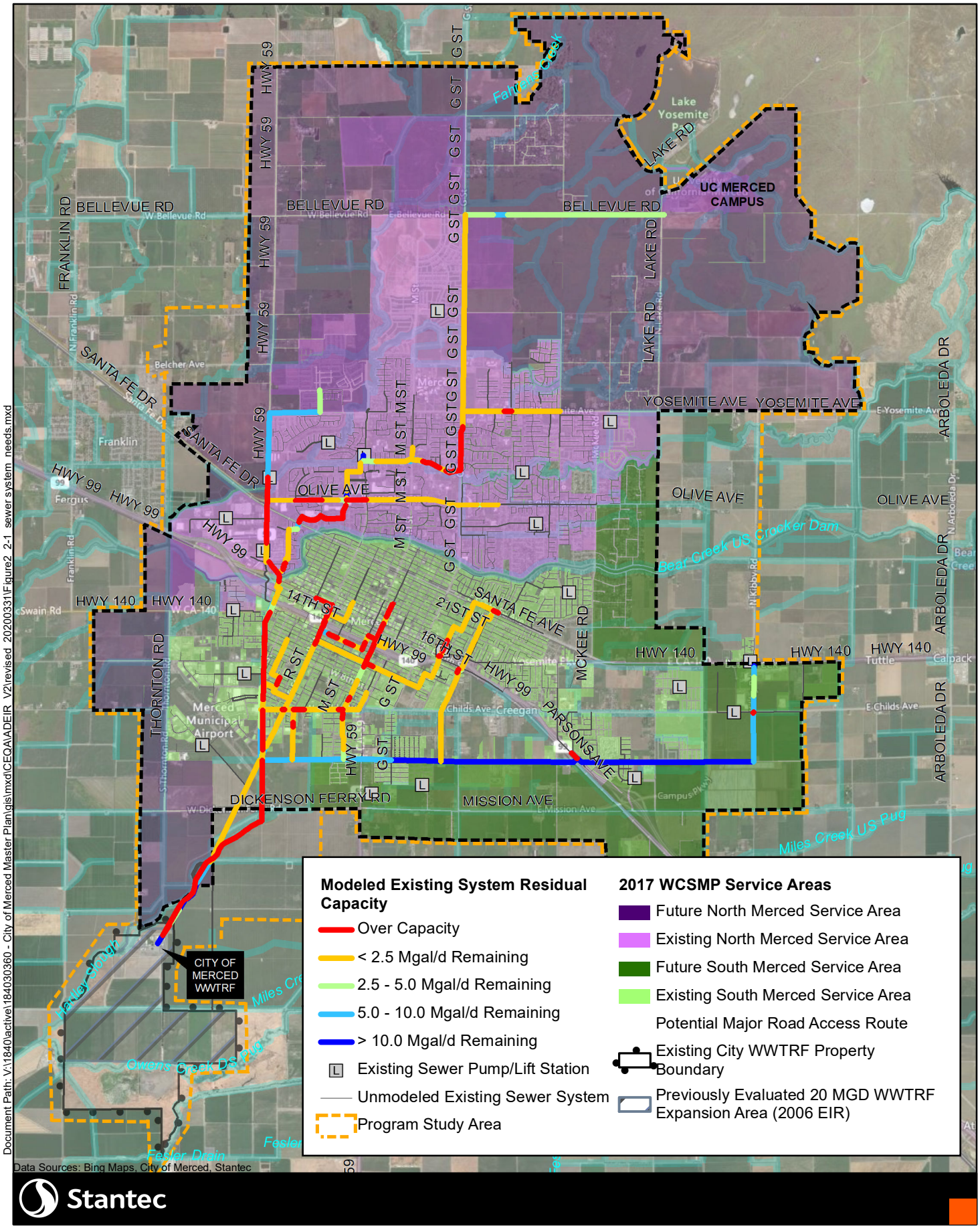


Figure 4.1-3
Parallel or Upsized Existing System Alternative
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4.1.3 Ability to Meet Basic Program and Project Objectives

As required by CEQA, to be considered as a viable alternative to the proposed Program, an alternative must meet all or most of the following Program objectives (as described in Section 2.0). The Program objectives were developed based on engineering requirements, City planning needs, and stakeholder and public input during development of the 2017 WCSMP and this Draft EIR. The following table presents an analysis of the identified alternative's ability to meet the Program objectives:

Table 4.1-1: Alternatives Ability to Meet Program Objectives

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
1. Construct and maintain safe and reliable facilities	No – no construction and no facilities would be built or improved	Yes – would double the maintenance and compliance required, but a second facility would be safe and reliable	No – would result in lower-grade treatment and more maintenance at each individual facility, which would not be as safe	Yes – would provide pipelines design to operate at current standards	Yes – would provide pipelines engineered to design and operate to current standards	Yes – would provide pipelines engineered to design and operate to current standards	Yes – would provide pipelines engineered to design and operate to current standards
2. Meet long-term sewer service collection system needs by constructing the components of the collection system in stages, as needed	No – no changes to the collection system would occur	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	Yes – would serve collection system needs and could be done in stages	No – could be done in stages, but does not meet long-term collection system needs	Yes – would serve collection system needs and could be done in stages

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
3. Achieve lower overall life-cycle cost and maintain relatively low costs for sewer service considering upfront costs and anticipated operation and maintenance costs over the coming decades	No – implementing the project would require multiple quick fixes that would cost more in the long term	No – operating two treatment systems would cost more and require more maintenance and staff	No – operating multiple treatment systems would cost more and require more maintenance and staff	Yes – this would be similar to the Program in terms of operation and life-cycle costs	No – adding a recycled water system would increase the amount of infrastructure to be maintained	Yes – this would be similar to the Program in terms of operation and life-cycle costs	No – upfront costs for constructing in City streets would be significantly more, and long-term maintenance would run the risk of potential conflicts

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
4. Maintain high water quality and wastewater treatment standards	Yes – existing WWTRF operations and planned expansions would continue up to 20 Mgal/day. The existing wastewater collection system would be at risk of failure with overflow from future flows and treatment mechanisms other than the Program would be required	No – operation of two treatment systems may likely only achieve secondary or tertiary treatment at the new facilities and would likely not have UV or other forms of disinfection due to the cost of constructing and operating such facilities. While new facilities would be required to maintain water quality standards, the highest levels of water quality and treatment would not be achieved	No – operation of multiple treatment systems would likely only achieve secondary or tertiary treatment at the new facilities and would likely not have UV or other forms of disinfection due to the cost of constructing and operating such facilities. While new facilities would be required to maintain water quality standards, the highest levels of water quality and treatment would not be achieved	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards	Yes – this would be similar to the Program in terms of water quality and treatment standards

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
5. Reduce or maintain relatively low operational costs and energy demand by selecting gravity systems where feasible	Yes – no conveyance would be required; however, septic systems or other treatment methods may result	Yes – this would decrease the need for the Northern Trunk pump station and could be almost entirely served by gravity flows; however, an additional treatment facility would introduce additional treatment costs and energy demands	Yes – this would decrease the need for the Northern Trunk pump station and could be almost entirely served by gravity flows; however, additional treatment facilities would introduce additional treatment costs and energy demands	Yes -- this would have similar costs and energy demands to the Program	No – this would require extensive pumping to return treated water from the WWTRF to north Merced increasing energy costs that would not allow the selection of gravity systems	Yes – this would have similar costs and energy demands to the Program, but would ultimately reduce treatment energy demands by not increasing WWTRF to full build-out capacity	Yes – while the complexities of working around infrastructure and within City streets could require additional energy demand, the alternative would have similar overall energy costs as the Program
6. Maintain consistency with the Merced Vision 2030 General Plan	No – this would not accommodate the growth projections of the 2030 General Plan	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	Yes – this would be similar to the Program in terms of consistency with the 2030 General Plan	No – Policy P-1.2 of the 2030 General Plan emphasizes using existing infrastructure to the extent possible; this alternative would require new treatment infrastructure	No – this would not accommodate the growth projections of the 2030 General Plan	Yes – this would be similar to the Program in terms of consistency with the 2030 General Plan

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
7. Plan collection system infrastructure that meets reasonable build-out conditions of 35 Mgal/d	No – this would not accommodate the growth projections of meeting 35 Mgal/d	Yes – this could accommodate build-out	Yes – this could accommodate build-out	Yes – this could accommodate build-out	Yes – this could accommodate build-out	No – this would not accommodate the growth projections of meeting 35 Mgal/d	Yes – this could accommodate build-out
8. Minimize land use and environmental impacts. (See Section 4.1.5 for further analysis)	Yes – this would not impact land use. There would be limited environmental impacts	Yes – the additional treatment site would require additional land but would not need the pump station site. Some impacts would be reduced	No – the additional treatment sites would require additional land. Many additional impacts would be generated, and few would be reduced	Yes – while this alternative would likely have greater impacts to agricultural resources, it is anticipated that other land use and environmental impacts would be similar to the Program	No – this would increase construction impacts with larger footprints and potentially additional alignments. It would increase supplies and could double the size of pipeline footprint	No– while this would limit the ability to serve some future development, most of the sewer infrastructure would still be required and downsizing wouldn't substantially minimize impacts but may minimize a few	No -- while this would reduce disturbance of other areas within the City, it would have greater land use and environmental impacts due to proximity to receptors and developed portions of the City

Program Objective	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
9. Adhere to federal and state policies and regulations in support of regionalization, reclamation, recycling, and conservation for wastewater treatment plants (such as Central Valley Regional Water Quality Control Board Resolution Number R5-2009-0028)	No – with the No Project Alternative, forms of wastewater treatment would be required in conflict with regionalization policies	No – building a second treatment facility is in conflict with regionalization policies	No – building multiple treatment facilities is in conflict with regionalization policies	Yes – this would maintain the treatment objectives of the Program with different conveyance infrastructure	Yes – recycled water would be consistent with recycling and conservation policies	Yes – this is a reduced capacity version of the Program; it would provide regionalization for wastewater treatment	Yes – this would maintain the treatment objectives of the Program with different conveyance infrastructure
10. Use the existing publicly owned property, roadways, and right-of-way to the extent feasible	Yes – no project would occur	Yes – this would include an additional treatment site but would not require the northern pump station	No – this would require acquisition of property for each new facility and would not make use of public ROWs	No – this alternative would run cross country and not make use of existing roadways	Yes – recycled water lines would be placed within existing ROWs and roadways similar to the Program infrastructure	Yes – this footprint would be similar to the Program infrastructure	Yes – this would capitalize on existing infrastructure which is predominantly in existing roadways and public ROWs
Total Number of Objectives Met	**3/10**	**6/10**	**3/10**	**9/10**	**6/10**	**6/10**	**8/10**

Notes:
City = City of Merced
Mgal/d = million gallons per day
ROW = right-of-way
UV = ultraviolet
WWTRF = Wastewater Treatment and Reclamation Facility

4.1.4 Reasonable Alternatives Feasibility

As required by CEQA, the term "feasible" is defined as, "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (14 CCR Section 15364). CEQA does not require that an EIR determine the ultimate feasibility of a selected alternative, but rather that an alternative be potentially feasible. Accordingly, no studies have been prepared regarding the economic feasibility of the selected alternatives.

Although, an EIR must contain a discussion of "potentially feasible" alternatives, the Merced City Council has made the determination, based on technical information presented by consultants, of feasibility of many of the alternatives considered throughout the 2017 WCSMP update process (PRC Section 21081(a)(3)). The City's development of feasible alternatives and the range of feasible alternatives considered for this EIR are discussed in the following section in a manner to foster meaningful public participation and informed decision-making. Pursuant to the CEQA Guidelines, factors taken into consideration for assessing feasibility of alternatives include the following:

> *Site suitability, economic viability, availability of infrastructure, General Plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives.*

Table 4.1-2 illustrates a summary of the feasibility of the identified reasonable alternatives.

Table 4.1-2: Reasonable Alternative Feasibility

Alternative	Feasible?
No Project Alternative	Yes – Failure to implement the Program would limit sewer service within the SUDP/SOI in a strategic and well thought out manner, but it would be possible to limit development.
North Merced Satellite Treatment Facility	Yes – As evaluated within the 2017 WCSMP, this alternative is a feasible alternative, although costs associated with operating a second treatment facility would be doubled.
Decentralized Facilities	No – Permitting and operational costs associated with treatment of decentralized facilities would be exponentially higher than the WWTRF. This would be inconsistent with the identified land uses within the 2030 General Plan and would require acquisition of exponentially more City property for siting.
Campus Parkway	Yes – Construction of trunk sewers similar to those of the Program would be feasible in a different location provided that it would similarly be within planned or existing roadways.
Recycled Water Reclamation	No – As evaluated in the 2017 WCSMP, recycled water would be too costly due to increased energy demands required to pump reclaimed water from the WWTRF back uphill to north Merced.
Reduced Build-Out Sewer Capacity	Yes – A reduced capacity system would be feasible and would be similar to the proposed Projects and Program, but trunk sewers would be downsized.
Parallel or Upsized Existing System	No – As evaluated in the 2017 WCSMP and previous WCSMP planning efforts, parallel pipelines were considered next to existing sewer infrastructure within the City and found to have too many conflicts with existing infrastructure and facilities to allow for appropriate setbacks.

Notes: WCSMP = Wastewater System Collection Master Plan; WWTRF = Wastewater Treatment and Reclamation Facility

4.1.5 Alternatives Ability to Lessen One or More Environmental Impacts

The CEQA Guidelines further require that the alternatives be limited to those that would avoid or substantially lessen any of the significant effects of the proposed project (CEQA Guidelines Section 15126.6(f)). The CEQA Guidelines require that potential impacts of the alternatives be compared to the project's environmental impacts and that the "no project" alternative be considered (CEQA Guidelines Section 15126.6(d)[e]). Finally, Section 15126.6(b) of the CEQA Guidelines defines requirements of the alternatives analysis as follows:

> *Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code [PRC] Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.*

Pursuant to the CEQA Guidelines, potentially significant effects include both those that are significant and unavoidable and those that are less than significant with mitigation. The alternatives considered within this section aim to provide a means of reducing the level of impact that would otherwise result from implementation of the Program and proposed Projects even though no significant impacts were identified.

The alternatives were reviewed for their ability to reduce one or more significant effects of the Program or proposed Projects. Table 4.1-3 includes that assessment:

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Table 4.1-3: Alternatives Impact Comparison

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Aesthetics and Visual Resources	LTS/M	**Lesser Impact** – no change to the aesthetic environment of the City; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and or treatment, which could result in additional impacts.	**Greater Impact** – an additional treatment plant would be constructed introducing a new above-ground feature with greater potential to substantially impact public views and introduce permanent above-ground lighting to the area (Impacts AES-3 and AES-4 respectively). There would be no change to Impacts AES-1 and AES-2 from that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact** – additional treatment facilities would be constructed introducing a new above-ground feature with a greater potential to impact public views in more areas throughout the City (Impact AES-3). The multiple treatment facilities would also increase operational lighting in multiple areas within the City (Impact AES-4). There would be no change to Impacts AES-1 and AES-2 from that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Similar Impact** – the addition of the trunk sewer within Campus Parkway in the eastern portion of the City would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact –** this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program. The additional pipelines needed under this alternative would not substantially change any views in the area; however, the additional pump and lift stations would place additional above-ground structures that would result in additional impacts. It is anticipated that these would be constructed and operated in a similar manner as the pump stations described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Lesser Impact** – this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program, except that the overall amount, intensity and length of construction activities would be slightly less than that described for the Program. Program MM AES-1, AES-2, and AES-3 would apply.	**Greater Impact** –this alternative would result in similar impacts related to scenic vistas (Impact AES-1), scenic resources (Impact AES-2), public views (Impact AES-3), and nighttime lighting (Impact AES-4) as those described for the Program, except that construction and operation of the parallel or upsized system would occur in the developed areas of the City where there are more potential viewers and scenic corridors. Program MM AES-1, AES-2, and AES-3 would apply.
Agricultural and Forestry Resources	LTS	**Lesser Impact** – no change to any agriculture lands or forestry resources; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Lesser Impact** – the additional treatment facility would be constructed on an industrial parcel designated as disturbed land, and there would be shorter trunk pipelines. This would not result in any additional impacts related to designated farmlands or forestry resources (Impacts AG-1 through AG-5).	**Greater Impact** –the additional treatment facilities have the potential to be located on designated farmlands, resulting in conversion to non-agricultural use. The facilities would require more land than the Program and would have a greater potential for impacts (Impact AG-1 through 3 and AG-5). Similar to the Program, no impacts to forestry resources would occur because there are no forestry resources within the City (Impact AG-4).	**Greater Impact** – similar to the Program, much of this alternative would be constructed within the roadway ROW; however, the non-roadway portions would cross designated farmlands, potentially resulting in greater environmental impacts than the Program (Impact AG-1 through AG-5).	**Greater Impact** – placement of additional pump stations and lift stations associated with the recycled water pipelines would have the potential need to be located on designated farmlands, requiring conversion to non-agricultural use. This potential impact would be greater than impacts associated with the Program (Impact AG-1 through 3 and AG-5). No impacts to forestry resources would occur because there are no forestry resources within the City (Impact AG-4).	**Lesser Impact** – this alternative would be constructed within the roadway ROW with the developed areas of the City and would not result in any additional impacts to agricultural or forestry resources beyond those described for the Program (Impact AG-1 through AG-5). Additionally, the limited capacity would limit the extent of the collector infrastructure and thereby the reduce the potential footprint.	**Lesser Impact** – this alternative would be constructed within the roadway ROW within the developed areas of the City and would not result in any additional impacts to agricultural or forestry resources beyond those described for the Program (Impact AG-1 through AG-5). Additionally, the developed nature of the area surrounding the existing system and the urban farmland use designation indicates that potential impacts would be less than those of the Program.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Air Quality	LTS/M	**Lesser Impact** – no increases in construction or operational emissions would occur; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility would require additional construction activities and transporting of materials to the treatment facility site, and therefore could result in greater impacts related to construction emissions (i.e., Impact AIR-1 through AIR-3). The additional treatment facility would also be located within 300 feet of numerous existing residences and could therefore introduce a potentially significant impact related to odors (Impact AIR-4) to an area that currently does not experience treatment facility odors. Program MMs AIR-1 through AIR-3 would apply. Program MM AIR-4 is specific to the existing WWTRF and would not apply.	**Greater Impact** – the additional treatment facilities would require additional construction activities and transporting of materials to the treatment facilities sites, and therefore could result in greater impacts related to construction emissions (i.e., Impact AIR-1 through AIR-3). The additional treatment facilities could also be located near numerous existing residences and could therefore introduce a potentially significant impact related to odors (Impact AIR-4) to areas that currently do not experience treatment facility odors. Program MMs AIR-1 through AIR-3 would apply. Program MM AIR-4 is specific to the existing WWTRF and would not apply.	**Similar Impact** – this alternative would not result in additional impacts to air quality (Impact AIR-1 through AIR-4) beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.	**Greater Impact** – construction of this alternative would require additional pipes as well as pump and lift stations which could result in greater impacts related to construction emissions (i.e. Impact AIR-1 through AIR-3). No changes to odor impacts (Impact AIR-4) are anticipated for the Recycled Water Reclamation Alternative beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.	**Lesser Impact** – this alternative would not result in additional impacts to air quality (Impact AIR-1 through AIR-4) beyond those described for the Program, however, may result in overall less construction related air quality emissions because the intensity ad length of construction activities would be less under this alternative. Program MMs AIR-1 through AIR-4 would apply.	**Greater Impact** – this alternative would have more complicated construction within the existing City limits in closer proximity to more sensitive receptors resulting in greater impacts related to construction emissions (i.e. Impact AIR-1 through AIR-3). No changes to odor impacts (Impact AIR-4) are anticipated for this alternative beyond those described for the Program. Program MMs AIR-1 through AIR-4 would apply.
Biological Resources	LTS/M	**Lesser Impact** – no construction or operational impacts to special status species, critical habitats, or protected waters would occur; however, inaction to accommodate the sewer service demands of future anticipated growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – construction of the additional treatment facility could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through BIO-12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Greater Impact** – construction and operation of these additional treatment facilities could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Similar Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5) because it would occur in a linear nature within existing and planned ROW. Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply.	**Greater Impact** – construction of this alternative would require additional pipes as well as pump or lift stations, which could have additional impacts to special status species, critical habitats, and protected waters (Impacts BIO-1 through 5). Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply to this alternative depending on species, habitats, and waters present within the area.	**Lesser Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5) because it would occur in a similar footprint as the Program. Program MM BIO-1 through 12 as well as MM GEO-1 would likely still apply; however, the reduced capacity would not require as much construction as the Program.	**Lesser Impact** – construction of this alternative would result in similar impacts to biological resources as described for the Program (Impact BIO-1 through BIO-5); however, the alternative may result in less overall impacts to species and habitats because construction activities would occur in more developed portions of the City (i.e., less likelihood to impact species, habitats and waters). Program MM BIO-1 through BIO-12 as well as MM GEO-1 would likely still apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Cultural Resources	LTS/M	**Lesser Impact** – no construction activities would occur, and therefore, no cultural resources would be potentially impacted; however, inaction to accommodate the sewer service demands of future growth could result in private or alternative methods of sewer collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility location would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the area, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Greater Impact** – the additional locations for the treatment facility would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the areas, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Similar Impact** – construction of the Campus Parkway trunk sewer would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in existing and planned ROW. Program MMs CUL-1 through CUL-5 would apply.	**Greater Impact** – this alternative would require additional pipes as well as pump and lift stations, which would require further cultural resource investigations to determine if there are any known cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) in the area, thus resulting in potentially greater cultural impacts if resources are present (Impact CUL-1 through 4). Additionally, the presence of previously undiscovered cultural resources to be discovered on project sites is a possibility. Program MMs CUL-1 through CUL-5 would apply.	**Lesser Impact** – construction of this alternative would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in a similar footprint as the Program. Program MMs CUL-1 through CUL-5 would apply. However, the reduced capacity of the alternative would require less construction and thereby less potential for impacting cultural resources.	**Greater Impact** – construction of this alternative would result in similar impacts related to cultural resources (i.e., historical, archaeological, or tribal resources or potential human burial sites) (Impact CUL-1 through CUL-4) since it would be constructed in existing and planned ROW. However, this alternative would be constructed in the more developed portions of the City, which would have a greater potential for impacting historic built-environment resources resulting in a greater potential impact than the Program. Also, there is still a potential that undiscovered cultural resources could be encountered during construction activities. Program MMs CUL-1 through CUL-5 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Geology, Soils, and Minerals	LTS/M	**Greater Impact** – no construction activities would occur; therefore, no erosion or loss of topsoil would occur. No facilities would be constructed; therefore, there would be no impacts related to geological hazards or paleontological resources. However, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and or treatment, which could result in additional impacts such as development of new septic tanks (Impact GEO-5).	**Similar Impact** – construction and operational impacts for this alternative related to geology, soils, and mineral impacts would not change from those described for the Program (Impact GEO-1 through GEO-8). No additional geological hazards or conditions are present within the additional treatment facility location. Program MMs GEO-1 through GEO-3 would apply.	**Greater Impact –** construction and operation of the additional treatment plans could potentially be located on areas with additional geologic hazards such as fault zones (Impact GEO-1), unstable or expansive soils (Impact GEO-3 and GEO-4), or soils with greater potential for paleontological resources (Impact GEO-6). There would be no change related to erosion (Impact GEO-2), septic tanks (Impact GEO-5), and mineral resources (Impact GEO-7 and GEO-8) as described and analyzed for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program and no additional geologic hazards are anticipated for the Campus Parkway trunk sewer, therefore the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the additional pipelines and pump stations; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the Reduced Build-Out Capacity Alternative; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.	**Similar Impact** – this alternative would be constructed in a similar method as described for the Program, and no additional geologic hazards are anticipated for the Parallel or Upsized Existing System Alternative; therefore, the impacts described for the Program relative to Impacts GEO-1 through GEO-8 would be the same as described for the Program. Program MMs GEO-1 through GEO-3 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Greenhouse Gases and Energy Resources	LTS	**Lesser Impact** – no construction activities would occur, and therefore, there would be no increases in GHG emissions or increases in energy consumption; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the construction of the additional treatment facility would require additional truck trips, materials, and workers, which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). Additionally, the operation of a second treatment facility could increase energy consumption in the City and thus, result in potentially wasteful, inefficient, or unnecessary consumption of energy resources and conflict with state and local energy efficiency standards (Impact GHG-3 and GHG-4).	**Greater Impact** – the construction of additional treatment facilities would require additional truck trips, materials, and workers which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). Additionally, the operation of multiple treatment facilities could increase energy consumption in the City and thus, result in potentially wasteful, inefficient, or unnecessary consumption of energy resources and conflict with state and local energy efficiency standards (Impact GHG-3 and GHG-4). While pipeline durations would be shorter under this alternative, the number of construction activities and mobilizations would increase.	**Similar Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). No additional construction or operational emissions or energy requirements would be anticipated for the Campus Parkway Alternative beyond those described in the Program.	**Greater Impact** – the construction of this alternative would require additional truck trips, materials, and workers which could increase the overall construction emissions for this alternative (Impact GHG-1 and GHG-2). The Recycled Water Reclamation Alternative is not anticipated to result in any changes related to wasteful, inefficient, or unnecessary consumption of energy resources or conflict with state and local energy efficiency standards beyond what was described for the Program (Impact GHG-3 and GHG-4).	**Lesser Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). A slight reduction in the amount of construction as well as the intensity and length could result in an overall reduction in GHG emissions and energy consumption requirements, however the impact would still remain less than significant as described under the Program.	**Similar Impact** – construction and operation of this alternative would not substantially change from that described for the Program (Impact GHG-1 through GHG-4). No additional construction or operational emissions or energy requirements would be anticipated for the Parallel or Upsized Existing System Alternative beyond those described in the Program.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Hazards, Hazardous Materials, and Wildfires	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no potential to increase construction-related hazards and hazardous materials in the area; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Similar Impact** – construction and operation of the additional treatment facility would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The additional treatment facility would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the additional treatment facility location within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8). Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** – construction and operation of additional treatment facilities would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The additional treatment facilities would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, because the exact locations of the additional treatment facilities are not yet known, they could result in additional impacts related to being located within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA and potential high-risk wildfire risk areas. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Similar Impact** – construction and operation this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Campus Parkway Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the Campus Parkway Alternative located within 0.25 mile of existing or proposed schools, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or a SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8) beyond those described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** – construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Recycled Water Reclamation Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, because the exact locations of the additional pump and lift stations are not yet known, they could result in additional impacts related to being located within 0.25 mile of an existing or proposed school, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA and potential high-risk wildfire risk areas. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Similar Impact** – construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Reduced Build-Out Capacity Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3), nor is the Reduced Build-Out Capacity Alternative located within 0.25 mile of existing or proposed schools, within a Cortese listed site, within 2 miles of an airport, within an evacuation plan or area, or an SRA or potential wildfire risk area (Impact HAZ-3 through HAZ-8) beyond those described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.	**Greater Impact** - construction and operation of this alternative would not substantially increase the use or transport of hazardous materials beyond those analyzed under the Program (Impact HAZ-1). The Parallel or Upsized Existing System Alternative would not result in any increases in hazards to the public or the environment (Impact HAZ-3). However, due to the Parallel or Upsized Existing System Alternative's location with the more developed portions of the City, there is a greater potential for this alternative to be located within 0.25 miles of a school, within a Cortese listed site, within 2 miles of an airport, and within an evacuation plan or area (Impact HAZ-3 through HAZ-7). There would be no change related to being located in an SRA or potential wildfire risk area (HAZ-8) beyond that described for the Program. Program MMs HAZ-1 through HAZ-4, MM TRA-1, MM AIR-2, and MM AIR-3 would apply.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Hydrology and Water Quality	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no increases in runoff, and there would be no potential water quality, groundwater, or drainage pattern impacts; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – operation of two treatment facilities could result in greater impacts to water quality (Impact HYD-1 and Impact HYD-5) because two Waste Discharge Requirement permits would be required to be obtained from the RWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Additionally, the proposed location of the additional treatment facility is within the Lake Yosemite inundation zone and therefore could experience flooding and potential contamination if a dam failure were to occur (Impact HYD-4). Impacts related to groundwater and drainage patterns (Impact HYD-2 and HYD-3) would be similar to those described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Greater Impact** – operation of multiple treatment facilities could result in greater impacts to water quality (Impact HYD-1 and Impact HYD-5) because multiple Waste Discharge Requirement permits would be required to be obtained from the RWQCB, which would be less efficient with respect to the City's efforts to simplify its monitoring and compliance efforts. Additionally, the additional treatment facility locations could be located within inundation zones and therefore could experience flooding and potential contamination if a dam failure were to occur (Impact HYD-4). Impacts related to groundwater and drainage patterns (Impact HYD-2 and HYD-3) would be similar to those described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Campus Parkway Alternative would not substantially change from those described in the Program, because the Campus Parkway trunk sewer would largely occur within existing and planned ROW in the eastern portion of the City and would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Lesser Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from this alternative would not substantially change from those described in the Program; however, by recycling the effluent and pumping back through the system, water could percolate into the north Merced groundwater basins, which could have a minor net benefit. This alternative would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Reduced Build-Out Capacity Alternative would not substantially change from those described in the Program because the Reduced Build-Out Capacity Alternative would be constructed in a similar footprint and manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.	**Similar Impact** – Potential impacts related to water quality, groundwater resources, flooding, and drainage (Impacts HYD-1 through HYD-5) from the Parallel or Upsized Existing System Alternative would not substantially change from those described in the Program, because the Parallel or Upsized Existing System Alternative would largely occur within existing and planned ROWs would be constructed in a similar manner as described for the Program. Program MM HYD-1, MM HYD-2, and MM GEO-2 would apply.

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Land Use and Planning	LTS	**Greater Impact** – no facilities would be constructed; however, the wastewater collection and treatment system would continue to operate at existing capacity, which would not be sufficient to serve anticipated future growth identified in the Merced Vision 2030 General Plan and could result in an overall greater impact to land use and planning in the City.	**Greater Impact** – the additional treatment facility could result in inconsistencies with the 2030 General Plan (Impact LU-2), which analyzed growth using only one treatment facility and using existing infrastructure to the maximum extent possible (Policy 1.2 of the 2030 General Plan). The additional treatment facility would not physically divide an established community (Impact LU-1) because it would be located on previously disturbed land, outside of existing communities.	**Greater Impact** – the additional treatment facilities could result in inconsistencies with the 2030 General Plan (Impact LU-2), which analyzed growth using only one treatment facility and using existing infrastructure to the maximum extent possible (Policy 1.2 of the 2030 General Plan). Further, the additional treatment facilities could result in additional impacts related to physically dividing an established community (Impact LU-1) because they could be located in or near current or future communities.	**Greater Impact** – this alternative would require construction of new pipelines outside of the City's SUDP/SOI which could result in greater impacts to land use and consistency with the 2030 General Plan (Impact LU-2). Additional permits and agreements with Merced County would be required for placement and long-term maintenance and operation of these pipelines. No change related to dividing an established community (Impact LU-1) would occur for the Campus Parkway Alternative from that described under the Program.	**Greater Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The additional land and approvals required for the additional pipelines and pump/lift stations could result in further land use impacts beyond those described for the Program (Impact LU-2)	**Similar Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The Reduced Build-Out Capacity Alternative would also result in similar less than significant impacts related to land use consistency as described for the Program (Impact LU-2).	**Similar Impact** – no change related to dividing an established community (Impact LU-1) would occur for this alternative from that described under the Program. The Parallel or Upsized Existing System Alternative would also result in similar less than significant impacts related to land use consistency as described for the Program (Impact LU-2).
Noise	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would be no potential to increase noise in the area; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the construction and operation of the additional treatment facility would require construction activities to occur within 300 feet of multiple residences, thus resulting in additional permanent and temporary noise and vibration increases (Impact NOS-1 and NOS-2). Program MM NOS-1 through NOS-3 would still apply.	**Greater Impact** – the construction and operation of the additional treatment facilities would require construction activities to occur near multiple residences, thus resulting in additional permanent and temporary noise and vibration increases (Impact NOS-1 and NOS-2). Program MM NOS-1 through NOS-3 would still apply.	**Lesser Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program. However, the distances from residences and other compounding noise sources such as the airport are greater and thereby potential noise impacts may be slightly less under this alternative.	**Greater Impact** – the construction and operation of this alternative would require additional construction activities for the pipes and pump/lift stations (Impact NOS-1 and NOS-2), thus resulting in an increase in overall noise and vibration impacts that were not analyzed within the Program. Program MM NOS-1 through NOS-3 would still apply.	**Lesser Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar footprint and manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program.	**Greater Impact** – construction of this alternative would involve similar impacts related to noise and vibration (Impact NOS-1 and NOS-2) because this alternative would be constructed in a similar manner as described for the Program and would be located near sensitive receptors at similar distances as described for the Program.
Population and Housing	LTS	**Greater Impact** – the wastewater treatment and collection facilities would continue to operate under existing conditions and therefore would not allow for future growth identified in	**Similar Impact** – the additional treatment facility would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – the additional treatment facilities would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).	**Similar Impact** – this alternative would not result in additional impacts to direct or indirect impacts related to population and housing beyond those analyzed under the Program (Impact POP-1 and POP-2).

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		the Merced Vision 2030 General Plan, resulting in a greater indirect impact to population and housing.						
Public Services and Utilities	LTS	**Greater Impact** – no construction activities would occur, and therefore no changes to public services or utilities would occur; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in service deficiencies.	**Greater Impact** – the additional treatment facility could result in additional environmental effects beyond those analyzed under the Program, as discussed herein (Impact PUB-2). Impacts related to other public services, water infrastructure and supplies, and solid waste (PUB-1, and PUB-3 through PUB-6) would remain unchanged from those analyzed under the Program.	**Greater Impact** – the additional treatment facilities could result in additional environmental effects beyond those analyzed under the Program, as discussed herein (Impact PUB-2). Impacts related to other public services, water infrastructure and supplies, and solid waste (PUB-1, and PUB-3 through PUB-6) would remain unchanged from those analyzed under the Program.	**Similar Impact** – no additional impacts related to public services and utilities (Impact PUB 1 through PUB-6) are anticipated for this alternative beyond those described for the Program.	**Similar Impact** – no additional impacts related to public services and utilities (Impact PUB 1 through PUB-6) are anticipated for this alternative beyond those described for the Program.	**Greater Impact** – the reduction of sewer capacity could result in utilities being developed that would work to serve the SUDP/SOI or alternately would not be developed, in which case greater impacts to public service and utilities (Impact PUB 1 through PUB-6) could occur beyond those described for the Program. It is not anticipated that the reduced capacity would limit impacts further.	**Greater Impact** – conflicts with existing utilities and public services are anticipated under this alternative, and impacts would be greater than those described for the Program (Impact PUB 1 through PUB-6).
Recreation	NI	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives; however, inaction to accommodate the sewer service demands of future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.	**Similar Impact** – recreational facilities within the City would continue to operate under existing conditions, which would not change as a result of implementation of the Program or one of the alternatives.

Environmental Resource Area	Program	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Transportation	LTS/M	**Lesser Impact** – no construction activities would occur; therefore, there would no increases in traffic on roadways; however, inaction to accommodate the sewer service demands of anticipated future growth could result in private or alternative methods of wastewater collection and/or treatment, which could result in additional impacts.	**Greater Impact** – the additional treatment facility would require additional construction and operational truck trips to haul materials to and from the site, thus resulting in additional truck trips on the local roadways, greater interaction with emergency access, and potentially more interaction with farm equipment on the local roadways (Impacts TRA-1 through TRA-4). Program MMs TRA-1 and MM TRA-2 would still apply.	**Lesser Impact** – the additional treatment facilities would require additional construction and operational truck trips to haul materials to and from the sites, thus resulting in additional truck trips on the local roadways, greater interaction with emergency access, and potentially more interaction with farm equipment on the local roadways (Impacts TRA-1 through TRA-4). Program MMs TRA-1 and MM TRA-2 would still apply. However, the smaller localized facilities would require less trunk and collector pipelines disturbing less roadways and also are likely to be 'packaged' treatment facilities requiring less total construction all of which could have a lesser impact than the Program.	**Similar Impact** – this alternative would require similar construction and operational truck trips to haul materials and would result in similar impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program. The trunk sewer down Campus Parkway would not result in any additional impacts related to these topics. Program MMs TRA-1 and MM TRA-2 would still apply.	**Greater Impact** – this alternative would require additional construction and operational truck trips to haul materials for the additional pipes and pump/lift stations, and could result in greater impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program. Program MMs TRA-1 and MM TRA-2 would still apply.	**Lesser Impact** – this alternative would require similar construction and operational truck trips to haul materials and would result in similar impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) as described under the Program; however, the amount of construction would be reduced resulting in a lesser impact. Program MMs TRA-1 and MM TRA-2 would still apply.	**Greater Impact** – this alternative would require similar construction and operational truck trips to haul materials; however, construction within the City limits would result in greater potential impacts related to emergency personnel, and design hazards (Impacts TRA-1 through TRA-4) than those described under the Program. Because the Upsized Existing System Alternative would be constructed in the central portion of the City, where more traffic occurs, additional delays from construction activities would likely occur. Program MMs TRA-1 and MM TRA-2 would still apply.
Overall Impact	**NI: 1** **LTS: 5** **LTS/M: 9**	**Lesser: 10** **Similar: 1** **Greater: 4**	**Lesser: 1** **Similar: 4** **Greater: 10**	**Lesser: 1** **Similar: 2** **Greater: 12**	**Lesser: 1** **Similar: 13** **Greater: 1**	**Lesser: 1** **Similar: 4** **Greater: 10**	**Lesser: 8** **Similar: 6** **Greater: 1**	**Lesser: 2** **Similar: 6** **Greater: 7**
Environmentally Superior Value	**n/a**	**13**	**-14**	**-20**	**13**	**-14**	**20**	**-6**

Notes:
Environmentally Superior Values calculated with the following factors: lesser impact = +2 multiplier, similar impact= +1 multiplier, greater impact=-2 multiplier.
City = City of Merced
GHG = greenhouse gas
LTS = Less than Significant
LTS/M = Less than Significant with Mitigation Required
MM = Mitigation Measure
NI = No Impact
ROW = right-of-way
RWQCB = Regional Water Quality Control Board
SRA = State Responsibility Area
SUDP/SOI = Specific Urban Development Plan/Sphere of Influence

4.2 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA Guidelines Section 15126.6(e)(2) requires an EIR to identify an "environmentally superior alternative." If the No Project alternative is the environmentally superior alternative, the EIR must also identify an environmentally superior alternative from among the other alternatives.

The qualitative and quantitative environmental effects of each alternative in relation to the Program are included in Table 4.1-3. To quantitatively identify an environmentally superior alternative, the number of Program objectives (Table 4.1-1) the alternative meets was weighted and added to value of the environmental impact (Table 4.2-1). Accordingly, the feasible alternative (Table 4.1-2) with the highest quantitative score is the environmentally superior alternative. Table 4.2-1 provides a comparison of these quantitative results and presents the environmentally superior rankings.

Table 4.2-1: Environmentally Superior Alternative Comparison Summary

	No Project Alternative	North Merced Satellite Treatment Alternative	Decentralized Facilities Alternative	Campus Parkway Alternative	Recycled Water Reclamation Alternative	Reduced Build-Out Sewer Capacity Alternative	Parallel or Upsized Existing System Alternative
Weighted Objective Score	6	12	6	18	12	12	16
Overall Environmental Impact	13	-14	-20	13	-14	20	-6
Alternative Score	19	-2	-14	32	-2	32	10
Feasibility	Feasible	Feasible	Not Feasible	Feasible	Not Feasible	Feasible	Not Feasible
Alternative Ranking	3	5	7	1	5	1	4

Note: Alternative score was calculated by adding the overall environmental impact score with the weighted (by a factor of 2) number of objectives met.

Since the Program and proposed Projects would not result in any significant and unavoidable impacts, the environmentally superior alternative is selected based on the discussion in Table 4.1-3, which includes a comparison of whether the alternative would result in a lesser or greater impact than the Program. Overall, the Campus Parkway Alternative and the Reduced Build-Out Sewer Capacity Alternative tied for the best ranking. The Campus Parkway alternative achieves a decrease in fewer environmental effects (noise) but meets 9 out the 10 Program objectives and only has one resource that would increase the magnitude of impact (land use and planning). Conversely, the Reduced Build-Out Sewer Capacity Alternative achieves a decrease in the magnitude of construction related impacts for 8 resources (Aesthetics and Visual Resources, Agricultural and Forestry Resources, Air Quality, Biological Resources, Cultural Resources, Greenhouse Gases and Energy Resources, Noise, and Transportation) but only meets 6 of the 10 Program objectives and increases the environmental impact associated with Public Services and

Utilities. Both alternatives met the feasibility screening criteria and would require similar mitigation measures to reduce potential impacts as the Program. Since the alternatives tied, the environmental impact score was used to select the Reduced Build-Out Sewer Capacity Alternative as the environmentally superior alternative.

4.3 ABBREVIATIONS

CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Merced
CVRWQCB	Central Valley Regional Water Quality Control Board
EIR	Environmental Impact Report
GHG	greenhouse gas
LTS	Less than Significant
LTS/M	Less than Significant with Mitigation
Mgal/d	Million Gallons Per Day
MID	Merced Irrigation District
MM	Mitigation Measure
NI	No Impact
NOP	Notice of Preparation
NPDES	National Pollution Discharge Elimination System
PRC	Public Resources Code
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SR	State Route
SRA	State Responsibility Area
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
UC Merced	University of California, Merced
UPRR	Union Pacific Railroad
WCSMP	Wastewater Collection System Master Plan
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	City of Merced Vision 2030 General Plan

4.4 REFERENCES

City of Merced. 2017. Wastewater Collection System Master Plan. https://www.cityofmerced.org/depts/engineering_division/sewer_master_plan.asp. Accessed April 2019.

City of Merced. 2016. Wastewater Collection System Master Plan (Admin Draft). Accessed July 2019.

City of Merced 2015. Wastewater Collection System Master Plan (Admin Draft). Accessed July 2019.

CVRWQCB (Central Valley Regional Water Quality Control Board). April 2009. Resolution No.R5-2009-0028. In Support of Regionalization, Reclamation, Recycling, and Conservation for Wastewater Treatment Plants. Website: https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2009-0028.pdf. Accessed March 2020.

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5.0 OTHER CEQA CONSIDERATIONS

This section describes required topics including growth inducing impacts, significant and unavoidable impacts, and significant irreversible environmental changes relative to the Program. It also provides an assessment of potential cumulative impacts resulting from the Program in conjunction with recent past, current, and reasonably foreseeable future projects.

5.1 GROWTH-INDUCING IMPACTS

The California Environmental Quality Act (CEQA) Guidelines Section 15126.2(e) requires that an Environmental Impact Report (EIR) evaluate the growth-inducing impact of a proposed action. The Guidelines describe the required growth inducement analysis as follows:

> *Discuss the ways in which the [Program] could foster economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this definition are public works projects which would remove obstacles to population growth, would tax community service facilities, or encourage or facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or little significance to the environment.*

Direct growth inducement would result if the Program involved construction of new housing which would facilitate new population in an area. Indirect growth inducement or secondary growth-inducement potential would be present if the Program would establish substantial new permanent employment opportunities (e.g., commercial, industrial, or governmental enterprises), remove a barrier to direct growth inducement, or if it would involve a substantial construction effort with substantial long-term employment opportunities which could indirectly stimulate the need for additional housing and services to support the new employment demand.

As a plan for wastewater collection system infrastructure and projects implemented as a result of that plan, the Program and proposed Projects would not directly develop housing or foster economic or population growth in the surrounding communities. However, the Program would indirectly accommodate growth by constructing sewer collection and treatment infrastructure that could accommodate additional housing and development. Construction of the Program cannot be considered isolated from immediate development since it would facilitate and serve growth that could occur if the Program is constructed to provide additional wastewater conveyance capacity. As such the Program could be the physical catalyst for future development in the Program Study Area. The growth-inducing potential of the Program would be considered significant if it fosters growth in excess of what is assumed in the local master plans and land use plans, or in projections made by regional planning agencies. However, the Program was developed consistently with one of these plans, the Merced Vision 2030 General Plan (2030 General Plan), and the Program was designed to meet the reasonable growth projections of the 2030 General Plan (City of Merced 2010, 2012). The 2030 General Plan and the 2030 General Plan EIR are incorporated by reference to this Draft EIR and the analysis in those documents, which considered the growth inducement associated with their adoption, was considered. A Statement of Overriding Considerations for the 2030 General Plan EIR was adopted upon certification of the EIR for those impacts.

Additionally, the Program would require construction efforts over the duration of reasonable build-out, which could result in multiple temporary demands on housing to support construction personnel. Depending on the frequency and duration of construction activities, construction personnel could potentially relocate to the area due to the Program's long-term potential for on-going new construction projects. However, this potential is speculative and is unlikely due to the uncertainty, irregularity, and unreliability of construction activities. Even if this were to occur, the number of personnel the construction under the Program would support would be inconsequential since it is anticipated that there would only be 55 construction workers maximum per day, which would not substantially induce growth within the area. The potential introduction of construction personnel requiring housing is an indirect effect of implementation of the 2030 General Plan, and the Statement of Overriding Considerations considered indirect effects of implementation of the 2030 General Plan (City of Merced 2012).

The Program would not result in further growth-inducing impacts beyond what was analyzed in the 2030 General Plan EIR, and therefore, no impact would occur from implementation of the Program, and no further growth-inducing analysis would be required.

5.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126(b) requires an EIR to "describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications, and the reasons why the project is being proposed, notwithstanding their effect, should be described."

No significant and unavoidable impacts were identified to be associated with the Program. After evaluation in Chapter 3.0, Environmental Impact Assessment, 26 potentially significant impacts were identified; however, all of these impacts are mitigated to less than significant levels by implementation of the mitigation measures prescribed. Therefore, the Program would not have significant and unavoidable impacts.

5.3 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Section 15126.2(d) describes irreversible environmental changes as follows:

> *Uses of nonrenewable resources during the initial and continued phases of a project may be irreversible if it requires a large commitment of such resources or makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

The CEQA Guidelines refer to the need to evaluate and justify the consumption of nonrenewable resources and the extent to which the project commits future generations to similar uses of nonrenewable resources. In addition, CEQA requires that irreversible damage that could result from an environmental accident associated with the Program be evaluated.

Construction of the Program would result in the commitment of nonrenewable natural resources used in the construction process and during operation, including gravel, petroleum products, steel, and other materials. As

discussed in Section 3.13, Public Services and Utilities, and Section 3.8, Hazards and Hazardous Materials, the Program would not generate large amounts of construction waste.

Construction and operation of the Program would also result in commitment of energy resources such as fossil fuels and electricity, as discussed in Section 3.7, Greenhouse Gases and Energy Resources. Direct energy use during construction and operation would involve using petroleum products and electricity to operate equipment, and indirect energy use would involve consuming energy to extract raw materials, manufacture items, and transport the goods and people necessary for construction activities. Construction-related energy consumption would be temporary and would be confined to the construction period. Nevertheless, construction and operation activities would, as with any construction project, cause irreversible and irretrievable commitments of finite nonrenewable energy resources, such as gasoline and diesel fuel.

The Program would include all feasible control measures to improve equipment efficiency and reduce energy use as required by the San Joaquin Valley Air Pollution Control District (SJVAPCD). These measures include a Construction Emission and Fugitive Dust Control Plan that would reduce unnecessary equipment idling and other policies that would help reduce energy use and are consistent with state and local legislation, and policies to conserve energy would be followed. In addition, the Program would comply with applicable federal, state, and local policies and regulations pertaining to energy standards and would ensure that natural resources are conserved to the maximum extent possible. Therefore, due to the rate and amount of energy consumed, the Program would not result in the unnecessary, inefficient, or wasteful use of resources and energy use would be accomplished in a manner consistent with applicable laws and regulations.

Finally, construction and operation of the Program has the potential to result in accidental release of hazardous materials, which may lead to irreversible damage. However, as stated in Section 3.8, Hazards and Hazardous Materials, hazardous materials used during construction would be typical of common construction activities. They would be handled by the contractor in accordance with applicable federal, state, and local regulations for hazardous substances. Additionally, the amount of these materials needed for onsite equipment maintenance would not be sufficient to cause a significant hazard to the public or any nearby schools if released since the quantity of these hazardous materials onsite at any one given time would amount to a refueling truck and construction equipment.

5.4 CUMULATIVE IMPACTS

CEQA requires an EIR to include a discussion of cumulative effects of a project when the project's incremental effect is "cumulatively considerable." An effect is cumulatively considerable when it is significant viewed in connection with the effects of past projects, other current projects, and future projects (CEQA Guidelines Section 15065(a)(3)).

A "cumulative impact" is an impact that is created as a result of the combination of a project together with other projects causing related impacts. Therefore, the first step in the cumulative analysis is to identify each impact of the project, and in each case, consider whether there are other projects (past, current, or future) that could have related impacts, and then determine whether the project's contribution to the overall impact is "cumulatively considerable."

For example, a project that constructs and operates a retail center would generate a substantial number of vehicle trips once the center is completed and opened for operation, which would affect road operations and conditions in the vicinity of the project site. A lead agency would be required to not only consider the effects of trips generated by the

project, but also those trips in combination with other projects that might contribute vehicle trips to the same roadway system. Thus, CEQA seeks to avoid situations in which a series of small projects with relatively minor effects eventually result in far larger effects as their effects are combined.

The CEQA Guidelines also state that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness.

In addition, Section 15130 of the CEQA Guidelines identifies that one of the following two options may be used to complete an adequate cumulative analysis:

1. **List Method –** A list of past, present, and reasonable anticipated future projects producing related or cumulative impacts, including those projects outside the control of the lead agency (i.e., the list approach), Section 15130(a).

2. **General Plan Method –** A summary of projections contained in an adopted General Plan or related planning document designed to evaluate regional or area-wide conditions. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency (i.e., the plan approach) Section 15130(b).

This Draft EIR uses both the List Method and the General Plan Method. The 2030 General Plan contains projections for growth and development within the Specific Urban Development Plan/Sphere of Influence (SUDP/SOI) (City of Merced 2012). The CEQA Guidelines (Section 15130(d)) state that a discussion of cumulative impacts contained in previously certified EIRs for land use plans may be incorporated by reference pursuant to provisions for tiering and program EIRs, which means that no further analysis of cumulative impacts beyond the incorporated information is required when a project is consistent with the general plan or "comparable programmatic plan" if the lead agency determines that the regional or areawide cumulative impacts relevant to the project have already been "adequately addressed" in a certified EIR for the plan (Section 15130(d)). The 2030 General Plan EIR considered the cumulative effects of these SUDP/SOI-wide projections, including the associated impacts associated with development and implementation of the Program (City of Merced 2010). The City of Merced's (City) 2030 General Plan EIR is incorporated by reference to account for the cumulative effects of the Program. The discussion in the remainder of this section is included to supplement the analysis of the 2030 General Plan EIR and where applicable review the adequacy. Where applicable the discussion is supplemented with related past, present, and reasonably foreseeable future projects identified by the City.

5.4.1 Geographic Scope

The geographic area that is analyzed for cumulative impacts depends on the resource being analyzed. The geographic area associated with a proposed project's different environmental impacts defines the boundaries of the area used for compiling the list of past, present, and probable future projects considered in the cumulative impact analysis. The geographic area that could be affected by implementation of the Program in combination with other projects varies depending on the type of environmental resource being considered. The general geographic area associated with different types of environmental effects of the Program defines the scope of the area considered in the cumulative impact analysis (Table 5.4-1). Also listed is the method of evaluation used to analyze cumulative impacts for each environmental resource.

Table 5.4-1: Geographic Scope of Cumulative Impact and Method of Evaluation

Resource Topic	Geographic Area
Aesthetics and Visual Resources	Immediate Program Study Area
Agriculture and Forestry Resources	Immediate Program Study Area
Air Quality	Immediate Program Study Area (Toxic Air Contaminants) Air Basin (Construction Related and Mobile Sources)
Biological Resources	Immediate Program Study Area
Cultural and Tribal Resources	Immediate Program Study Area
Geology, Soils, and Minerals	Immediate Program Study Area
Greenhouse Gases and Energy	Global (greenhouse gas) and Statewide (energy)
Hazards and Hazardous Materials	Immediate Program Study Area
Hydrology and Water Quality	Immediate Program Study Area Watershed
Land Use and Planning	Immediate Program Study Area
Noise	Immediate Program Study Area
Population and Housing	Immediate Program Study Area
Public Services and Utilities	Immediate Program Study Area
Recreation	Immediate Program Study Area
Transportation and Traffic	Immediate Program Study Area Regional roadway network

5.4.2 List of Related Plans and Projects

A list of past, current, and reasonably foreseeable future projects was compiled using information from the City, the county, and other local, state, and federal agencies. The past, present and reasonably foreseeable future projects within the City or directly adjacent to the Program Study Area were identified and categorized in Table 5.4-2. For the purposes of this discussion, these projects that may have a cumulative effect on the resources of the Program Study Area are often referred to as the “collective projects.” These projects are described in Table 5.4-2.

Table 5.4-2: List of Collective Past, Present, and Reasonably Anticipated Future Projects in the Region

Project/Action	Status *	Location	Acres	Description
Infrastructure Projects				
Campus Parkway	Pending	Campus Parkway	-	Campus Parkway public works streets and signals project. Estimated construction in 2020-2021 and 2022-2023.
Childs Widening at Highway 99	Pending	Childs Avenue at Highway 99	-	Widening of roadway along Childs Avenue at Highway 59. Estimated construction in 2021-2022.
Yosemite Avenue at Highway 59	Pending	Yosemite Avenue at Highway 59	-	Yosemite Avenue public works streets and signals project.
Roadway Improvements	Pending	Throughout the City's SUDP/SOI	-	Various roadway improvement projects throughout the City of Merced projected to occur after 2023.
Wastewater Collection System Improvements	Current	At the City's WWTRF and throughout the City	-	Various wastewater collection system upgrades and improvements occurring as needed.
Black Rascal Creek Flood Control Project	Current	Merced County	300	This project consists of a new perimeter levee, internal levee, and training levees to create a flood control detention basin and wetland area on Black Rascal Creek, which is a tributary to Bear Creek.
Merced Irrigation District (MID) Water Resources Management Plan	Pending	Throughout MID's service area.	-	MID's Waster Resources Management Plan provides long-term guidance to help optimize MID's water rights, facilities, operations, and finances. It takes into consideration a host of trends for land and water use, as well as existing and upcoming mandated regulations affecting both agriculture and MID operations. Additionally, the modernization of MID facilities will allow more water storage to be conserved in Lake McClure by improving operations and reducing operational water losses at key locations.
Development Projects				
Bellevue Ranch West Village 12	Approved 3/23/2016	Southwest Corner of M Street and Arrow Wood Drive	55	Single-family subdivision
Regency Court Apartments (B.P. Investors)	Approved 8/3/2015	North of Merrill Drive (extended), East of G Street	9.8	Apartments
Compass Pointe II Apartments	Approved 1/6/2016	Southeast Corner of Horizons and Pacific	10.42	Apartments

Project/Action	Status *	Location	Acres	Description
Mansionette Estates Unit 5	Approved 8/20/2014 and 6/20/2016	Southeast Corner of Mercy Avenue and Mansionette Drive	5.92	Single-family subdivision
University Village Merced Annexation (Pending)	Pending	Northeast Corner of Gardner Avenue and Yosemite	28.6 (Annex Area= 70 ac)	Student housing, mixed use, and neighborhood commercial
Bianchi/Norcal Cajun Annexation	Pending	Northwest Corner of Santa Fe Drive and North Highway 59	7.83	Retail/Commercial
Starbucks	Approved 2/3/2016	North of Olive and West of M Street (645 West Olive Avenue)	1	Coffee Shop
Yosemite & McKee Commercial Center	Approved 8/3/2015	Southeast Corner of Yosemite Avenue and McKee Road	5.42	Commercial
University Village Merced-Lake (“Merced Station”)	Approved 6/5/2017	Southeast Corner of Yosemite Avenue and Lake Road	14.5	Apartments (Student Housing)/Retail
Prime Shine	Approved 3/22/2017	16th Street and P Street (930 West 16th Street (Pending)	1.7	Car Wash
Pro Lube	Approved 11/5/2014	Northwest Corner of G Street and 23rd Street	1.93	Pro-Lube/Car Wash/Sandwich Shop
Gas Station/Convenience Mkt/Car Wash- Carol Ave	Approved 7/20/2016	Carol Avenue, North of Childs (764 and 782 Carol Avenue)	1	Gas Station, Convenience Market, Retail Space
Towne Place Suites	Approved 7/22/2015	247 South Parsons Avenue	1.90	Hotel
Childs & Parsons (Old Bowling Alley)	Approved 3/3/2016	Southwest Corner of Childs and Parsons	3.21	Arco Gas Station/Car Wash/Convenience Market, KFC, and Fast Food Restaurant

Other CEQA Considerations
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Project/Action	Status *	Location	Acres	Description
Merced Gateway Center	Approved 8/7/2017	Northeast and Southeast Corner of Coffee and Campus Parkway	77.5	Shopping Center, Apartments, and Fire Station
Super Shop	Approved 11/12/2015	North of 14th Street, West of V Street (1535 West 14th Street)	1.1	Automotive Repair Shop and future Building
Mainzer Theater	Approved 8/25/2016	North side of Main Street, East of N Street (655 West Main)	0.50	Restaurant/Entertainment Stage/Bowling Alley/Theater
El Capitan Hotel	Approved 9/21/2016	Southwest Corner of Main and M Street (611, 613-621 West Main)	0.48	Rehab/Addition for 100-room hotel and retail space
Advanced Chemical Transportation (ACT)	Approved 11/17/2016	271 Riggs Avenue	2	Processing Plan and Warehouse (2 phases)
Bellevue Ranch East Village 15 (Remaining Lots)	Approved 9/25/1996 and 4/17/2006	Bellevue Ranch East South of Mandeville Lane	9.23	Single-family subdivision (Remaining Lots)
Bellevue Ranch East Village 7 (Remaining Lots)	Approved 9/25/1996 and 11/6/2006	Bellevue Ranch East South of Merrill Place	25.70	Single-family subdivision (Remaining Lots)
Bellevue Ranch East Lot Q (Remaining Lots)	Approved 2/22/2006 and 7/17/2006	Bellevue Ranch East Northeast Corner M and Cardella	39	Single-family subdivision (Remaining Lots)
Bellevue Ranch West Village 1 (Remaining Lots)	Approved 9/25/1996 and 8/1/2005	Bellevue Ranch West, West of M Street at Ironstone Drive	-	Single-family subdivision (Remaining Lots)
Campus Vista Unit 2 (Remaining Lots)	Approved 8/4/2004 and 3/7/2005	North of Campus Drive, West of G Street	10.60	Single-family subdivision (Remaining Lots)
Lantana Estates South (Phase 1)	Approved 2/8/2006 and 6/18/2007	East of San Augustine at Cassis Drive	32.20	Single-family subdivision (Remaining Lots)

Project/Action	Status *	Location	Acres	Description
The Meadows Subdivision (Remaining Lots)	Approved 7/20/2005 and 5/1/2006	South of Gerard Avenue, West of Barroso Avenue	19.90	Single-family subdivision (Remaining Lots)
Mission Ranch (Remaining Lots)	Approved 2/6/2006 and 12/4/2006	West of G Street, North of Mission Avenue	16.60	Single-family subdivision (Remaining Lots)
Golden Valley Health Centers (Part of Northview)	Approved 2/8/2018	East of Sandpiper Drive, Approximately 200 feet South of Mercy Avenue	1.80	2-Story Medical Office Building
Northview Medical Offices	Approved 8/21/2013	Southeast Corner if Mercy Avenue and Sandpiper Drive	6	Medical Offices (4 Buildings)
PG&E Regional Utility Center	Approved 4/26/2018	Northeast Corner of Childs Avenue and Kibby Road	28	9,100-square-foot Operations Building, 15,400-square-foot Management Office, and 23,500-square-foot Garage/Maintenance Building
Merced Mall Expansion & Redevelopment (Pending)	Pending	Northeast Corner of West Olive Avenue and R Street	52	Mall Expansion in 2 phases, including 50,000-square-foot retail and expanded 72,000-square-foot Theater
Stoneridge South Subdivision	Approved 5/9/2018	Northeast and Northwest Corner of Mission Avenue and la Hambra (extended)	39.70	Single-family subdivision with future 100 Apartments
Bellevue Ranch East Village 16 (Remaining Lots)	Approved 9/25/1996 and 4/17/2006	Northwest Corner of G Street and Mandeville Drive	17.20	Single-family subdivision (Remaining Lots)
Bellevue Ranch East Village 8 (Remaining Lots)	Approved 9/25/1996 and 916/2006	Southwest Corner of G Street and Foothill Drive	8.62	Single-family subdivision (Remaining Lots)
University Park II, Phase 2 Subdivision (Remaining Lots)	Approved 8/6/2003 and 12/5/2005	East of Highway 59 North of Yosemite Avenue	18.98	Single-family subdivision (Remaining Lots)
Sierra Vista Units 2 & 3 (Remaining Lots)	Approved 10/6/2004 and 7/18/2005	East of Coffee Road, North of Childs Avenue	41	Single-family subdivision (Remaining Lots)

Project/Action	Status *	Location	Acres	Description
Bellevue Ranch East Village 14 (Remaining Lots)	Approved 9/25/1996 and 4/7/2006	Northeast Corner of M Street and Arrow Wood Drive	12.40	Single-family subdivision (Remaining Lots)
Moraga Subdivision Phase 1 (Remaining Lots)	Approved 5/4/2005 and 2/21/2006	South of Yosemite between McKee and Lake Road	60	Single-family subdivision (Remaining Lots)
Cypress Terrace East (Remaining Lots)	Approved 3/8/2006 and 9/17/2006	La Mesa Street and Gerard Avenue	19.70	Single-family subdivision (Remaining Lots)
Sandcastle Phase 2 & 3 Subdivision (Remaining Lots)	Approved 4/23/2003, 5/16/2005, and 11/7/2005	Northeast Corner of Gerard Avenue and Coffee Street	40	Single-family subdivision (Remaining Lots)
Cypress Terrance East Phase 4 (Remaining Lots)	Approved 3/8/2006 and 9/17/2006	La Mesa Street and Gerard Avenue	19.70	Single-family subdivision (Remaining Lots)
Tuscany East Subdivision (Remaining Lots)	Approved 2/23/2005 and 3/6/2006	North of Childs Avenue, West of Hartley Lateral	8.60	Single-family subdivision (Remaining Lots)
Shadow Creek at Compass Point (Remaining Lots)	Approved 6/4/2003 and 10/18/2004	North of Yosemite, West of R Street	108.80	Single-family subdivision (Remaining Lots)

Notes:

ac = acre

MID = Merced Irrigation District

SUDP/SOI = 2030 General Plan Specific Urban Development Plan/Sphere of Influence

WWTRF = Wastewater Treatment and Reclamation Facility

Source: City of Merced Planning Division 2018; City of Merced Capital Improvements Program 2018

5.4.3 Methods

The analysis below examines the cumulative impacts of the Program for each of the resource topics analyzed in Chapter 3.0, Environmental Impact Assessment. The cumulative impacts are assessed by adequacy of the 2030 General Plan EIR and looking at the short-term (construction) and long-term (operational) impacts of the Program combined with the impacts of the past and planned projects listed in Table 5.4-2 (collectively referred to as projects).

The following objectives were set forth to analyze the short-term construction and long-term operational cumulative impacts:

1. Identify if the combined impacts of the Program and the projects in Table 5.4-2 are significant. If so,
2. Determine whether the Program's incremental contribution to that significant impact is cumulatively considerable. If so,
3. Determine if mitigation is feasible.

"**Cumulatively considerable"** means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." (CCR Section 15064(h)(1))

Note: it is possible that even when the cumulative impacts of multiple projects are significant, the incremental contribution of the impact for the Program may itself not be cumulatively considerable (California Code of Regulations [CCR] Section 15064.H4, Communities for Better Environment Case Law). Furthermore, a project's contribution is less than cumulatively considerable if the project implements mitigation measures designed to alleviate the cumulative impact (CEQA Guidelines Section 15130 (a)(3)). In this case, the Program's impact would not be cumulatively considerable.

5.4.4 Resource-Specific Cumulative Analysis

5.4.4.1 Aesthetics and Visual Resources

The 2030 General Plan EIR found the cumulative impact to aesthetic resources from build-out within the SUDP/SOI cumulatively less than significant. For the Program, the geographic scope for potential cumulative impacts to aesthetics and visual resources include foreground views immediately surrounding the Program components, as well as the long-distance views of the Program Study Area. As described in Section 3.1, Aesthetics and Visual Resources, the Program requires very few above-ground elements added to the built environment of homes, roadways, shopping centers, and other buildings and was found to be less than significant with mitigation incorporated to blend above-ground features into the environment. When considered with the projects in the cumulative list (Table 5.4-2) there is a slight potential to affect key views and sensitive aesthetic resources within the Program Study Area. As stated in the 2030 General Plan, many of the projects in Table 5.4-2 would require above-ground facilities and the conversion of undeveloped land to developed, which could result in a substantial changes in the existing visual environment within the Program Study Area. Consistent with the findings of the 2030 General Plan EIR, compliance with general plan policies and standards in conjunction with adopted City regulations would reduce project-level significant impacts, but when combined with the overall growth trends, such as those associated with buildout of the SUDP/SOI, the conversion from agricultural feel to a more urban environment could result in a cumulative significant and unavoidable aesthetic impact. However, given the pace and extent of planned development within the City within the last 20 to 30 years and the timeframe of 2030 General Plan, it is unlikely that there would be a significant conversion of agricultural

lands to urban uses or substantial changes in visual profiles. Thus, the combined visual effects would not be cumulatively significant.

As such, when Program activities are added to the consideration of a potentially significant visual impact, the effects of the Program would have a very limited incremental contribution to the cumulative impacts on aesthetic resources since the mitigation measures described in Section 3.1, Aesthetic and Visual Resources, would restore disturbed areas (mitigation measure [MM] AES-1), set design parameters for above-ground facilities (MM AES-2), and minimize construction and operational lighting (MM AES-3). These measures would reduce any potential contribution from implementation of the Program to any potential significant cumulative aesthetic impacts. Therefore, consistent with the 2030 General Plan EIR analysis, the Program's incremental contribution to aesthetic impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.2 Agriculture and Forestry Resources

The 2030 General Plan EIR found that the cumulative impact to agricultural resources from reasonable build-out within the SUDP/SOI would be cumulatively significant and that new development in conformance with the 2030 General Plan would contribute to these cumulatively significant impacts. For the Program, the geographic scope for potential cumulative impacts to agriculture and forestry resources would include the areas where Program components would be constructed and operated. As discussed in Section 3.2, Agriculture and Forestry Resources, implementation of the Program would occur within existing and proposed rights-of-way (ROW) and would not convert or conflict with these farmlands. All Program components would be consistent with existing agricultural uses and would not result in substantial conversion of agricultural lands. When the new development projects described in Table 5.4-2 occur in combination with the Program, as described in the 2030 General Plan EIR, there would be a significant cumulative effect.

When Program activities are considered for their contribution to the cumulative impact, it is not considered significant because the Program's contribution would be within existing or future road rights-of-ways and would not result in any substantial conversions of agricultural land. Therefore, when considered in addition to the anticipated impacts of other projects in the cumulative scenario, the Program's incremental contribution to agricultural impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.3 Air Quality

The 2030 General Plan EIR found the cumulative impact to air quality resources from reasonable build-out within the SUDP/SOI cumulatively significant and unavoidable. When the Program's contribution to this impact is considered the short term construction-related, and long-term operation-related (regional) emissions of reactive organic gases (ROG), oxides of nitrogen (NO_x), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). all factor

into the Program's potential contribution to the cumulative impact. As described in Section 3.3, Air Quality, Ozone and PM_{10} have the potential for severe cumulative concentrations that could result in significant and unavoidable cumulative impacts.

For the evaluation of cumulative impacts, SJVAPCD recommends that lead agencies use the project-level significance standards to determine whether a project's construction or operational emissions of criteria pollutants would have a cumulatively considerable contribution to a significant cumulative impact. Based on this methodology and described in Section 3.3, Air Quality, the Project-level impact of construction emissions associated with construction and operation of the Program would not be cumulatively considerable after implementation of the dust reduction and ozone precursor limiting mitigation incorporated.

Other projects in the cumulative list (Table 5.4-2) would be required to analyze construction emissions in a similar manner and if determined emissions are below the thresholds, would also not be cumulatively considerable. If emissions are above the thresholds, then mitigation would be required to reduce potential cumulative impacts from construction emissions to a less than significant level and would be able to incorporate the 2030 General Plan's EIR's significant and unavoidable cumulative impact into their project. So while, land use development in the Program Study Area and the overall air basin would result in a significant and unavoidable impacts, the Program's contribution would not be significant itself and would not result in a cumulatively considerable incremental increase to a cumulative impact related to air quality.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.4 Biological Resources

The 2030 General Plan EIR found the cumulative impact to biological resources from reasonable build-out within the SUDP/SOI cumulatively less than significant. The projects in Table 5.4-2, similar to the 2030 General Plan discussion, would have the potential to effect special-status species within the Program Study Area that find habitat within the existing intensive urbanization and agricultural uses. As found in the 2030 General Plan EIR, compliance with General Plan policies and standards as well as agency-mandated surveys and project-level mitigation measures would result in a less than significant cumulative impact to biological resources.

As described in Section 3.4, Biological Resources, the Program would avoid or mitigate impacts to sensitive biological resources through its placement in existing and proposed disturbed areas such as road ROWs, the use of trenchless technology for stream crossings, and implementation of mitigation measures. Additionally, the avoidance and mitigation of potential impacts to special status species would not result in a significant contribution to any potential cumulative effect. Therefore, when combined, these projects would not result in a substantial cumulative impact to biological resources. Therefore, the Program would not substantially contribute to an incremental cumulative impact related to biological resources.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.5 Cultural and Tribal Resources

The 2030 General Plan EIR found there was no cumulative impact to cultural resources from reasonable build-out within the SUDP/SOI. The projects in the cumulative list (Table 5.4-2) would have the potential to result in potentially significant impacts to cultural or tribal resources if any of the projects listed in Table 5.4-2 would substantially disrupt or change the significance or importance of any cultural or tribal resources. The projects listed in Table 5.4-2 would be located within fixed locations and would require environmental review and related identification of known cultural resources within their individual footprints. All of these sites would either be located in areas that do not contain significant cultural or tribal resources or would require mitigation to avoid any known resources. Additionally, as part of the stipulations of the permits required for these projects and provided through state and local requirements, any unknown cultural or tribal resources discovered onsite during construction of these projects would require evaluation and subsequent analysis if deemed necessary by an archaeologist, thus preventing any significant impacts to cultural or tribal resources.

As discussed in Section 3.5, Cultural and Tribal Cultural Resources, impacts from the Program would be less than significant with mitigation incorporated. Consistent with the 2030 General Plan EIR, the Program and other projects within the Program Study Area would comply with federal, state, and local laws and regulations protecting cultural resources, including historical resources, and as such, the Program's incremental effect to the combined cumulative effect would not be substantial. Therefore, the Program's incremental contribution to cumulative impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.6 Geology, Soils, and Minerals

The 2030 General Plan EIR found the cumulative impact to geology and soil resources from reasonable build-out within the SUDP/SOI cumulatively less than significant and no cumulative impact to mineral resources. For the Program, as described in Section 3.6, Geology, Soils, and Minerals, construction would involve excavation and grading that would disturb soils and potentially expose them to erosion or topsoil loss.

When combined, projects in the cumulative list (Table 5.4-2) have the potential to result in cumulative impacts to geologic, soil, and seismic conditions if substantial erosion and overall lack of stability of soils occurs from combined actions. In particular, the projects listed in Table 5.4-2 consist of commercial, residential, and infrastructure projects within the Program Study Area and areas immediately adjacent to it. Based on comparison of the project locations, none of the projects listed in Table 5.4-2 would be located in geologic hazard zones or liquefaction, landslide, or Mineral Resource Zones (MRZ). As such, consistent with the 2030 General Plan EIR, impacts associated with geology, soils and seismicity for related projects would not combine to create a greater impact.

The Program's incremental effect to the combined cumulative scenario is not substantial because the Program, along with other projects implemented under the 2030 General Plan and the projects in Table 5.4-2, would meet the policies of the 2030 General Plan along with compliance with federal, state, and local regulations addressing building construction, engineering regulations, and permitting conditions that would restrict the Program's contribution to cumulative significance. These impacts would be site-specific, and when considered together with related projects,

would not combine to create greater cumulative impacts due to geology, soils, seismicity, or paleontological resources. Therefore, the Program's incremental effect to cumulative geology and soils impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.7 Greenhouse Gases and Energy Resources

Cumulative effects of greenhouse gases (GHG) were addressed with the air quality evaluation of cumulative impacts in the 2030 General Plan EIR which found a significant an unavoidable impact to GHGs and looked at energy resources for the plans ability to irreversibly commit energy resources. Relevant to the Program, GHG and energy resources are global and in their very nature cumulative. As discussed in Section 3.6, Greenhouse Gases and Energy Resources, impacts would result in a less than significant impact with mitigation incorporated. Although the Program would involve the use of increased electricity and fuel during construction and operation, it is intended to improve or replace aging wastewater collection system infrastructure with newer, more efficient machinery that would provide reliable future wastewater infrastructure necessary to meet the projected growth of the City's SUDP/SOI service area. For the full analysis of cumulative impacts related to GHGs from the Program, see Section 3.6. The Program's incremental contribution to cumulative GHG and energy impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.8 Hazards, Hazardous Materials, and Wildfires

The 2030 General Plan EIR found the cumulative impact to hazards and hazardous material resources from reasonable build-out within the SUDP/SOI cumulatively less than significant. As the 2030 General Plan evaluated, local, region, state, and federal regulations and policies of the 2030 General Plan would limit the potential cumulative impacts by limiting the risk of exposure to hazardous materials, wastes, safety hazards near airports and airstrips, and wildland fires. When combined, projects in Table 5.4-2 have the potential to generate hazards and hazardous materials or place people at risk from them as identified in Section 3.8, Hazards and Hazardous Materials, this temporary risk of increase in short-duration hazards transport in compliance with governing laws and regulations and mitigation measures, the combined impacts to hazards and hazardous materials within the geographic scope would not be cumulatively significant.

The Program's incremental effect to the combined cumulative impact is also not substantial because the Program would not result in substantial impacts and would not contribute to the worsening of impacts caused overall because of the implementation of the project-level mitigation and compliance with regulations incorporated. Therefore, when considered in addition to the anticipated impacts of other projects and evaluation of cumulative impacts in the 2030 General Plan EIR, the Program's incremental contribution to cumulative hazards and hazardous material impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.9 Hydrology and Water Quality

The 2030 General Plan EIR found the cumulative impact to hydrology and water quality resources from reasonable build-out within the SUDP/SOI cumulatively less than significant for hydrology, water quality, and flooding, but cumulatively significant for groundwater. When combined, projects listed in Table 5.4-2 have the potential to affect surface and groundwater hydrology and water quality within the watershed and groundwater basin. Construction and operation of these projects could introduce sediment and other pollutants to surface waters or groundwater and could impact water quality or disrupt the existing drainage and flood patterns, causing damage to structures or people. These projects, along with projects under the 2030 General Plan, would be required to comply with local and state regulations, such as the Stormwater Pollution Prevention Plan (SWPPP) and best management practices (BMP) to regulate water quality and drainage patterns such that receiving water bodies are not impaired. As a result of adherence to these regulations, the combined effects from the construction and operation related to water quality and surface water drainage would not be considered cumulatively significant.

As described in the 2030 General Plan EIR, groundwater depletion and recharge have the potential for overdraft if not properly managed, resulting in the potential for a significant cumulative impact. With the passage of the Sustainable Groundwater Management Act since certification of the 2030 General Plan EIR, local agencies are addressing this cumulative impact through Groundwater Sustainability Plans. These plans, in conjunction with the implementation of project-specific mitigation measures, would help reduce the impacts within the Program study area to less than cumulatively significant.

The Program's incremental effect to these combined effects is not substantial because the Program would also implement mitigation that would reduce any potential project or cumulative effect to a less than significant level. Additionally, compliance with applicable federal, state, and local regulations described in Section 3.9, Hydrology and Water Quality, would reduce the likelihood of impacts to water quality, drainage, and groundwater management. Therefore, the Program's incremental effect to cumulative hydrology and water quality impacts would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.10 Land Use and Planning

The 2030 General Plan EIR found that there would be no cumulative impact to land use and planning resources from reasonable build-out within the SUDP/SOI. For the Program, impacts involving land use plans or policies and zoning generally would not combine to result in cumulative impacts. The determination of significance for impacts related to these issues as considered in Appendix G of the CEQA Guidelines is whether a project would conflict with any applicable land use plan or policy adopted for the purpose of reducing or avoiding environmental impacts. Such a conflict is site-specific and is addressed on a project-by-project basis. As described in Section 3.10, Land Use and Planning, implementing the Program is consistent with the existing land use designation and zoning, and land use plans and policies and would not result in a significant impact. The Program is also consistent with the 2030 General Plan, and components under the Program would be developed as needed, consistent with approved land use plans,

policies, and zoning. Therefore, the Program would not contribute to any incremental cumulative impacts regarding this issue.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.11 Noise

The 2030 General Plan EIR found the cumulative impact to noise resources from reasonable build-out within the SUDP/SOI less than significant. When combined, with the projects listed in Table 5.4-2 have the potential to result in substantial increases in noise or vibration levels beyond acceptable levels defined by the 2030 General Plan and Merced County Noise Ordinance would occur if multiple noise sources were occurring at the same time. The City would have discretion with approvals of projects that could cumulatively generate noise, and the 2030 General Plan Noise Element has several specific development policies and standards to minimize and mitigate noise impacts. Specifically, the development projects and some of the transportation projects listed in Table 5.4-2 would result in increases in operational noise or vibration, which could result in a cumulatively considerable effect if appropriate design measures and construction noise reduction measures are not taken. Prior to issuance of any building permits for these projects, environmental reviews would be required to determine construction and operational noise levels for nearby sensitive receptors. Permanent or temporary noise and vibration measures (e.g., sound barriers) could be required. All of the projects would be required to show compliance with the 2030 General Plan policies and to ensure combability with surrounding land uses.

The Program's incremental effect to the combined cumulative scenario is not substantial because the Program construction activities would adhere to the existing policies noise regulations and would implement mitigation measures, which would reduce impacts from construction related noise and vibration to a less than significant level. Further, as described in Section 3.11, Noise, because construction of the Program includes largely linear activities and activities away from receptors in rural areas, no single sensitive receptor would be substantially affected by construction noise for extended periods of time. It is unlikely that noise impacts as a result of Program construction activities would occur. Therefore, the Program would not contribute to substantial incremental cumulative impacts related to construction noise or vibration.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.12 Population and Housing

The 2030 General Plan EIR found there would be no contribution to cumulative impact to population and housing from reasonable build-out within the SUDP/SOI. The 2030 General Plan sets forth policies that control and direct growth in a well-planned manner, which would improve jobs and housing opportunities and as a result would not have the potential to result in a significant cumulative impact. The Program would not involve construction or operation of any new residential or commercial uses that would increase population or necessitate the need for housing. The increase in capacity of the wastewater collection system was analyzed based on reasonable build-out identified in the

2030 General Plan and thus would not cumulatively contribute to any effect. Therefore, the Program would not contribute to any incremental cumulative effects related to population and housing.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.13 Public Services and Utilities

The 2030 General Plan EIR found the cumulative impact to public services from reasonable build-out within the SUDP/SOI less than significant, and the 2030 General Pan would not contribute to a significant cumulative impact. The Program would not involve construction or operation of any new residential or commercial uses that would require increased fire or police protection, new parks or schools, or increased demand for wastewater, water, or other public services or utilities. Consistent with the 2030 General Plan, the Program proposes conveyance and treatment wastewater facilities. Therefore, the Program would not contribute to any incremental cumulative effects related to these resources.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.14 Recreation

The 2030 General Plan EIR found there would be no contribution to cumulative impact to recreation from reasonable build-out within the SUDP/SOI. The Program would not involve the construction or operation of any new parks, or demolition or removal of any existing parks. Therefore, it would not contribute to any substantial cumulative effects related these resources. No impact would occur.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.4.4.15 Transportation

The 2030 General Plan EIR found there would be a cumulatively considerable impact to transportation and traffic from reasonable build-out within the SUDP/SOI. Senate Bill 375 was passed after the General Plan EIR was published however, as discussed in Section 3.15, Transportation and Traffic, construction would result in a temporary increase of vehicle trips that generate vehicle trips, however these trips are short in duration and temporary in nature. The projects identified in Table 5.4-2 likely have the potential to contribute to the cumulatively considerable impacts identified in the 2030 General Plan; however, the Program's contribution to this impact is not considerable because transportation impacts related to the Program are primarily limited to construction activities, which are temporary and apply project-based mitigation measures as well as comply with local regulations and the 2030 General Plan Circulation element.

Future development in the area would be subject to additional environmental review and determination by the City for potential cumulative impacts related to transportation. Therefore, when considered in addition to the anticipated

impacts of other projects in the cumulative scenario, the Program's incremental contribution to traffic and transportation would not be cumulatively considerable.

Cumulative Mitigation Measures: None Required

Cumulatively Considerable Impact? No

5.5 ACRONYMS

ac	acre
BMP	best management practices
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
City	City of Merced
EIR	Environmental Impact Report
GHG	Greenhouse Gases
MID	Merced Irrigation District
MM	mitigation measure
MRZ	Mineral Resource Zone
NOx	Nitrogen Oxides
$PM_{2.5}$	fine particulate matter
PM_{10}	respirable particulate matter
ROG	Reactive Organic Gases
ROW	Right-Of-Way
SJVAPCD	San Joaquin Valley Air Pollution Control District
SUDP/SOI	Specific Urban Development Plan/Sphere of Influence
SWPPP	Stormwater Pollution and Prevention Plan
WWTRF	Wastewater Treatment and Reclamation Facility
2030 General Plan	Merced Vision 2030 General Plan

5.6 REFERENCES

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6.0 LIST OF PREPARERS

As required by the California Environmental Quality Act (CEQA), this chapter identifies the preparers of this Environmental Impact Report (EIR).

Table 6-1: Draft EIR Preparers and Reviewers

City Staff		
Ken Elwin		
Kim Espinosa		
Scott McBride		
Consultant Staff		
CEQA Section	**Author**	**Technical Reviewer**
Executive Summary/Introduction	Zoryana Pope	Kim Clyma
Project Description	Zoryana Pope	Kim Clyma Dave Price
Aesthetics	Zoryana Pope	Dave Price
Agricultural and Forestry Resources	Zoryana Pope	Meghan Oats
Air Quality	Zoryana Pope	Elena Nuno Trevor Macenski Dimitri Antoniou, AICP
Biological Resources	Emily Eppinger Meghan Oats	Dave Plumpton Morgan Kennedy
Cultural Resources and Tribal Cultural Resources	Meagan Kersten	John Nadolski
Geology, Soils, and Minerals	Morgan Kennedy	Zoryana Pope
Greenhouse Gasses and Energy Resources	Zoryana Pope	Elena Nuno Dimitri Antoniou, AICP
Hazards and Hazardous Materials	Zoryana Pope	Dave Price
Hydrology and Water Quality	Zoryana Pope	Dave Price Katherine Gray
Land Use and Planning	Zoryana Pope	Robert Prohaska
Noise and Vibration	Zoryana Pope	Katherine Gray Tracie Ferguson Dimitri Antoniou, AICP
Population and Housing	Zoryana Pope	Robert Prohaska
Public Services and Utilities	Zoryana Pope	Robert Prohaska
Recreation	Zoryana Pope	Robert Prohaska
Transportation and Traffic	Zoryana Pope	Dave Price

List of Preparers
September 2020

Alternatives	Zoryana Pope	Dave Price
Cumulative/other considerations	Zoryana Pope	Dave Price
Acronym List/Distribution List	Zoryana Pope	Ann Tolman
Literature Cited	Zoryana Pope	Ann Tolman
Technical Editing	Chris Broderick	
Document PM and QAQC	Kim Clyma, JD Robert Prohaska Dave Price, PE Paul Uncapher Mike Parker, AICP Gary Jakobs, AICP	
Formatting	Ann Tolman	
Cover Graphic Arts CD Labels Figures	Mike Maddux	

The following includes the title and qualifications of each preparer and/or reviewer:

Table 6-2: Preparer's Qualifications

Name	Expertise and Education
Consultant Staff	
Kim Clyma	Project Manager, Senior Environmental Scientist JD, Law; BA, Environmental Studies; GIS Certificate
Paul Uncapher	Principal/ Senior Project Manager BS, Geological Sciences
Trevor Macenski	Senior Principal MS, Environmental Science and Policy; BS, Environmental Policy Analysis and Planning
Robert Prohaska	Principal Planner MS, Environmental Health Services; BA, Geography
Dave Price	Senior Associate, Water BS, Environmental Engineering; Registered Professional Engineer, California and Washington
Dave Plumpton	Principal, Environmental Planner & Permitting Specialist PhD, Natural Resources Conservation; MS, Wildlife Biology; BS, Wildlife Biology
John Nadolski	Senior Archaeologist PhD, Archaeology; MA, Anthropology; BS, Anthropology
Emily Eppinger	Wildlife Biologist BS, Wildlife Management; GIS Certificate
Meagan Kersten	Archaeologist MA, Anthropology; BA, Anthropology
Katherine Gray	Environmental Scientist

List of Preparers
September 2020

	MS, Environmental Science and Policy; BS, Environmental Studies with a focus in Sustainable Development
Meghan Oats	Environmental Scientist, Botanist BS, Biology and Environmental Science
Morgan Kennedy	Vegetation Ecologist BA, Geography with a Biophysical Environment emphasis and minor in Geology; Wetland Delineator Certificate
Zoryana Pope	Environmental Planner BS, Environmental Protection and Management
Tracie Ferguson	Senior Acoustics Associate MS, Acoustics; BA, Music
Chris Broderick	Technical Editor BA
Mike Maddux	Technical Illustrator GIS/CAD/Graphics Specialist BS, Graphic Design
Ann Tolman	Project Manager Assistant AA, Administration of Justice
Mike Parker	Technical Review MA, English; BA, English, AICP
Gary Jakobs	Technical Review BA, Economics, AICP
Dimitri Antoniou	Technical Review MA, City and Regional Planning; BS, Environmental Management and Protection, AICP

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Appendix A NOTICE OF PREPARATION

A.1 NOTICE OF PREPARATION

A.2 COMMENTS RECEIVED

City of Merced

Notice of Preparation of a Draft Environmental Impact Report

Date: July 9, 2018

Project Title: City of Merced Sewer Master Plan Update

To: Responsible Agencies, Organizations, and Interested Parties

Lead Agency: City of Merced
678 W 18th St
Merced, CA 95340
(209) 385-6800

Contact: Ken Elwin, PE, Public Works Director, City of Merced

INTRODUCTION

The City of Merced (City) will prepare an Environmental Impact Report (EIR) that addresses the potential impacts of implementing the proposed Updated Wastewater Collection System (WCS) Master Plan (Master Plan or proposed Project) to address key wastewater infrastructure needs within the City. Your input is requested in the form of written comments regarding the scope of the EIR including potential environmental impacts and alternatives to be considered.

The EIR is being prepared in compliance with the California Environmental Quality Act (CEQA). Under CEQA, upon deciding to prepare and EIR, the City, as lead agency, must issue a Notice of Preparation (NOP) to inform trustee agencies, the public, and responsible agencies of the decision. Accordingly, the purpose of this NOP is to provide information describing the Master Plan including associated potential environmental effects to those in the public who may wish to comment regarding the scope and content of the information to be included in the EIR. Agencies should comment on such information as is related to their statutory responsibilities in connection with the Master Plan.

The EIR will provide an evaluation of potential environmental impacts associated with implementation of the Master Plan at a project- and program-level where appropriate. The Master Plan location, description, and environmental resource areas that may be affected by development of the Master Plan are described below. The EIR will evaluate potentially significant environmental impacts of the Master Plan, on both a direct and indirect, and cumulative basis; identify mitigation measures that may be feasible to lessen or avoid such impacts; and identify alternatives that may lessen one or more potentially significant impact to the Master Plan.

PROJECT LOCATION/SETTING

Figure 1, Project Vicinity, shows the setting of the proposed Project area in the Merced County region. The proposed Project is located entirely within the boundaries shown in the City's *Merced Vision 2030 General Plan*, including the University of California at Merced (UC Merced) campus and additional community planning areas (Figure 2). This area includes the area within existing City limits, as well as the authorized sphere-of-influence (SOI) for the City, as recognized by the Merced County Local Agency Formation Commission (LAFCo).

PROJECT DESCRIPTION

Development of the WCS Master Plan has been an iterative process from 2002 to 2017 to evaluate and assess function, expansion, and replacement of the wastewater collection system within the City to accommodate existing and future development. Wastewater generated within the City is collected in a series of pipelines which the City owns, operates, and maintains. The system includes over 400 miles of gravity sewers which collect wastewater from a majority of residential users, as well as, commercial users, industrial users, and public uses.

The current Master Plan identifies potential capacity constraints within the existing sewer system, assesses the future demand for these services, and develops recommendations for short- and long-term Capital Improvement Projects (CIP) to address the identified issues needed to serve the anticipated future capacity. During preparation of the Master Plan the City attempted to minimize impacts to the four natural streams that flow through the City: Fahrens Creek, Black Rascal Creek, Cottonwood Creek and Bear Creek, while working to maximize gravity flow of the sewer system to reduce energy and pump station costs.

This most recent draft Master Plan, released in December 2017, incorporated elements from other planning documents that have been developed, including the *Merced Vision 2030 General Plan* and the University of California (UC) Merced 2020 Project Addendum Long Range Development EIS/EIR. These planning documents, combined with the Master Plan, have led to the identification of Alternative Plan A as the preferred alternative to address the long-range sewer system planning needs for the City.

PROJECT ELEMENTS

The purpose of the Master Plan is to:

1. Update land use and wastewater flows accommodating the *Merced Vision 2030 General Plan*;
2. Assess the available capacity of the City's major sewers;
3. Determine the best means to sewer the build-out of the *Merced Vision 2030 General Plan* SUDP;
4. Develop an interim service plan and CIP for City growth; and
5. Establish a sewer repair and replacement program.



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City of Merced
Wastewater Collection System Master Plan
Environmental Impact Report

Figure 1
Project Vicinity

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N

0 0.2 0.4 0.6 0.8 1.0
APPROXIMATE SCALE IN MILES

Stantec

FAHRENS CREEK

59

W BELLEVUE RD

E BELLEVUE RD

'G' ST

UC MERCED CAMPUS

Bellevue-1: 24 in ø

Bellevue-1A2: 27 in ø

18271-2: 24 in ø

G STREET TRUNK

E CARDELLA RD

W.G: 54 in ø

W.F: 48 in ø

W.E: 42 in ø

W.D: 42 in ø

W.C: 27 in ø

W.B: 24 in ø

W.A: 24 in ø

PS

LAKE RD

W.H: 54 in ø

21 in ø

W YOSEMITE AVE

MCKEE RD

BLACK RASCAL CREEK

HIGHWAY 59 PUMP STATION

W OLIVE DR

E OLIVE DR

99

WESTERN INDUSTRIAL PARK

BEAR CREEK

E SANTA FE DR

R ST

DEDICATED HIGH STRENGTH/HIGH VOLUME INDUSTRIAL WASTE LINE

KIBBY RD

30 in ø

WEST AVE TRUNK

WEST AVE

140

E.D: 18 in ø

MERCED MUNICIPAL AIRPORT

E CHILDS RD

S THORNTON RD

W.I: 60 in ø

S 'G' ST

E GERARD AVE

E.E: 21 in ø

48-INCH INTERCEPTOR

GERARD TRUNK

E MISSION AVE

E.H: 36 in ø

E.G: 36 in ø

E.F: 27 in ø

HARTLEY SLOUGH

MILES CREEK

COVE RD

W.J: 60 in ø

E.I: 36 in ø

59

99

OWENS CREEK

E.J: 36 in ø

W REILLY RD

REILLY RD

E.K: 36 in ø

E.L: 36 in ø

E.M: 36 in ø

CITY OF MERCED WWTRF

MILES CREEK

OWENS CREEK

LEGEND

- FORCEMAINS
- PS LIFT STATIONS
- PROPOSED UPGRADES
- EXISTING CITY LIMITS
- MERCED VISION 2030 GP SUDP BOUNDARY
- PARCELS IDENTIFIED IN EITHER NMSD OR TSAM
- SUDP BUILDOUT SEWERSHED
- EXISTING SEWER SYSTEM
- CREEKS

City of Merced
Wastewater Collection System Master Plan
Environmental Impact Report

Figure 2
Proposed Project

ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The EIR will analyze potentially significant impacts that result from construction and operation of the Master Plan. Pursuant to section 15063(a) of the CEQA Guidelines, the EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA statute and the CEQA Guidelines including:

- Aesthetics and Visual Resources
- Agriculture and Forestry Resources
- Air Quality and Greenhouse Gases
- Biological Resources
- Cultural and Tribal Resources
- Energy Resources
- Geology, Soils, and Mineral Resources
- Hazards, Hazardous Materials, and Wildfires
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services and Utilities
- Recreation
- Transportation and Traffic

Potential environmental impacts associated with implementation of the Master Plan are anticipated to be analyzed at project-level where feasible and a program-level for all other considerations. Preliminary screenings indicate that any potential adverse effects can be avoided, redesigned, minimized and/or mitigated through the development of alternatives or adoption of appropriate mitigation measures. The EIR will consider a range of potential temporary construction-period impacts, permanent impacts, and cumulative impacts.

SUBMITTING COMMENTS

Comments and suggestions as to the appropriate scope of analysis in the EIR are invited from all interested parties. Written comments or questions concerning the EIR for the WCS Master Plan should be directed to the City's public works director at the following address by **5:00 PM on August 7th, 2018**.

Ken Elwin, PE, City of Merced Public Works Director
678 W 18th Street
Merced, CA 95340
E-mail: elwink@cityofmerced.org

All comments should please include the name, email address, phone number, and mailing address of the contact person submitting the written response. In the event no response or request for additional time is received by any responsible agency or trustee agency by the end of the review period on **August 7th, 2018**, the City may presume that the responsible agency or trustee agency has no response.

SCOPING MEETING

A public scoping meeting will be held to receive comments on environmental issues that should be addressed in the Draft EIR as well as the range of practicable alternatives to be evaluated in the Draft EIR. The address, date, and time of this meeting are as follows:

Date: **Tuesday, July 24, 2018**
Time: **5:30 –7:30 pm**
Place: Merced Civic Center, Sam Pipes Room
678 W. 18th Street
Merced, CA 39540

RECEIVED
AUG 07 2018
ENGINEERING DEPT.

July 25, 2018

Ken Elwin PE, City of Merced Public Works Department
678 West 18th St.
Merced, CA 95340

RE: Draft Environmental Impact Report City of Merced Master Plan Update

Dear Mr. Elwin:
We are the owners of the property which fronts on Cardella Rd. and runs from G St. to Gardner Rd. We currently farm the 80-acre southwest parcel to 3-year-old almond trees. This parcel is in the city limits. The remainder of the 240 acres (160 acres) is currently farmed to winter oats. We mention this because we recently experienced a PG&E pipeline construction along G St., where workers from PG&E were parking along Cardella Rd. and inside our orchard, which impeded our normal farming practices, without notice to us prior to their work. We do not wish for this to occur during any sewer line construction running down Cardella Rd., as it could impede our farming practices again, depending on the time of year and requirements for irrigation, spraying, pruning, harvest, and other farming practices performed year-round. Any pipeline construction on Cardella Road should not impede our "right to farm".

Access to our house is accessed by entering Cardella Rd. from G St., and is located between G St. and Gardner Rd. The paved road is somewhat maintained by the City, from the G Street access. There is only dirt road access from Gardner Rd. across our back field on a road which we maintain and is suitable only for a pickup or an all-terrain vehicle. Our daily vehicles, mail vehicles, and guest vehicles cannot travel across the dirt road from Gardner Rd. Mail trucks, visitors, etc. must access our home on Cardella Road. The back portion of our ranch (160 acres) is in the County. It is important to us that the sewer builders understand our ingress and regress predicament and offer us some solutions before making the G St. access unsuitable for driving using regular cars (non-four-wheel drive and non-pickups).

The land on either side of Cardella Road to the east sits at a higher elevation than the land closer to G St. Stormwater and any overflow irrigation waters naturally flow across Cardella Rd. into a drain located on the south side of Cardella Road into the current G St. drain. Depending on the rainy season, the amount of water flowing into the drain can be considerable. Any construction along Cardella Rd. should take the drainage issues and the topography of the land in the area into consideration. Excess water running into the orchard from poorly considered drainage issues would be extremely harmful to the trees.

Of course, the condition of Cardella Rd. after any construction is important to us. Will the road be improved and extended to Gardner Rd. and beyond? Will Cardella Rd. become an access road to Old Lake Road and the University connecting with the other portion of Cardella Rd. to the east? Cardella Rd, will become a main East-West through fare and traffic flows should be taken into account. Will our driveway access to our home be rebuilt by the project?

Please consider all of these issues as you plan your Environment Impact Report for the sewer project.

Thank you,

Pete and Vicki Bandoni
1550 E. Cardella Rd.
Merced, CA 95340

Pete Bandoni
Vicki Bandoni

August 7, 2018

City of Merced
Merced City Council,
678 West 18th st.
Merced, CA 95340

Dear, Mayor Mike Murphy and Council members, Michael Belluomini, Kevin Blake, Josh Pedrozo, Anthony Levi Martinez, Jill McLeod, Matthew Serratto

We are writing this letter as landowners of property adjacent to the proposed 2030 Sewer Project along Cardella Rd. We have owned and farmed 240 acres of land in this location for over 40 years. Our income is derived from farming our land to almonds and winter oats. We do believe that planning for northern growth is vital, but we have watched over many years the ebb and flow of development in north Merced. While developers close to the University of California, Merced, and the Lake Road and Bellevue Corridor may be in a hurry to have sewer access, development of lands in between the University and Cardella Rd. will likely not be developed for many years. The majority of this land is still used for farming, grazing cattle, and low-density residential.

It is our understanding that it is the City of Merced's plan to create a sewer assessment district to finance the 2030 sewer project. We have heard numbers in the neighborhood of $1000 per acre per year for 40 years. For our family, that would mean $240,000 per year, which would put such a financial burden that we could be forced to lose our land or change our livelihood. This is simply unsustainable for any landowner who does not develop their property, essentially forcing all farmers and residents along Cardella Road to sell out or change their current operations completely. Much of the land is owned in small parcel ranchettes that function on private septic systems, and those that would benefit in the long term would only be the developers. How could it be that the burden would lie with landowners, with and unsustainable assessment?

As landowners, longtime citizens of Merced, and parents, we feel an obligation to find a balance between planning for the future of our community as a whole and planning for our future as a family. We urge you to not only consider the University of California and its interest in the project, but find an equitable financial solution to finance any " sewer expansion" for which the benefits are years in the future for the landowners in between.

Sincerely,

Pete and Vicki Bandoni

Law Offices of
Richard L. Harriman
1078 Via Verona Drive
Chico, California 95973-1031
Telephone: (530) 343-1386
Email: harrimanlaw1@sbcglobal.net

August 6, 2018

VIA EMAIL TRANSMISSION
[elwink@cityofmerced.org]]

Ken Elwin, PE,
Public Works Director
City of Merced
678 W. 18th Street.
Merced, CA 95340

Re: Merced Wastewater Collection System Master Plan (MWCSMP)
Comments re Notice of Preparation for Environmental Impact Report
Request for Notice of All Public Notices re Availability of Public Environmental Review Documents and Meetings, Hearings, and Workshops

Dear Mr. Elwin:

As you were informed previously at the Scoping Meeting for the above-referenced Program and Project held on July 24, 2018, I am a property owner in the City of Merced and also represent the Merced Citizens for Responsible Planning (MCRP) and the San Joaquin Valley Environmental Defense Center (SJVEDC), regarding this matter.

After having carefully reviewed the Notice of Preparation (NOP) for the above-referenced Program and Project Environmental Impact Report (EIR), I am submitting the following objections to and comments regarding the NOP for the above-referenced EIR.

1. I incorporate by reference herein all of the oral objections and comments made by attorney Michael Claiborne and the undersigned at the Scoping Meeting held on July 24, 2018.

2. The project description for the program and project is inadequate, due to the fact the proposed program and project fails to provide a stable, complete, finite, and accurate description of the "whole of the project" because the NOP fails to include the expansion of the City's Waste Water Treatment Facility at Gurr Road, which will the proposed project is designed and will be constructed to serve.

3. Based on the previous comment, the Notice of Preparation is defective and fails to provide the public and stakeholders with adequate notice of what the true and accurate "whole of the project" will be. Therefore, the NOP should be corrected, re-circulated to the trustee and affected federal, state, and local agencies, and published as required by law; and the Scoping Meeting should be re-noticed and conducted, after the project description has corrected to remedy the improper segmentation of the whole project, due to the "piece-mealing" of the program and project by the lead agency, so that the City property owners, taxpayers, and rate-payers will be properly informed of the true scope of the whole program./project and cost of the whole program/project.

4. The Project Alternatives need to be revised and expanded to disclose, analyze, and consider the use of de-centralized tertiary treated wastewater facilities that can be specially planned, designed, and engineered to be constructed and served new growth as it occurs, rather than incurring the exorbitant costs of the construction and debt service for growth that may not occur or be necessary. [See article attached to December 18, 2017 letter to the City Council, regarding the City's Urban Water Management Plan, enclosed herewith and incorporated herein.]

5. The 2017 UWMP is flawed and invalid, based on the reasons set forth in Comment No. 4 hereinabove, which needs to be disclosed, analyzed and considered in the program/project EIR.

6. The City's proposed use of surface water supplied by the Merced Irrigation District (MID) from the Merced River raises significant environmental effects and other legal issues that need to be disclosed, analyzed, and considered in the EIR for this program/project.

7. The EIR needs to disclose, analyze, and consider the common law Public Trust Doctrine's applicability to the City's proposed use of in-stream surface water in conjunction with the groundwater supply that has been historically relied upon by the City for its Municipal and Industrial ("M&I") water supplies. Specifically, the EIR must disclose, analyze, and consider the legal and other design and construction issues raised by the use of water impressed with the "Public Trust" for its M&I purposes, in conjunction with the California Water Code mandate to recycle and re-use its treated urban effluent within its jurisdiction. [See CWC sections 13350 et seq.]

8. The Urban Water Management adopted by the lead agency on December 18, 2017 is defective and valid due to the failure of the City to include and analyze recycling and re-use of treated urban water effluent within is jurisdiction. [See Commentator's letter of December 18, 2017 to the City Council, attached hereto and incorporated herein by reference.]

9. The EIR needs to disclose, analyze, and consider in the Environmental Background and Environmental Setting section the recently announced policy and decision to

reduce the diversion of surface water from the Merced River and other tributaries of the San Joaquin River by 40-60%, due to fact that the City's 2017 UWMP plan states the lead agency's policy and decision to depend on a conjunctive use system. Specifically, the City has stated in its UWMP that it will use surface water diverted by the MID for its agricultural water supply to mix with existing groundwater supplies for the City's M&I uses. This foundational assumption included in the City's 2017 UWMP is no longer valid and cannot be relied upon in the EIR for the proposed program/project.

10. The EIR needs to disclose, analyze, and consider the local Groundwater Sustainability Agency's (GSA's) groundwater management plan, which has not yet been completed or adopted. Until the local GSA's groundwater management plan has been completed and adopted, the lead agency's lack of a final plan must be disclosed, analyzed, and considered, and the City will need to provide current updated accurate groundwater facts, data, and information about the reliability and sustainability of both the surface water supply that may be banked in the City's groundwater basin and the existing supply of groundwater that the City plans to utilize to provide potable water for the City's M&I supplies identified in the 2017 UWMP. These facts, data, and information will need to be analyzed and considered in both the Environmental Background/Setting sections and the Project Alternatives section of the EIR.

11. The EIR needs to include full disclosure, analysis, and consideration of the direct and indirect impacts on the City's proposed surface and groundwater supplies from "Global Warning." The NOP refers to "Greenhouse Gases;" but this term should include facts, data, and information regarding "Global Climatic Disruption," as described by Dr. John Holdren (former Assistant to the President on Science and Technology and Harvard Professor of Environmental Policy) in Thomas L. Friedman's 2008 book, "Hot, Flat, and Crowded," at page 134. This subject matter must be addressed in the Environmental Background, Air Resources, Biological Resources, Hydrological Resources and Project Alternatives. These sections must include disclosure, analysis, and consideration of the substantial probability of significant reduction in the amount of annual snowfall and spring runoff from the Sierra Nevada in the Merced River, which is purported to be the surface water source of the City's M&I water supplies and of the recharge for agricultural, municipal, and industrial use.

12. The EIR must analyze and consider Environmental Justice issues, with respect to how the proposed program/project will impact the lower income communities and communities of color in the City of Merced regarding the issues raised at the Scoping Meeting by Michael Claiborne, attorney for the Leadership Counsel for Justice and Accountability, concerning adverse impacts on affordable housing and other quality of life issues that disproportionally impact the African-American, Hmong, Latino, and lower income communities in the City. In addition, the issue of consistency with the City General Plan, which the City must update to include an Environmental Justice Element by the end of 2018, must be disclosed, analyzed, and considered, pursuant to Government Code sections 65040.12 and 65302(h).

13. The issues of General Plan consistency with the program/project, as a whole, must be disclosed, analyzed, and considered in the EIR. These issues have been raised numerous times in the stakeholders' meetings, public meetings before the City Council, the public hearings regarding this program/project, and the UWMP matter, at which City Staff and the City's consultants from STANTEC have been present. It is the position of this Commentator that the City will need to amend the City General Plan as part of the process and actions taken by the City Council to proceed with the proposed program/project, both as described and as a whole. Therefore, this Commentator has raised and is raising, again, this issue as one which must be properly addressed in the Draft EIR and the EIR process that has been commenced. The amendment of the City General Plan policies, goals, objectives, and its implementation action plan should have been included in the NOP and notice to the public of the Scoping Meeting; and this defect in the NOP and the Notice to the Public is raised herein and is not waived.

14. As was raised in the Scoping Meeting by Mr. Claiborne and me, there is a substantial probability that the proposed program/project will have a significant impact on the physical environment of the minority communities who reside in Merced, as caused by short-term, intermediate term, and long-term construction activities and by the physical urban blight that will be caused by the development and construction of the proposed program/project. Moreover, the failure to provide and include the costs of the construction of the expansion of the Gurr Road WWTF caused by this program/project and the long-term servicing of the debt from the program/project as a whole in the NOP constitutes a major defect in the notice to the public of the proposed program/project as a whole. This procedural defect should be remedied ***immediately*** by the revision and correction of the notice of the NOP and the Scoping Meeting, because this issue is not waived and will infect the entire environmental review process, if not addressed forthwith.

15. With regard to the issue of impacts caused by urban blight to the physical environment by the proposed program/project, the City's consultants must disclose, analyze, and consider the potentially significant effects on the existing urban environment in the EIR and should include an economic study of such potential environmental effects in the EIR. This study should also include an analysis of the potentially significant financial impacts on property owners and rate-payers of the substantial increase in debt service and operating expenses generated by and associated with the development of the program/project ***as a whole***. If the economic and financial impacts of the program/project are not addressed, the City could face another financial disaster similar to the recent recession (e.g., the Bellevue Ranch infrastructure bond default by property owners and developers), due the failure of the lead agency to identify, disclose, analyze, and consider the potentially significant impacts of the overly aggressive expansion of the City's sewer collection system infrastructure and the WWTF on Gurr Road, in violation of the City's current General Plan policies, goals, objectives, and implementation action plan.

Thank you for the opportunity to comment on the NOP for this program/project EIR. Please note the procedural objections set forth herein and the undersigned's request for timely written notice by email and U.S. Mail of all future environmental review and planning documents and all public stakeholders' meetings, workshops, Planning Commission and City Council meetings and hearings concerning this matter, including Agenda items regarding the revision and/or amendment of the program/project description and/or Notice of Preparation and re-scheduling of another Scoping Meeting for the revised project description and Notice of Preparation.

Respectfully submitted,

/s/ *Richard L. Harriman*
RICHARD L. HARRIMAN
Attorney for MCRP and the
San Joaquin Valley
Environmental Defense Center

Encl.: December 18, 2017 Letter re 2017 UWMP w/ enclosures

cc: Ken Alex, Director, OP&R
California Department of Water Resources
Central Valley Regional Water Quality Control Board
Merced Sun Star
Clients

Law Offices of
Richard L. Harriman
1078 Via Verona Drive
Chico, California 95973-1031
Telephone: (530) 343-1386
Email: harrimanlaw1@sbcglobal.net

December 18, 2017

VIA EMAIL TRANSMISSION
[cityclerk@cityofmerced.org]

Michael Murphy, Mayor
Merced City Council
678 W. 18th Street, 1st Fl.
Merced, CA 95340

Re: City of Merced Amended 2015 Urban Water Management Plan (UWMP)
Item J.3 on Council Consent Agenda for December 18, 2017
Comments and Objections re Final Amended 2015 UWMP
Hearing Date: December 18, 2017; 6:00 p.m.
Request to Pull Matter from Consent Agenda and Discuss

Honorable Mayor Murphy and City Council Members:

As you have been previously informed, I am a property owner in the City of Merced and also represent the Merced Citizens for Responsible Planning (MCRP) and the San Joaquin Valley Environmental Defense Center. .

The purpose of this letter is to request that you pull the above-referenced item from your Consent Calendar, in order to discuss and deliberate in open session the approval of the proposed final Amended City of Merced 2015 Urban Water Management Plan, which is required to have been approved no later than July 1, 2016.

After having carefully reviewed the above-referenced document, I am submitting the following comments and objections to the final Amended 2015 UWMP.

1. P. 6-7, line 2: The plan mistakenly refers to "sewer drought conditions," which should be corrected to read "**severe** drought conditions." (emphasis added)

2. The final Amended 2015 UWMP states, at p. 6-10:

CWC §10633

*The plan **shall provide**, to the extent available, information on recycled water and **its potential for use as a water source in the service area of the urban water supplier**. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area*

All of the City's wastewater is treated at the Wastewater Treatment Facility (WWTF). **Currently, the City's recycled water program is in its early stages** and is used within the Public Works Collections Department. **The City does not have the infrastructure to convey large quantities of recycled water to customers within the service Area**. Any recycled water not used by the Public Works Department is used for Agricultural irrigation and environmental purposes. According to the 2016 Draft Sewer Master Plan, the City's wastewater generation was 85 gallons." (emphasis added)

As will be discussed in greater detail below, the primary defect in the Amended 2015 UWMP is that it does not comply with the mandatory statutory requirement that the UWMP discuss and analyze the potential for use of recycled water as a water source in the service area of the City of Merced and the alternatives which would achieve this statutory goal.

The amended UWMP concedes that the City's recycled water program is in its early stages and that the City does not have the infrastructure to convey large quantities of recycled water to customers within the service area. [see quoted portion above] The reason for this lack of progress in the development of the use of recycled water in the City is that it has not chosen to analyze or include consideration of the use of recycled water in the City's service area. The evidence for this statement is contained in the 2016 Draft Sewer Master Plan, which fails to include a plan for the development of infrastructure for a sewer water recycling plant in north Merced, where a majority of development is occurring and will continue to occur, due to the location of the University of California campus, nor has the City has chosen not to analyze or consider the alternative of de-centralized tertiary treatment facilities to be constructed on the site of, or in close proximity to, new developments as they occur.

In addition, there is no analysis or consideration in the Amended UWMP of the cumulative financial impacts to the City of Merced and to its residents from the costs of the infrastructure necessary to treat the surface water proposed by the City, the new trunk line system necessary to transport the untreated effluent to the existing Waste Water Treatment Facility (WWTF) located 10-12 miles from new development in north Merced, of the expansion of the WWTF, nor of the cost of a separate trunk line to return the treated effluent to the location of new development for re-use, as required by California Water Code (CWC) section 13350 et seq. (re-use of treated recycled urban effluent in the service area of the source of the untreated urban effluent).

Despite the fact that the City has been working on the Draft Sewer Master Plan since 2007 and on the 2015 UWMP for over almost four years, there is still no evidence in the amended 2015 UWMP that the City intends to comply with either CWC sections 10633 or 13350. It should also be noted that, in Fig. 3.4 at p. 3-9, the population of the City will be 105,000 in 2020 and approximately 145,000 in 2035, according to the 2035 Merced General Plan

Update. Thus, the longer the City postpones its compliance with CWC sections 10633 and 13350, the more costly in will be for the City and its ratepayers to treat and transport potable and recycled water for re-use in the City's service area.

Therefore, the City should address, analyze, and consider the potential for the use of recycled water now---as mandated by CWC sections 10633 and 13350 et seq.

3. Section 6.4.3.2, at p. 6-18, of the amended UWMP states:

"***CWC §10633***
(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
CWC § 10633
(g) ***(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*** (emphasis added)

The City supports use of reclaimed water in the service area **where economically feasible, though there are no current plans to do so.** The City however, has taken steps to promote and expand the use of reclaimed water and promote awareness among City stakeholders. The majority of the potential use of recycled water consists of agricultural demands **and minimal application is planned for urban reuse. The City does not provide or maintain incentives to use reclaimed water."** (emphasis added)

The foregoing quotation from the Amended UWMP further demonstrates, again, the City's lack of compliance with CWC section 10633. Here, the City blatantly disregards the mandatory statutory language in subsection (g) above to "Provide a plan" for the express purposes of "for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use."

In this context, it is particularly instructive to refer to Tables 6-7 and 6-8, at pp. 6-17 and 6-18, which report that no more than 1.0 acre foot (AF) of the treated effluent is currently used for urban re-use in the City's service area as required by CWC section 13350 et seq., which "consultant's failure to perform its duties under its contract with the City to provide an UWMP which complies with the statutorily requirements of the Act.

The foregoing citations to CWC section 10633 set in relief the City's willful failure and refusal to proceed in the manner required by law, in violation of CWC section 10651.

4. Section 6.7, p. 6-19, states:

"***CWC §10631***
(g) …The urban water supplier ***shall include a detailed description of expected future projects and programs…that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier*** *in average, single-dry, and multiple-dry water years.* ***The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project.*** *The description shall include an estimate with regard to the implementation timeline for each project or program.*" (emphasis added)

The foregoing section reinforces the statement immediately preceding this statement in section 6.6.2, which states:

> "UC Merced's Long Range Development Plan identifies the need for the Campus to consider the use of recycled water for irrigation and industrial use. The plan recognizes the City as a source for recycled water. However, the City and UC Merced do not have any plans to implement the transfer of recycled water. Therefore, any transfers between the City and UC Merced have not been considered for the planning period. The City's 2015 Water Master Plan (Water Master Plan) identifies the need to increase the water supply in the future and outlines alternatives to address the potential supply deficiency."

These two sections, again, demonstrate the City's unwillingness and refusal to analyze, discuss or consider the use of tertiary treated effluent or de-centralized tertiary treatment facilities in its UWMP. Section 6.7 also fails to include a "detailed description of expected future projects and programs…that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years" and to "identify specific projects and include a description of the increase in water supply that is expected to be available from each project,: as required by CWC section 10631(g) set forth above.

Specifically, the amended UWMP fails to disclose and include a detailed description of the conveyance system that will be necessary to transport the additional untreated effluent that will be produced as a result of the use of surface water with groundwater in the proposed "conjunctive water use" system which is described in the amended UWMP, along with the project and program that will be necessary to expand the WWTF on Gurr Road to treat the increased supply of water resulting from the importation of surface water from the Merced River source utlilized by the Merced Irrigation District (MID).

What has been omitted from the amended UWMP by the City and its consultants is the cumulative project infrastructure and its components that will have to be constructed as parts of the new Surface Water Treatment Plant (SWTP) system---including the cost to the City and its residents of this entire integrated water supply, treatment, re-use, and disposal system. By omitting the required "detailed description of future projects and programs that the urban water supplier **may** implement to increase the amount of water supply available to the urban water supplier," the City violates the legislative intent of the law set forth in CWC sections 10610.2 and 106l0.4.

Specifically, the amended UWMP violates CWC section 10610.4, subsections (a), (b), and (c), as follow:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

In support of the foregoing arguments in favor of including a meaningful role for de-centralized recycling opportunities in the City's 2015 UWMP, I have provided a copy of an article that was published in the *Valley Voice* in the summer of 2015, which was also published in the Merced Sun Star in July, 2015, for your information and for the record.

Finally, the failure of the City to comply with CWC section 16031, subd. (g) will result in the improvident and imprudent expenditure of public funds, which will result in a substantial increase to City residents and tax payers in the rates paid to store and supply their potable water and to convey and treat the increased wastewater resulting from growth and development in the City. The residents and rate payers of Merced deserve to have their legal and economic interests protected by your City Council.

With your Council's leadership, Merced can be a statewide example of "Smart Growth" and financially responsible development**. Please do not adopt the proposed resolution approving the amended 2015 UWMP in its current form and until your Sewer Master Plan has been finally approved.** The City is already a year and a half late in approving its UWMP; please take the time to do it and the Sewer Master Plan right.

Respectfully submitted,

/s/ *Richard L. Harriman*
RICHARD L. HARRIMAN
Attorney for MCRP and the
San Joaquin Valley
Environmental Defense Center

Encl.: Valley Voice Article
cc: Clients
Council members

VALLEY VOICE

Urban Water Conservation: Another Alternative

Posted on August 6, 2015 by Richard L. Harriman

Lester Snow's recent editorial, "Drought Serves as Wake-up Call for Major Changes" (*Sacramento Bee*, July 11), invites renewed focus on "improved urban water conservation."

California statutes mandate re-use of tertiary *treated* wastewater by urban communities within their jurisdictions. Re-use of tertiary treated wastewater from de-centralized treatment facilities for purposes that do not require potable water is defined as "beneficial use" of water.

Civil engineering consultants in the Bay area and the San Joaquin Valley already have the knowledge and technology necessary to design and construct specially engineered tertiary wastewater treatment systems to serve new development or retro-fit infill development. The UC Merced Engineering Department has the intellectual ability and resources to assist in the application or improvement of such technology in Merced and the Valley. If implemented, this technology can reduce the demand for potable urban water by almost 30% .

Similarly, financing for de-centralized tertiary wastewater systems is available. Community Facility District (CFD) financing for public police, fire safety services, and infrastructure for public utilities is commonly utilized throughout the state. Public finance consultants are familiar with this financing; and, following the repeal of redevelopment agency statutes, new financing options are being created by consultants, and new legislation will follow.

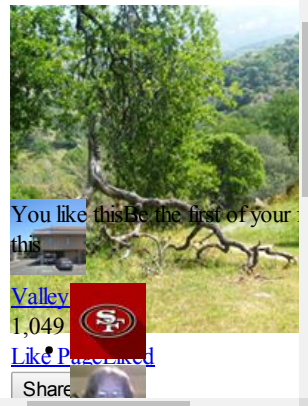
The financial and environmental benefits of specially engineered community wastewater treatment facilities are numerous. First, using small-scale wastewater treatment systems allows a local government to avoid excess treatment capacity and debt service for development of treatment facilities that are *over-sized* to anticipate future growth. Second, the use of small-scale community wastewater treatment facilities avoids having to *speculate* about the rate of future growth and allows the local governments to respond more accurately to *real growth*, rather than speculate on growth during uncertain future economic conditions.

The failure to use small-scale wastewater facilities imposes an unnecessary burden on the existing local taxpayers and water users. Currently, they pay for excess unused capacity that does not benefit these rate payers—who do *not need it, and will never use it.* Using tertiary treated wastewater from small-scale de-centralized facilities avoids the cost of having to construct and operate additional unnecessary water conveyance facilities to *return the tertiary treated waste water* to the users for re-use on site.

Finally, the environmental benefits of small-scale wastewater treatment facilities includes re-use of urban tertiary treated wastewater closer to the original user, as required by statute, which will reduce the total amount of groundwater used. Second, the use of this technology allows local governments to "fine tune" the amount and rate of new growth which will occur in the local community. Third, these systems may be used for both new development and retro-fitting in-fill growth, without expanding or surcharging the existing centralized wastewater treatment facilities. Fourth, charging the residents of the new growth and/or infill development for the cost of their own wastewater treatment facilities and operating expenses will make these residents more aware of their own water use, so they may reduce their use of potable water supplies as much as possible. Fifth, the use of small-scale de-centralized wastewater treatment facilities will reduce demand *per capita* on groundwater supplies.

Therefore, the current paradigm of hugely expensive large-scale centralized wastewater treatment facilities must be re-examined in the light of currently available wastewater treatment technology and financing. Governor Brown's administration should aggressively pursue "improved urban conservation" by permitting developers to elect state-of-the-art small-scale de-centralized tertiary wastewater systems for new development. This alternative can be expedited and implemented quickly by executive action. This strategy will

Search …



Upcoming Events

Tue 11

Valley Oak SPCA Yappy Hour

August 11 @ 5:00 pm - 9:00 pm
Recurring Event (See all)
Every month on the second Tuesday

The Planing Mill Artisan Pizzeria
Visalia CA

Tue 11

save money for local rate payers and will protect environmental resources, while implementing the mandatory “beneficial use” of recycled tertiary treated wastewater.

Mr. Harriman is an environmental and land use attorney who has practiced in the Central Valley for over 39 years.

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Valley Oak SPCA Yappy Hour

August 11 @ 5:00 pm - 9:00 pm
Recurring Event (See all)
Every month on the second Tuesday

Tue 11

Kindergarten Readiness Storytime

August 11 @ 6:15 pm - 7:00 pm
Recurring Event (See all)
Every week

Tulare Public Library
Tulare CA

Tue 11

Palette Club Meeting

August 11 @ 7:00 pm - 8:00 pm
Recurring Event (See all)
Every month on the second Tuesday

Tulare Historical Museum
Tulare CA

Tue 11

Exeter Friends of the Library

August 11 @ 7:00 pm - 8:00 pm
Recurring Event (See all)
Every month on the second Tuesday

Exeter Branch Library
Exeter CA

Wed 12

Farmers Market at Quail Park

August 12 @ 10:30 am - 1:30 pm
Recurring Event (See all)
Every week

Quail Park Retirement Village
Visalia CA

View More…

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From: Elwin, Ken
To: Clyma, Kimberly
Cc: Espinosa, Kim
Subject: FW: NOP COMMENTS
Date: Monday, August 6, 2018 8:53:18 AM
Attachments: NOP ATTACHMENTS SCSMP.pdf

Kimberly;

Please see the attached from Mr. Rick Telegan.

Thanks
Ken

From: RICK TELEGAN <fresno3rdm@aol.com>
Sent: Saturday, August 04, 2018 7:16 PM
To: Elwin, Ken <ElwinK@cityofmerced.org>
Subject: NOP COMMENTS

Mr. Elwin….Please accept this email, with attachments, as my comment letter relative to the proposed environmental impact report intended to be prepared for the city's draft Sewer Collection System Master Plan. Thank you.

- Analyze the financial impact and economic burden, both direct and in-direct, on those parcels of land within the North Merced Sewer District that have not yet been developed.

- Analyze and explain how this Sewer Collection System Master Plan would further the city's intent of consistency with each of the "Guiding Principles" enumerated in the "Merced Vision 2030 General Plan" (beginning on page I-iii), particularly:
    - Expansion of the Sphere of Influence and City boundary with phasing of development to avoid premature conversion of agricultural land and to plan for cost-effective extension of municipal services.
    - Foster compact and efficient development patterns.
    - Connectivity between existing and planned urban areas.

- Justify, in detail, why future developments (particularly in the new SUDP areas) should be financially responsible for "addressing existing system deficiencies" (paragraphs 7.3.1 and 7.4.2 of draft plan, December 15, 2017), rather than the existing rate-payers (through the monthly city imposed sewer service fees).

- Explain the fairness of the city's intent to establish an assessment district encompassing the

entire SUDP while limiting the areas to be initially annexed, as was previously mentioned in various public gatherings, including the notice of preparation for this environmental document held on July 24, 2018.

- Thoroughly evaluate the environmental and financial results of an alternative that permits property owners, individually or collectively with neighboring property owners, to opt-out of the city's plan and assessment district, allowing them to build , when needed to develop, their own sewer collection and treatment system, including urban re-use (within the City of Merced).

- Thoroughly evaluate the environmental and financial results of modifying the Sewer Collection System Master Plan to allow UC Merced, and its associated community, to build their own tertiary sewer treatment plant on their property, thereby removing the rush to have this plan approved, financed and constructed…all without the burden that this plan would have on thousands of acres privately owned property.

- In light of the statement on page ES-1 of the Executive Summary dated December 15, 2017 ["The most important concept coming out of these concurrent planning efforts is that the City is not planning to implement extensive effluent reuse (i.e. the City is not planning to install a 'purple pipe' distribution system) in the North Merced area], explain how Merced's proposed Sewer Collection System Master Plan complies with the California Water Code, Sections 13550, 13551, 13552.2, 13552.4, 13552.6, 13552.8, 13553 and 13554 (see attached).

- In a July 14, 2015 email to me from the then Merced City Manager John Bramble (see attached), he said that at the July 6th 2015 city council meeting, "…the City Council authorized a separate study to be funded considering different uses for the recycled water from the wastewater treatment plant…". This study needs to be completed and the results analyzed in order for the Sewer Collection System Master Plan to comply with California State Law.

- In an article recently written by Mr. Marc Benjamin titled "Fresno, Clovis Plan To Mix Recycled Sewer Water For Drinking" published in the July 18, 2018 edition of The Business Journal (see attached), nearly two (2) dozen water agencies in California are working with state officials to make this a reality. The article mentions that the Central Valley must have a sustainability plan by 2020, and needs to achieve that sustainability by 2040. How does the Sewer Collection System Master Plan intend to interface with the near future concept of blending potable water with treated sewer water to accomplish the sustainability

requirements of the State of California?

RICK TELEGAN, PARTNER
3rd MILLENNIUM INVESTMENTS
2206 East Muncie Avenue
Fresno, California 93720
Telephone 559.298.9300
Cell 559.269.3441

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13550. (a) The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the state board, after notice to any person or entity who may be ordered to use recycled water or to cease using potable water and a hearing held pursuant to Article 2 (commencing with Section 648) of Chapter 1.5 of Division 3 of Title 23 of the California Code of Regulations:

(1) The source of recycled water is of adequate quality for these uses and is available for these uses. In determining adequate quality, the state board shall consider all relevant factors, including, but not limited to, food and employee safety, and level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. In addition, the state board shall consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits.

(2) The recycled water may be furnished for these uses at a reasonable cost to the user. In determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water.

(3) After concurrence with the State Department of Public Health, the use of recycled water from the proposed source will not be detrimental to public health.

(4) The use of recycled water for these uses will not adversely affect downstream water rights, will not degrade water quality, and is determined not to be injurious to plantlife, fish, and wildlife.

(b) In making the determination pursuant to subdivision (a), the state board shall consider the impact of the cost and quality of the nonpotable water on each individual user.

(c) The state board may require a public agency or person subject to this article to furnish information which the state board determines to be relevant to making the determination required in subdivision (a).

(Amended by Stats. 2014, Ch. 544, Sec. 14. (SB 1458) Effective January 1, 2015.)

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DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13550. (a) The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the state board, after notice to any person or entity who may be ordered to use recycled water or to cease using potable water and a hearing held pursuant to Article 2 (commencing with Section 648) of Chapter 1.5 of Division 3 of Title 23 of the California Code of Regulations:

(1) The source of recycled water is of adequate quality for these uses and is available for these uses. In determining adequate quality, the state board shall consider all relevant factors, including, but not limited to, food and employee safety, and level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. In addition, the state board shall consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits.

(2) The recycled water may be furnished for these uses at a reasonable cost to the user. In determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water.

(3) After concurrence with the State Department of Public Health, the use of recycled water from the proposed source will not be detrimental to public health.

(4) The use of recycled water for these uses will not adversely affect downstream water rights, will not degrade water quality, and is determined not to be injurious to plantlife, fish, and wildlife.

(b) In making the determination pursuant to subdivision (a), the state board shall consider the impact of the cost and quality of the nonpotable water on each individual user.

(c) The state board may require a public agency or person subject to this article to furnish information which the state board determines to be relevant to making the determination required in subdivision (a).

(Amended by Stats. 2014, Ch. 544, Sec. 14. (SB 1458) Effective January 1, 2015.)

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13551. A person or public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, shall not use water from any source of quality suitable for potable domestic use for nonpotable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses if suitable recycled water is available as provided in Section 13550; however, any use of recycled water in lieu of water suitable for potable domestic use shall, to the extent of the recycled water so used, be deemed to constitute a reasonable beneficial use of that water and the use of recycled water shall not cause any loss or diminution of any existing water right.

(Amended by Stats. 1995, Ch. 28, Sec. 40. Effective January 1, 1996.)

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13552.2. (a) The Legislature hereby finds and declares that the use of potable domestic water for the irrigation of residential landscaping is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for this use, is available to the residents and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

(Amended by Stats. 1995, Ch. 28, Sec. 41. Effective January 1, 1996.)

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13552.4. (a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for irrigation of residential landscaping, if all of the following requirements are met:

(1) Recycled water, for this use, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The irrigation systems are constructed in accordance with Chapter 3 (commencing with Section 60301) of Division 4 of Title 22 of the California Code of Regulations.

(b) This section applies to both of the following:

(1) New subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1994, for which the State Department of Public Health has approved the use of recycled water.

(2) Any residence that is retrofitted to permit the use of recycled water for landscape irrigation and for which the State Department of Public Health has approved the use of recycled water.

(c) (1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project that only involves the repiping, redesign, or use of recycled water for irrigation of residential landscaping necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

(Amended by Stats. 2010, Ch. 288, Sec. 45. (SB 1169) Effective January 1, 2011.)

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13552.6. (a) The Legislature hereby finds and declares that the use of potable domestic water for floor trap priming, cooling towers, and air-conditioning devices is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user, and the water meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to submit information that the state board determines may be relevant in making the determination required in subdivision (a).

(Amended by Stats. 1995, Ch. 28, Sec. 43. Effective January 1, 1996.)

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WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13552.8. (a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water in floor trap priming, cooling towers, and air-conditioning devices, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) If public exposure to aerosols, mist, or spray may occur, appropriate mist mitigation or mist control is provided, such as the use of mist arrestors or the addition of biocides to the water in accordance with criteria established pursuant to Section 13521.

(4) The person intending to use recycled water has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the public agency, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies to both of the following:

(1) New industrial facilities and subdivisions for which the building permit is issued on or after March 15, 1994, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1994, for which the State Department of Public Health has approved the use of recycled water.

(2) Any structure that is retrofitted to permit the use of recycled water for floor traps, cooling towers, or air-conditioning devices, for which the State Department of Public Health has approved the use of recycled water.

(c) (1) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water for floor trap priming, cooling towers, or air-conditioning devices necessary to comply with a requirement prescribed by a public agency under subdivision (a).

(2) The exemption in paragraph (1) does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

(Amended by Stats. 2014, Ch. 544, Sec. 15. (SB 1458) Effective January 1, 2015.)

WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13553. (a) The Legislature hereby finds and declares that the use of potable domestic water for toilet and urinal flushing in structures is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(b) The state board may require a public agency or person subject to this section to furnish any information that may be relevant to making the determination required in subdivision (a).

(c) For purposes of this section and Section 13554, "structure" or "structures" means commercial, retail, and office buildings, theaters, auditoriums, condominium projects, schools, hotels, apartments, barracks, dormitories, jails, prisons, and reformatories, and other structures as determined by the State Department of Public Health.

(d) Recycled water may be used in condominium projects, as defined in Section 4125 or 6542 of the Civil Code, subject to all of the following conditions:

(1) Prior to the indoor use of recycled water in any condominium project, the agency delivering the recycled water to the condominium project shall file a report with, and receive written approval of the report from, the State Department of Public Health. The report shall be consistent with the provisions of Title 22 of the California Code of Regulations generally applicable to dual-plumbed structures and shall include all the following:

(A) That potable water service to each condominium project will be provided with a backflow protection device approved by the State Department of Public Health to protect the agency's public water system, as defined in Section 116275 of the Health and Safety Code. The backflow protection device approved by the State Department of Public Health shall be inspected and tested annually by a person certified in the inspection of backflow prevention devices.

(B) That any plumbing modifications in the condominium unit or any physical alteration of the structure will be done in compliance with state and local plumbing codes.

(C) That each condominium project will be tested by the recycled water agency or the responsible local agency at least once every four years to ensure that there are no indications of a possible cross connection between the condominium's potable and nonpotable systems.

(D) That recycled water lines will be color coded consistent with current statutes and regulations.

(2) The recycled water agency or the responsible local agency shall maintain records of all tests and annual inspections conducted.

(3) The condominium's declaration, as defined in Section 4135 or 6546 of the Civil Code, shall provide that the laws and regulations governing recycled water apply, shall not permit any exceptions to those laws and regulations, shall incorporate the report described in paragraph (1), and shall contain the following statement:

"NOTICE OF USE OF RECYCLED WATER

This property is approved by the State Department of Public Health for the use of recycled water for toilet and urinal flushing. This water is not potable, is not suitable for indoor purposes other than toilet and urinal flushing purposes, and requires dual plumbing. Alterations and modifications to the plumbing system require a permit and are prohibited without first consulting with the appropriate local building code enforcement agency and your property

management company or owners' association to ensure that the recycled water is not mixed with the drinking water."

(e) The State Department of Public Health may adopt regulations as necessary to assist in the implementation of this section.

(f) This section shall only apply to condominium projects that are created, within the meaning of Section 4030 or 6580 of the Civil Code, on or after January 1, 2008.

(g) This section and Section 13554 do not apply to a pilot program adopted pursuant to Section 13553.1.

(Amended (as amended by Stats. 2012, Ch. 181, Sec. 84) by Stats. 2013, Ch. 605, Sec. 53. (SB 752) Effective January 1, 2014.)

WATER CODE - WAT

DIVISION 7. WATER QUALITY [13000 - 16104] *(Division 7 repealed and added by Stats. 1969, Ch. 482.)*

CHAPTER 7. Water Reclamation [13500 - 13557] *(Chapter 7 added by Stats. 1969, Ch. 482.)*

ARTICLE 7. Water Reuse [13550 - 13557] *(Heading of Article 7 amended by Stats. 1994, Ch. 724, Sec. 6.)*

13554. (a) Any public agency, including a state agency, city, county, city and county, district, or any other political subdivision of the state, may require the use of recycled water for toilet and urinal flushing in structures, except a mental hospital or other facility operated by a public agency for the treatment of persons with mental disorders, if all of the following requirements are met:

(1) Recycled water, for these uses, is available to the user and meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing.

(2) The use of recycled water does not cause any loss or diminution of any existing water right.

(3) The public agency has prepared an engineering report pursuant to Section 60323 of Title 22 of the California Code of Regulations that includes plumbing design, cross-connection control, and monitoring requirements for the use site, which are in compliance with criteria established pursuant to Section 13521.

(b) This section applies only to either of the following:

(1) New structures for which the building permit is issued on or after March 15, 1992, or, if a building permit is not required, new structures for which construction begins on or after March 15, 1992.

(2) Any construction pursuant to subdivision (a) for which the State Department of Public Health has, prior to January 1, 1992, approved the use of recycled water.

(c) Division 13 (commencing with Section 21000) of the Public Resources Code does not apply to any project which only involves the repiping, redesign, or use of recycled water by a structure necessary to comply with a requirement issued by a public agency under subdivision (a). This exemption does not apply to any project to develop recycled water, to construct conveyance facilities for recycled water, or any other project not specified in this subdivision.

(Amended by Stats. 2014, Ch. 544, Sec. 17. (SB 1458) Effective January 1, 2015.)

RICK TELEGAN

From: Bramble, John <bramblej@cityofmerced.org>
Sent: Tuesday, July 14, 2015 2:06 PM
To: Fresno3rdM@aol.com
Subject: Use of Recycled Water

July 14, 2015

Mr. Telegan:

Thank you for your comments on the potential to utilize the effluent water from the wastewater treatment plant for other irrigation purposes in the City and its potential for the reduction of the use of potable water to irrigate our parks, open spaces and street medians.

What we did not explain at the July 6th Council meeting is that the City Council authorized a separate study to be funded considering different uses for the recycled water from the wastewater treatment plant as part of the 2015-2016 Adopted Budget. The other action that the City is taking is for an immediate project that will allow the City to haul the recycled water from the WWTP to landscaped areas in the City that do not have a separate drip system to utilize to keep our trees and shrubbery alive during this summer and fall.

My point is your voice has been heard and although it will not be tacked onto the sewer master plan study at this point, it is an evaluation that the City Council has established as a very high priority.

Again thank you for your input regarding the re-use of non-potable water.

John Bramble
City Manager
Merced, Ca
209-385-6834

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Fresno, Clovis Plan To Mix Recycled Sewer Water For Drinking

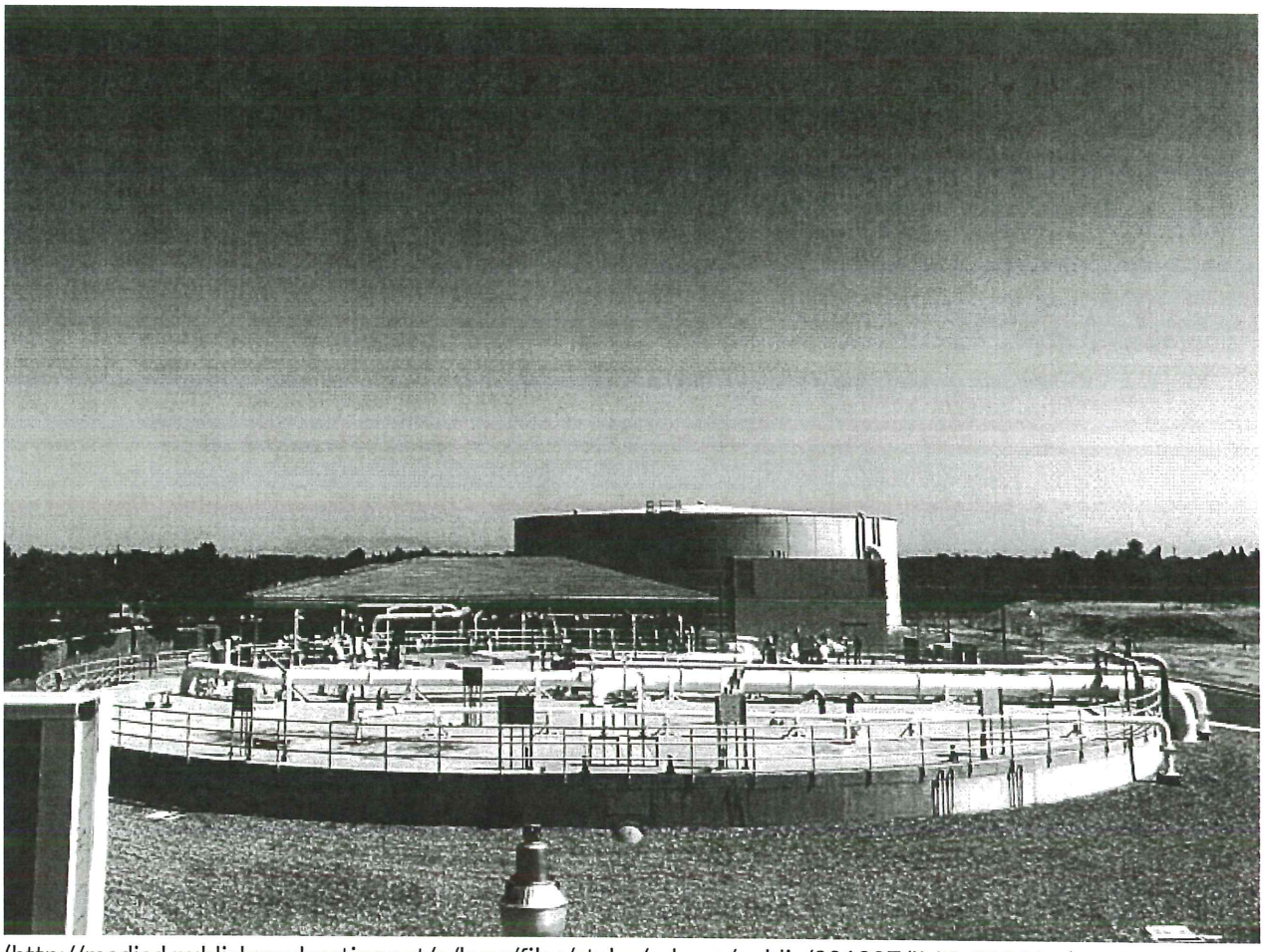
By MARC BENJAMIN (/PEOPLE/MARC-BENJAMIN) • 20 HOURS AGO

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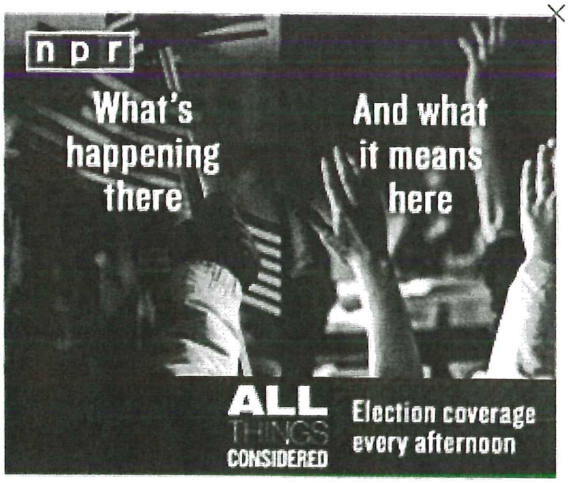
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The Clovis Water Reuse Facility treats sewage and turns it into clean water for landscaping. The city's largest user is Clovis Community Medical Center. The water also is used by Caltrans and the city for landscaping.

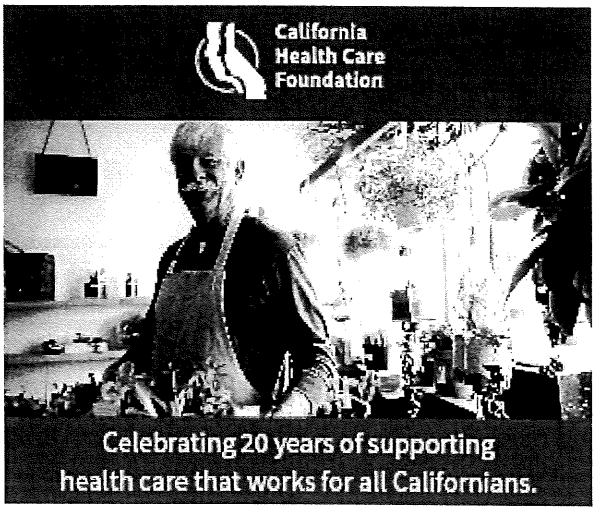
MARC BENJAMIN



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6:01

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If you've been to Disneyland, Cambria, many parts of Los Angeles, then you most likely had a swig of highly treated recycled water. Recycled water meaning, yes, it was once in a sewage treatment plant.

For many years this recycled water has helped Orange County meet the needs of its growing population and reduce the toll on its declining aquifers. Soon, the same kind of water may be coming to Clovis and Fresno's drinking water.

Fresno and Clovis have sewage treatment plants equipped to recycle water to a level that meets state drinking water standards. For now, neither city is using the water for drinking because of state rules. Both cities irrigate landscaping with the water. Fresno is starting a pilot program for downtown, southwest Fresno and Roeding Park landscaping. For nearly 10 years, Clovis has been using the highly treated water from its water reuse plant for landscaping, too.

Now, Clovis and Fresno are planning the next steps. They are among 22 California agencies working with the state Water Board on permits to allow them to deliver some of this water to your tap within a few years.

It's an idea whose time has come, says Dan Schlenk, professor of Environmental Toxicology at U.C.-Riverside. Schlenk has served on two state water board panels examining emerging contaminants. He says there shouldn't be any concerns about drinking tertiary treated recycled water.

"The water that is treated is not the same water that comes out of the toilet," he says. "That water undergoes a tremendous amount of treatment and it costs a lot of money to do that. There are so many steps after the toilet part that happen, before it gets to the tap, and most people don't realize that."

The point, Schlenk says is that "every drop of water that you drink comes from someplace else. It may go to the ocean volatilize in the atmosphere and come down as rain, but every drop of water is recycled."

And this water is safe. "The bottom line risk is extremely low, if measurable at all."

To make that water drinkable will require the cities to go through the state permitting process.

Mike Carbajal, Fresno's assistant director for the Department of Public Utilities, explains that the city wants to eventually "take some of that recycled water and put it into our existing recharge facilities that we operate to allow the water to percolate back into the aquifer over a period of time. We can subsequently pump that water that becomes groundwater back out and utilize it for potable water purposes."

In Fresno, the proposed destination for highly treated water is Leaky Acres at Highway168 and Ashlan Avenue. The city also has a much smaller recharge site west of Fresno. Clovis plans to pipe its treated water to the Marion Avenue basin for recharge on the city's north side.

Once in the basins, the water will mix with river water, percolate into the ground, then into aquifers and wells before going into homes.

That plan will require more of a financial commitment from the city's ratepayers or get financed through grants and loans to pay the cost of new pipelines, Carbajal says. Fresno officials are eyeing other projects around the state, specifically Pure Water San Diego, a 20-year plan by San Diego to have one-third of its drinking water supply come from recycled water.

ALL IS NOT WELL

For decades, Clovis and Fresno grew. Clovis is four times larger than it was 30 years ago and Fresno is twice the size. During that time, both cities were drawing water from wells. This drained aquifers and lowered water tables.

In the past 15 years, Fresno and Clovis began using water from local rivers, known as surface water. The cities built water treatment plants to clean river water from the Kings and San Joaquin rivers to reduce pressure on wells.

Fresno also is employing $105 million in low-interest state loans for the Fresno-Clovis Regional Wastewater Reclamation Facility on Jensen Avenue to produce 5 million gallons of recycled water each day.

“The city has historically been a groundwater-based system, Carbajal says. "All of our potable water was pumped directly out of the ground through 260 wells... our groundwater levels have dropped by more than 100 feet.”

A major reason Fresno and Clovis are planning to boost use of recycled water is the California Sustainable Groundwater Management Act.

Gary Serrato is general manager for Fresno Irrigation District and he says "The Central Valley has been identified as a critically overdrafted basin that means we are taking more out than we are putting back in.”

Each critically designated basin must have a sustainability plan developed by 2020.

“By 2040 we need to be sustainable," Serrato says. "That means... we are putting a like amount back into the underground so that our groundwater tables do not continue to decline.”

And, this means conservation and using every available water supply, including surface water, groundwater recharge and recycled water, Serrato says.

"We are going to be looking at how we take advantage of those water supplies as well... they all become part of the overall fix to get us sustainable by 2040," Serrato says.

Clovis Public Utilities Director Scott Redelfs says the state’s groundwater sustainability requirements loom large.

"We don’t want to have any negative consequences in our aquifer so if we can’t meet future demand with our water supply, or even if we can, we want to decrease well pumping," Redlfs says. "In order to do that, we want to look at every additional available water supply we can get.”

YOU LIKELY DRANK IT ALREADY

Getting recycled water into the two cities' drinking water systems is still a couple years away. It will take another year or two to complete the permitting process, says Randy Barnard, the state's recycled water unit chief in the state Water Resources Control Board. When that's done, the cities can start building pipelines.

He says the state has reported no recycled water quality issues during Water Board during monitoring.

"If you have ever visited LA or you've been to Disneyland, and you drank some water in those areas, you've drank some potable reuse recycled water," Barnard says. "Nobody can tell the difference. It's very protective of public health. As a matter of fact, Orange County Water District is a world leader in the process."

Other places using this water are Cambria and Monterey's program just recently got underway, Barnard says.

The state Water Board also is preparing new rules to allow treated recycled water to get added into a drinking water system or into a raw water supply immediately upstream from a water treatment plant. Those rules are expected in 2023.

TAGS: WATER (/TERM/WATER) FRESNO (/TERM/FRESNO) CLOVIS (/TERM/CLOVIS) RECYCLED WATER (/TERM/RECYCLED-WATER) ENVIRONMENT (/TERM/ENVIRONMENT-0) GROUNDWATER (/TERM/GROUNDWATER) SGMA (/TERM/SGMA) SUSTAINABILITY (/TERM/SUSTAINABILITY) SUSTAINABLE GROUNDWATER MANAGEMENT ACT (/TERM/SUSTAINABLE-GROUNDWATER-MANAGEMENT-ACT) IN-DEPTH (/TERM/DEPTH)

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Mape's Ranch and Lyons' Investments
10555 Maze Road Modesto, CA 95358
Office: (209) 522-1762 FAX: (209) 522-7871

August 3, 2018

Mr. Ken Elwin, PE
Public Works Director
City of Merced
678 W 18th Street
Merced, CA 95340

RE: Notice of Preparation of a DEIR for the City of Merced Sewer Master Plan Update

Dear Ken:

We appreciate the opportunity to participate in the process to update the City of Merced's Sewer Master Plan. As you are aware my family has a tremendous investment in the University Industrial Park easterly of Campus Parkway and south of State Route 140. We also enjoy a Development Agreement with the City of Merced which serves to ensure our ability to develop the subject property into a job generating center for the community and the region. Our concerns are not focused on the environmental document to be published, but rather with the Sewer Master Plan itself. My team of experts has not had the time to completely review the work of Stantec engineering published December 15, 2017. Nor have we had time to conclude our impression of the impacts this new study may have on the developablity of our land holdings. We suspect the conclusions of this report will embrace the commitments made by the City of Merced with our development. In this regard, we assume appropriate sewer capacity reservation have been made in the sewer modeling represented to fully accommodate future industrial development of the University Industrial Park.

John B. Anderson of JB Anderson Planning has placed a call to you to discuss the specifics of the updated Sewer Master Plan. I would appreciate you and your staff making yourselves available to meet with Mr. Anderson and Ms. D'Arpino.

In the future we would appreciate be notified of any and all studies, reports, presentations to the City Council on any topic involving water and non-potable water, sewer, storm drainage and road improvements in the area of our properties described below:

APN: 061-250-089, 093 & 095
061-290-053
061-030-019
061-033-023 & 024
061-340-023

Notices of any public works related actions in the vicinity of our properties need to be sent to the following interested parties:

William (Bill) J. Lyons, Jr.
Lyons' Investments L.P.
10555 Maze Blvd.
Modesto, CA 95358
e-mail: maperanch@aol.com

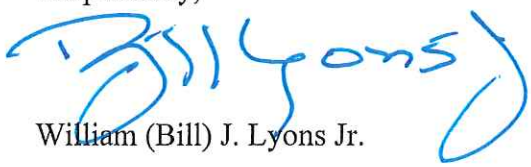
Marci D'Arpino
Plan-Tech
920 13th Street, Suite #4
Modesto, CA 95354
e-mail: mldarpino@gmail.com

Mark W. Purdon
AIM Property Management
1212 K Street
Modesto, CA 95354
e-mail: mark@aimpmc.com

John B. Anderson
JB Anderson Land Use Planning
139 South Stockton Ave.
Ripon, CA 95366
e-mail: John@jbandersonplanning.com

Again we appreciate the opportunity to participate in this very important topic and appreciate the hard work your department does to ensure infrastructure capacities are available to accommodate the future growth projections contemplated in and around the City of Merced that will benefit the economy and provide job opportunities in the local community.

Respectfully,



William (Bill) J. Lyons Jr.

Cc: Marci D' Arpino
Mark W, Purdon
John B. Anderson

LAFCo
of Merced County

Local Agency Formation Commission
2222 M Street
Merced, CA 95340
Phone (209) 385-7671 / Fax (209) 726-1710
www.lafcomerced.org

August 7, 2018

Ken Elwin, P.E., Director
Department of Public Works
City of Merced
678 West 18th Street
Merced, CA 95340

RE: City of Merced Sewer Master Plan Update – Comments on Notice of Preparation

Dear Mr. Elwin:

Thank you for forwarding Merced LAFCO a copy of the Notice of preparation (NOP) for the important Sewer Master Plan Update project. While LAFCO has no direct role in the preparation or approval of the Master Plan, the Commission will rely on this document in future LAFCO actions including: updates to the Municipal Service Review and/or Sphere of Influence for the City, processing individual annexation proposals which will connect to City sewer and wastewater services, and any future consolidations with existing special districts or public utility districts that currently provide sewer service or rely on septic systems.

It is understood the boundary of the Master Plan study area (reflected in Figure 2 of the NOP) is the same as the Merced Vision 2030 General Plan boundary. Areas outside the current city limits anticipated to be annexed into the City are reflected in this boundary. However, there is an existing area, the community of Celeste, which is currently connected to the sewer system (and the water system), but which is not identified within the General Plan or Sewer Master Plan boundary. The Celeste area is located on the north side of State Highway 140 and the west side of Kibby Road, across the highway and BNSF railroad tracks from the City's eastern industrial park. Whether or not the City has any capacity to expand service in this area, it does have approximately 100 connections to the City and should be considered in the Master Plan. At some point in the future, LAFCO will be processing a consolidation of the Celeste County Water District with the City of Merced since the City currently provides all the services and collects all fees for the sewer and water needs of the currently inactive Celeste County Water District.

The NOP references the Master Plan incorporates elements from the City 2030 General Plan and the UC Merced 2020 Long Range Development Plan. Other adopted planning documents that have been adopted but are not referenced include the Bellevue Community Plan, adopted by the City Council in April 2015, covering approximately 1,600 acres along the Bellevue Road corridor between G Street and Lake Road. Another adopted planning document is the University Community Plan adopted by Merced County in 2004 covering approximately 2,100 acres which are within the City SUDP boundary.

One final comment involves the ongoing discussions for annexation into the City of the area from G Street to the UC Merced Campus which currently contains a partially developed Rural Residential Center (RRC) in the County with minimum lot sizes of one acre and homes on individual septic systems and wells. Does the Master Plan assume a density of future development in this area which will ultimately be served by City sewer and water service? Does the Master Plan contemplate replacing existing septic systems in the Rural Residential Center area with sewer connections over the life of the Master Plan?

It appears there would be capacity for serving these existing developed areas based on information in the City's adopted Bellevue Community Plan. On Page 133, under the discussion of wastewater collection and disposal, the document indicates the City has projected a growth in population to 155,000 from growth planned with in the 2030 General Plan boundary and the UC Merced and University Community areas. This is less than the capacity of the planned 20 mgd treatment plant which could be able to serve a population of 174,000. If this information is correct, it appears there would be adequate capacity to connect the existing development areas in order to eventually abandon the use of on-site septic systems.

This concludes the LAFCO comments on the NOP. Please let me know if you have any questions or would like to discuss any issues raised in this letter.

Sincerely,

Bill Nicholson

Bill Nicholson,
Executive Officer

cc: LAFCO Counsel

August 7, 2018

Sent Via Email [ElwinK@cityofmerced.org]

Ken Elwin, P.E.
Public Works Director
City of Merced
1776 Grogan Ave
Merced, CA 95341

Re: Notice Of Preparation Of Environmental Impact Report, Merced Sewer Master Plan Update

Dear Mr. Elwin:

Thank you for the opportunity to comment on the Notice of Preparation for the Merced Sewer Master Plan Update (the "project"). This letter follows written comments dated February 5, 2018 on the draft Wastewater Collection System Master Plan, as well as oral comments delivered at the July 24, 2018 Public Scoping Meeting. We incorporate our prior comments by reference.

As you will recall, Leadership Counsel for Justice and Accountability ("Leadership Counsel") works alongside and supports the most impacted communities to advocate for sound policy and eradicate injustice to secure equal access to opportunity regardless of wealth, race, income and place. We work with community leaders throughout the San Joaquin Valley and Eastern Coachella Valley to ensure meaningful investment in the communities most in need. Within the City of Merced, we work with many residents who live in the area south of State Route 99.

Our concerns throughout this process have been, in general, threefold: (1) the need to expand sewer service to presently unserved residents of the City and its sphere of influence, especially to those residing in disadvantaged communities; (2) the impacts of a potential assessment district or assessment districts on current residents, especially those living in disadvantaged communities and/or low-income households; and (3) the need to prevent or limit avoidable northward sprawl while residents of South Merced experience the effects of historic disinvestment.

Turning to the Notice of Preparation, the California Supreme Court has held that "[t]he foremost principle under CEQA is that the Legislature intended the act 'to be interpreted in such manner as to afford the fullest possible protection to the environment within the reasonable scope of the statutory language.'" (*Laurel Heights Improvement Assn. v. Regents of University of California*

(1988) 47 Cal.3d 376, 390 quoting *Friends of Mammoth v. Board of Supervisors* (1972) 8 Cal.3d 247, 259 disapproved on other grounds by *Kowis v. Howard* (1992) 3 Cal.4th 888; *Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 112.)

The purpose of an environmental impact report is to "provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project.'" (*Laurel Heights*, 47 Cal.3d at 390 citing Pub. Resources Code § 21061; CEQA Guidelines, § 15003, subds. (b)-(e).) The phrase "significant effect on the environment" means "a substantial, or potentially substantial, adverse change in the environment." (Pub. Resources Code § 21068; *Laurel Heights*, 47 Cal.3d at 390.)

"The EIR is the heart of CEQA, and the mitigation and alternatives discussion forms the core of the EIR." (*In re Bay-Delta etc.* (2008) 43 Cal.4th 1143, 1162; *see also Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564.)

With these principles in mind, we ask that the City of Merced thoroughly analyze all potentially significant impacts of the project in the EIR, including but not limited to:

- Environmental, social and economic impacts in disadvantaged communities, communities of color and low-income communities from both construction and operation of the project;
- Air quality impacts, including localized, city-wide and regional impacts, as well as impacts to neighborhoods that are already disproportionately burdened by poor air quality;
- Impacts on vehicle miles traveled within Merced City and the County;
- Greenhouse gas emissions related to the project;
- Water quality and sustainability, including impacts related to reduced groundwater recharge caused by urban development;
- Conversion of prime farmland;
- Hazardous materials, creating a hazard to the public or environment through the transport, use or disposal of hazardous materials, in particular, due to the siting of hazardous waste sites or facilities that process hazardous materials in proximity to existing or planned development;
- Noise impacts, during and after construction;
- Odor impacts, during and after construction;
- Aesthetic impacts, especially those impacting disadvantaged communities;
- Climate resilience and adaptation;

- Impacts on availability of affordable quality housing, including housing sufficient to meet the Regional Housing Needs Assessment allocations in the City of Merced, other cities located in Merced County and in the unincorporated County, and any impacts on the development capacity of sites designated in the inventory of sites included in the housing elements of those jurisdictions;
- Impacts of new development — both infill and greenfield — on economic and physical displacement on residents and businesses in existing disadvantaged communities;
- The induction of urban sprawl through identification of new areas for housing development and/or through extension of wastewater infrastructure; and
- Cumulatively significant impacts of the project taken together with all existing or reasonably foreseeable projects and considering existing conditions in areas burdened by poor environmental quality.

At a minimum, the EIR should also consider feasible alternatives which would: (a) prioritize expansion of sewer service to existing homes within the city limits and sphere of influence; and (b) require, encourage and/or incentivize dense infill development in the vicinity of existing residential and commercial development.

With respect to mitigation, Merced should analyze: (a) increasing utilization of recycled water through groundwater recharge, irrigation and purple pipe projects; (b) opportunities to increase groundwater recharge, through use of recycled water or otherwise; (c) the prevention of new market-rate development within the sphere of influence while existing residents lack access to safe water and wastewater infrastructure; (d) transit and active transportation investments within disadvantaged communities, including transit routes from disadvantaged communities to University of California, Merced; (e) investments in quality affordable housing and rehabilitation of existing housing stock; (f) expansion of drinking water and wastewater services to existing homes within the City and its sphere of influence; (g) explore opportunities to reduce air quality impacts and GHG emissions related to transportation by investing in public services and commercial development, in particular grocery stores, in neighborhoods that presently must travel for such services; and (h) air pollution and GHG reduction measures aimed at improving conditions in disadvantaged communities, communities of color and low-income communities which are most burdened by air quality and climate change impacts, including but not limited to air quality monitoring and local air quality improvement plans.

Furthermore, we note that state law provides that no person shall, on the basis of race, national origin, ethnic group identification, and other protected classes, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state. (Gov. Code § 11135.) In addition, California's Fair Employment and Housing Act, California Government Code 12900, et

seq. guarantees all Californians the right to hold and enjoy housing without discrimination based on race, color or national origin. (*See also* Gov. Code §§ 65008; 12955.) Similarly, Title VI prohibits recipients of federal funds from taking actions that have the effect of discriminating on the basis of race. (*See* 42 U.S.C. § 2000d.)

As the environmental review proceeds, Merced must analyze compliance with the above-referenced authorities to ensure that the project will not have a disparate impact on protected classes.

We look forward to working with City staff during EIR development and would be happy to discuss any of the issues raised above at your convenience.

Regards,

Michael K. Claiborne

MVE Inc.
Project Management · Civil/Structural Engineering · Urban Design · Land Planning
Entitlements · Right-of-Way/Permitting · Surveying · Construction Staking · Graphics

August 2, 2018

Ken Elwin, PE elwink@cityofmerced.org
City of Merced Public Works Director
678 West 18th Street
Merced, CA 95340

RE: Waste Collection System Master Plan Scoping Comments

Ken: After the November 13, 2017 Sewer Collection Stakeholder meeting and in a follow up email from December 21, 2017, we detailed the following concerns to Dave Price (Stantec) as it related to the proposed Yosemite Lake Estates (YLE) project located in north Merced (unincorporated Merced County). We did this in order to determine if adjustments or additional review were needed to the proposed Updated Wastewater Collection System Master Plan. In summary, our concerns were:

- Page 13 of the Sewer Master Plan (October 28, 2016), Table 3-1 Footnotes (a) and (b) state that for undeveloped parcels within the Planning Area, land uses were assigned per the General Plan. For the YLE project area, the assigned land use was Community Plan which assumed 4.5 units/ acre.

  For some amount of time now, YLE proponents have discussed with City planning staff two potential land use alternatives, i.e.1) Alternative A, which has a portion of it as an age restricted/active adult community and 2) Alternative B, a traditional mix of residential housing. See attached the land use maps and tables.

  The primary land uses for both alternatives are LDR (4 to 6 du/acre) and MDR (4 to 10 du/acre) but there also a small portion of HDR (8 acres at 15 to 33 du/acre) and Neighborhood Commercial (6 acres). Moreover, Alternative B may need to analyze a future school site location.

  Finally, there are approximately 100 acres of Yosemite Lake Estates that are outside of the existing Merced SUDP/SOI. As part of our entitlements we will request an SOI amendment but in the interim, it was requested that the non-SOI area be analyzed for wastewater flow if feasible.

  Because of these differences, we have concerns that the actual project densities of the project are more intensive than the 4.5 units/acre that was analyzed in the WCS modeling study.

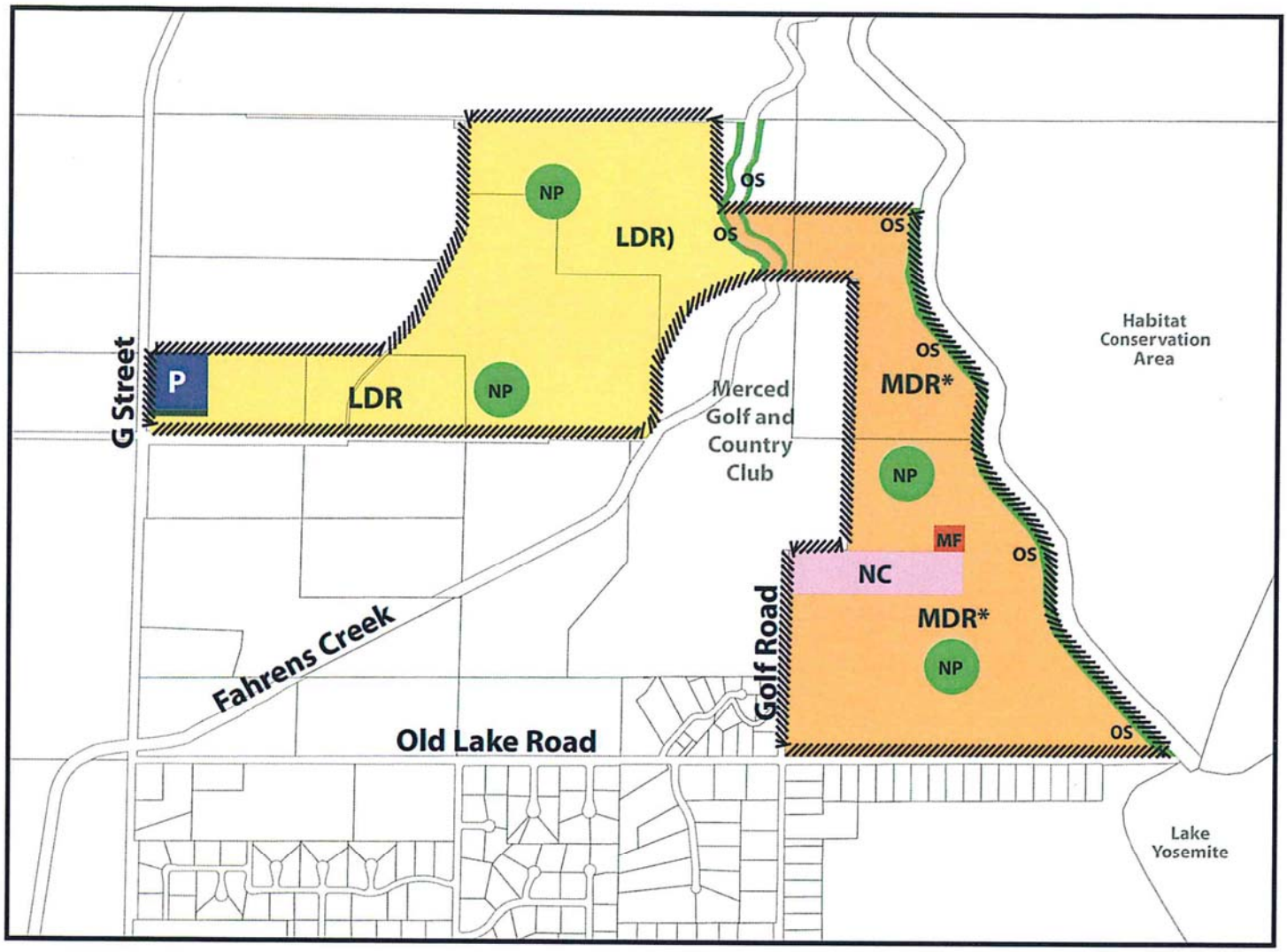
  In pre-application discussions with City staff it has been mentioned that the active adult scenario would have less impacts on utility/sewer demand. However, as future market demand is unknown the project proponents requested that both alternatives be evaluated as build options.

We've not yet received confirmation that both scenarios were considered by the City of Merced and Stantec in its Updated Wastewater Collection System Master Plan.

Per the process, we would like to submit these comments as part of the related EIR scoping process for evaluation and response.

Sean Tobin, stobin@mve.net
1117 "L" Street, Modesto, CA 95354
(209) 526-4214

cc: Enclosures



LEGEND

- Community Plan Boundary
- LDR — Low Density Residential (LDR)
- MDR* — Medium Density Residential (MDR) Active Adult Community
- NC — Neighborhood Commercial (NC)
- P — Public/Quasi Public (P)
- NP — Neighborhood Parks (NP)
- OS — Open Space (OS)
- MF — Multi-Family

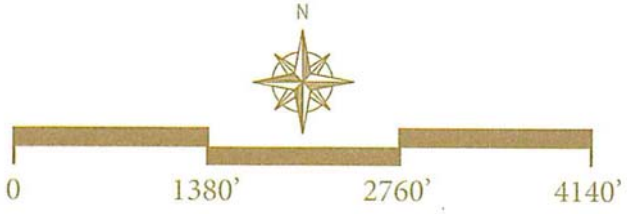
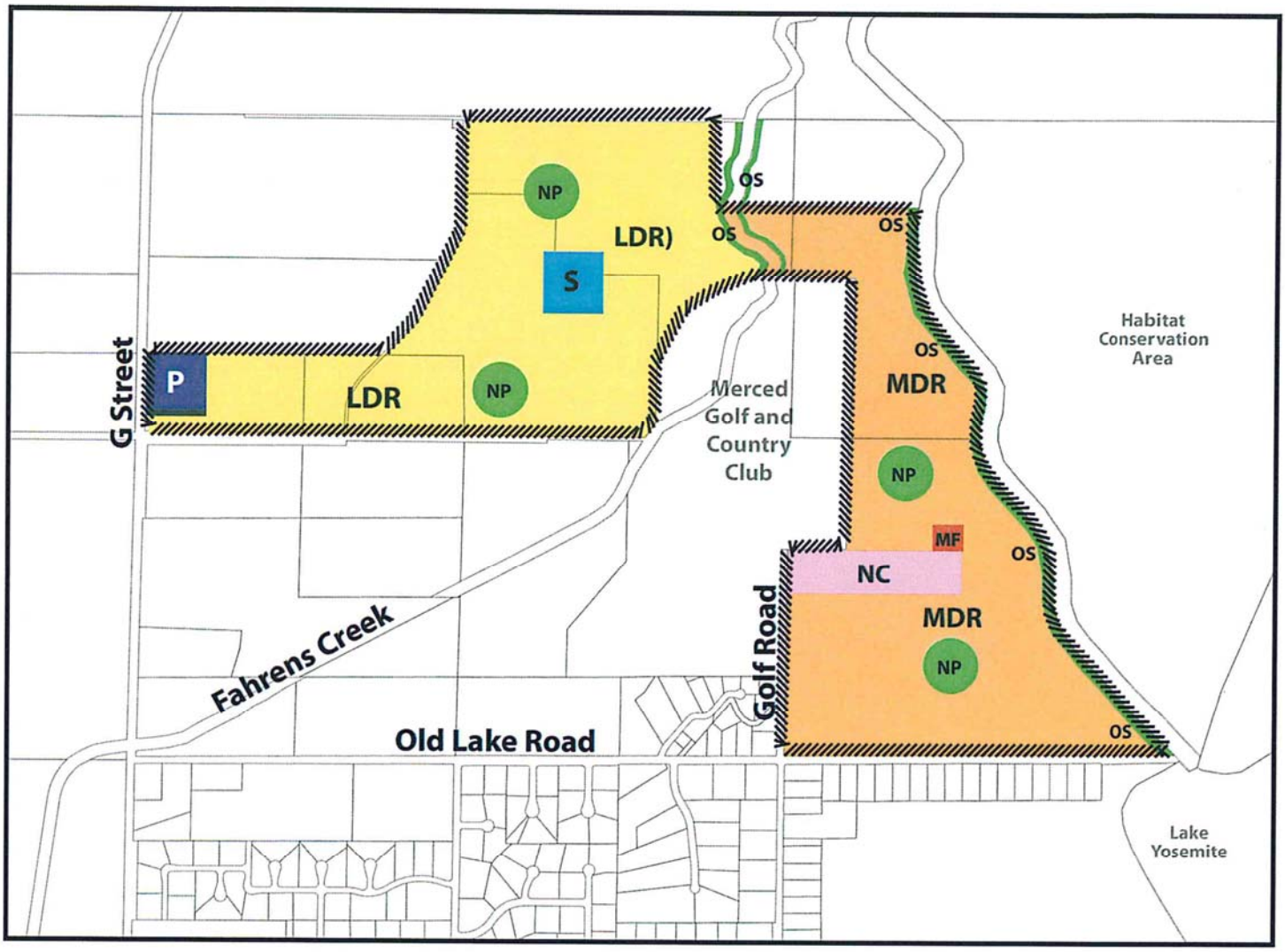


Figure 3.1A
Land Use Diagram
Alternative A with Active Adult Community



LEGEND

- Community Plan Boundary
- LDR — Low Density Residential (LDR)
- MDR — Medium Density Residential (MDR)
- NC — Neighborhood Commercial (NC)
- P — Public/Quasi Public (P)
- NP — Neighborhood Parks (NP)
- OS — Open Space (OS)
- S — Elementary School Site (underlying zoning to be LDR)
- MF — Multi-Family

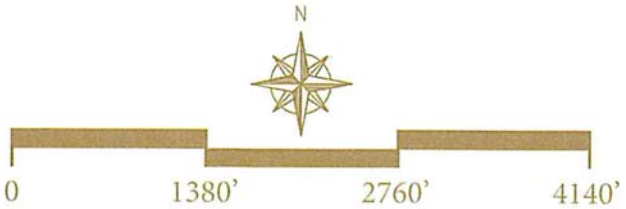


Figure 3.1B
Land Use Diagram
Alternative B with Traditional Housing

Table 3.1A
Alternative A Land Use Summary

Land Use Designation	Total Acreage	Land Use Distribution	Units Per Acre	Total Units	Population	FAR	Potential Building Square Footage
Low Density Residential (4 to 6 du/acre)	131	36%	5.0	649	2,077	_	_
Medium Density Residential (4 to 10 du/acre)	137	41%	5.2	713	1,355	_	_
High Density Residential (15 to 33 du/acre)	8	2%	20	160	304	_	_
Neighborhood Commercial (NC)	6	2%	_	_	_	.35	91,500
Public/Quasi Public	20	6%	_	_	_	_	_
Neighborhood Parks and Open Space	32	10%	_	_	_	_	_
Total	**334**	**100%**	**3.86**	**1,522**	3,736	_	**91,500**

Assumptions:
Units per acre and total units are representative of typical or median range of residential density allowable and reflect the level of development expected during the planning period of this Community Plan.
Population is based on the Merced County General Plan of 3.2 persons per household for LDR and 1.9 for MDR and HDR.
Floor area ratio (FAR) is the ratio of building area to parcel area. The FAR is representative of the typical or median range of building area allowable.
Potential building square footage is derived by multiplying the typical FAR and the land use designation acreage total (excluding existing uses) and reflects the average intensity of development expected during the planning period of this Community Plan.
Average is calculated on a gross acreage basis.

Table 3.1B
Alternative B Land Use Summary

Land Use Designation	Total Acreage	Land Use Distribution	Units Per Acre	Total Units	Population	FAR	Potential Building Square Footage
Low Density Residential (4 to 6 du/acre)	119	36%	5.0	595	1,904	_	_
Medium Density Residential (4 to 10 du/acre)	137	41%	5.2	713	2,400	_	_
High Density Residential (15 to 33 du/acre)	8	2%	20	160	512	_	_
Neighborhood Commercial (NC)	6	2%	_	_	_	.35	91,500
School Site	12	3%	_	_	_	_	_
Public/Quasi Public	20	6%	_	_	_	_	_
Neighborhood Parks and Open Space	32	10%	_	_	_	_	_
Total	**334**	**100%**	**3.86**	**1,468**	4,816	_	**91,500**

Assumptions:
Units per acre and total units are representative of typical or median range of residential density allowable and reflect the level of development expected during the planning period of this Community Plan.
Population is based on the Merced County General Plan of 3.2 persons per household for LDR and 1.9 for MDR and HDR in Alternative A and 3.2 persons per household for Alternative B for all Land Use Designations.
Floor area ratio (FAR) is the ratio of building area to parcel area. The FAR is representative of the typical or median range of building area allowable.
Potential building square footage is derived by multiplying the typical FAR and the land use designation acreage total (excluding existing uses) and reflects the average intensity of development expected during the planning period of this Community Plan.
Average is calculated on a gross acreage basis.

Table 3.2
Non-Residential Floor Area Ratio (FAR) Standards

Non-Residential Land Use Designation	Minimum FAR	Maximum FAR
Neighborhood Commercial (NC)	0.20	.35

1. Minimum of two hundred (200) square feet of open space per dwelling is required.
2. From existing or adopted street right-of-way line (ultimate width of existing street).
3. Carports and garages facing the front lot line shall be twenty (20) feet from the right-of-way.
4. The rear yard may be ten (10) feet if a side yard width is fifteen (15) feet with outdoor access (back door, patio, etc.) oriented to that side yard.
5. A maximum of ten (10) percent reduction in lot width or depth may be allowed where it can be demonstrated to the satisfaction of the Planning and Community Development Director that due to physical constraints of the property, compliance with the standard width or depth would not allow the property to be developed to its maximum potential.

STATE OF CALIFORNIA Edmund G. Brown Jr., Governor
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

July 30, 2018

Ken Elwin
City of Merced
678 W. 18th Street
Merced, CA 95340

RE: SCH#2018071019, City of Merced Sewer Plan Update, Merced County

Dear Mr. Elwin:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

a. A brief description of the project.
b. The lead agency contact information.
c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation

monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
    a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
    a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
    b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
    c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: Sharaya.Souza@nahc.ca.gov.

Sincerely,

Sharaya Souza
Staff Services Analyst
(916) 573-0168

cc: State Clearinghouse

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

JUL 24 2018

Ken Elwin, PE, City of Merced Public Works Director
City of Merced
Public Works Department
678 West 18th Street
Merced, CA 95340

Project: Updated Wastewater Collection System Master Plan

District CEQA Reference No: 20180710

Dear Mr. Elwin:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation (NOP) for the proposed Updated Wastewater Collection System Master Plan project. The proposed project consists of updating land use and wastewater flows accommodating the Merced Vision 2030 General Plan; assess the available capacity of the City's major sewers; determine the best means to sewer the build-out of the Merced Vision 2030 Sphere of Influence; develop an interim sewer service plan and capital improvement program for City growth; and establish a sewer repair and replacement program (Project). The District offers the following comments:

Emissions Analysis

1) At the federal level for the National Ambient Air Quality Standards (NAAQS), the District is currently designated as extreme nonattainment for the 8-hour ozone standards; nonattainment for the PM2.5 standards; and attainment for the 1-Hour ozone, PM10 and CO standards. At the state level, the District is currently designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 California Ambient Air Quality Standards (CAAQS). The District recommends that the Air Quality section of the Environmental Impact Report (EIR) include a discussion of the following impacts:

   a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

Samir Sheikh
Executive Director/Air Pollution Control Officer

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4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

Printed on recycled paper.

i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separately from operational emissions. For reference, the District's annual criteria thresholds of significance for construction are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* To reduce impacts from construction related exhaust emissions, the District recommends feasible mitigation for the project to utilize off-road construction fleets that can achieve fleet average emissions equal to or cleaner than the Tier III emission standards, as set forth in §2423 of Title 13 of the California Code of Regulations, and Part 89 of Title 40 Code of Federal Regulations. This can be achieved through any combination of uncontrolled engines and engines complying with Tier III and above engine standards.

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. For reference, the annual criteria thresholds of significance for operation of permitted and non-permitted sources each are: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (SOx), 15 tons per year of particulate matter of 10 microns or less in size (PM10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

- *Recommended Mitigation Measure if needed:* Project related impacts on air quality can be reduced through incorporation of design elements, for example, that increase energy efficiency, reduce vehicle miles traveled, and reduce construction exhaust related emissions.

iii) Recommended Model: Project related criteria pollutant emissions from construction and operation non-permitted (limited to equipment not subject to District permits) should be identified and quantified. Emissions analysis should be performed using CalEEMod (**Cal**ifornia **E**mission **E**stimator **Mod**el), which uses the most recent approved version of relevant Air Resources Board (ARB) emissions models and emission factors. CalEEMod is available to the public and can be downloaded from the CalEEMod website at: www.caleemod.com.

b) **Nuisance Odors:** The Project should be evaluated to determine the likelihood that the Project would result in nuisance odors. Nuisance orders are subjective, thus the District has not established thresholds of significance for nuisance odors. Nuisance odors may be assessed qualitatively taking into consideration of Project design elements and proximity to off-site receptors that potentially would be exposed objectionable odors.

c) **Health Risk Screening/Assessment:** A Health Risk Screening/Assessment identifies potential Toxic Air Contaminants (TAC's) impact on surrounding sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences. TAC's are air pollutants identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) (https://www.arb.ca.gov/toxics/healthval/healthval.htm) that pose a present or potential hazard to human health. A common source of TACs can be attributed to diesel exhaust emitted from both mobile and stationary sources. Industry specific TACs generated must also be identified and quantified.

The District recommends the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multi-year construction TAC emissions.

i) The District recommends conducting a screening analysis that includes all sources of emissions. A screening analysis is used to identify projects which may have a significant health impact. A prioritization, using CAPCOA's updated methodology, is the recommended screening method. A prioritization score of 10 or greater is considered to be significant and a refined Health Risk Assessment (HRA) should be performed. The prioritization calculator can be found at: http:www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION%20RMR%202016.XLS.

ii) The District recommends a refined HRA for projects that result in a prioritization score of 10 or greater. It is recommended that the Project proponent contact the District to review the proposed modeling protocol. The Project would be considered to have a significant health risk if the HRA demonstrates that the Project related health impacts would exceed the Districts significance threshold of 20 in a million for carcinogenic risk and 1.0 for the Acute and Chronic Hazard Indices.

More information on toxic emission factors, prioritizations and HRAs can be obtained by:

- E-Mailing inquiries to: hramodeler@valleyair.org; or
- The District can be contacted at (559) 230-6000 for assistance; or
- Visiting the Districts website (Modeling Guidance) at http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm

d) **Ambient Air Quality Analysis:** An ambient air quality analysis (AAQA) uses air dispersion modeling to determine if emissions increases from a project will cause or contribute to a violation of the ambient air quality standards. The District recommends that an AAQA be performed for the Project if emissions exceed 100 pounds per day of any pollutant.

If an AAQA is performed, the analysis should include emissions from both Project specific permitted and non-permitted equipment and activities. The District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis. Specific information for assessing significance, including screening tools and modeling guidance is available online at the District's website www.valleyair.org/ceqa.

2) In addition to the discussions on potential impacts identified above, the District recommends the EIR also include the following discussions:

a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the Project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

b) A discussion of the components and phases of the Project and the associated emission projections, including ongoing emissions from each previous phase.

c) A discussion of Project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the Project.

d) A discussion of whether the Project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at: http://valleyair.org/aqinfo/attainment.htm.

District Rules and Regulations

3) The proposed Project may be subject to District rules and regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

4) This Project may be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (209) 557-6446.

5) As stated above, the project will be subject to District Rule 2010 and Rule 2201. Per Section 4.4.3 of District Rule 9510 (Indirect Source Review), any project whose primary functions are subject to District Rule 2010 and Rule 2201 is exempted from Rule 9510. Therefore, the District concludes that the proposed Project is not subject to District Rule 9510.

6) The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance (SBA) Office at (209) 557-6446. Current District rules can be found online at the District's website at: www.valleyair.org/rules/1ruleslist.htm.

The District recommends that a copy of the District's comments be provided to the Project proponent. If you have any questions or require further information, please call Mark Montelongo at (559) 230-5905.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Brian Clements
Program Manager

AM: cf

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

Notice of Preparation

July 9, 2018

To: Reviewing Agencies

Re: City of Merced Sewer Master Plan Update
SCH# 2018071019

Attached for your review and comment is the Notice of Preparation (NOP) for the City of Merced Sewer Master Plan Update draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Ken Elwin
City of Merced
678 W. 18th Street
Merced, CA 95340

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2018071019
Project Title City of Merced Sewer Master Plan Update
Lead Agency Merced, City of

Type NOP Notice of Preparation

Description The development of the Wastewater Collection System Master Plan for the city has evaluated and assessed the function, expansion, and replacement of the wastewater collection system within the city to accommodate future development. As identified in the Wastewater Collection System Master Plan, alternative plan A is the proposed project for the development of this Draft EIR.

Lead Agency Contact

Name Ken Elwin
Agency City of Merced
Phone 209-385-6800 **Fax**
email
Address 678 W. 18th Street
City Merced **State** CA **Zip** 95340

Project Location

County Merced
City Merced
Region
Cross Streets SR 99, Hwy 140, 59
Lat / Long 37° 18' 10.4" N / 120° 29' 7.25" W
Parcel No.
Township 7S **Range** 14E **Section** 30 **Base** MDBM

Proximity to:

Highways 99
Airports Merced Regl
Railways UPRR
Waterways Bear Creek
Schools mult
Land Use Multiple: ag, industrial reserve, mixed use, commercial, and res

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Cumulative Effects; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Growth Inducing; Landuse; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian

Reviewing Agencies Resources Agency; Department of Fish and Wildlife, Region 4; Department of Parks and Recreation; Department of Water Resources; Native American Heritage Commission; Public Utilities Commission; Caltrans, Division of Aeronautics; Caltrans, Division of Transportation Planning; Air Resources Board, Major Industrial Projects; Caltrans, District 10; State Water Resources Control Board, Divison of Financial Assistance; State Water Resources Control Board, Division of Drinking Water; State Water Resources Control Board, Division of Drinking Water, District 11; Department of Toxic Substances Control; Regional Water Quality Control Bd., Region 5 (Fresno)

Date Received 07/09/2018 **Start of Review** 07/09/2018 **End of Review** 08/07/2018

Note: Blanks in data fields result from insufficient information provided by lead agency.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2018071019

Project Title: City of Merced Sewer Master Plan Update

Lead Agency: City of Merced
Contact Person: Ken Elwin
Mailing Address: 678 W 18th Street
Phone: (209)385-6800
City: Merced Zip: 95340 County: Merced

Project Location: County: Merced City/Nearest Community: City of Merced
Cross Streets: State Route 99, Highway 140 and 59 Zip Code: 95340
Longitude/Latitude (degrees, minutes and seconds): 37 ° 18 ′ 10.4 ″ N / 120 ° 29 ′ 7.25 ″ W Total Acres: N/A
Assessor's Parcel No.: N/A Section: 30 Twp.: T7S Range: R14E Base: MDB&M
Within 2 Miles: State Hwy #: 99 Waterways: Bear Creek
Airports: Merced Regional Airport Railways: Union Pacific Rail Road Schools: multiple

Document Type:

CEQA: ☒ NOP ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec Other:

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other:

Governor's Office of Planning & Research
JUL 09 2018
STATE CLEARINGHOUSE

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☒ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other:

Development Type:

☐ Residential: Units ____ Acres ____
☐ Office: Sq.ft. ____ Acres ____ Employees ____
☐ Commercial: Sq.ft. ____ Acres ____ Employees ____
☐ Industrial: Sq.ft. ____ Acres ____ Employees ____
☐ Educational:
☐ Recreational:
☐ Water Facilities: Type ____ MGD ____
☐ Transportation: Type
☐ Mining: Mineral
☐ Power: Type ____ MW ____
☐ Waste Treatment: Type ____ MGD ____
☐ Hazardous Waste: Type
☒ Other: Wastewater Collection System

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☒ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☒ Flood Plain/Flooding
☒ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☒ Population/Housing Balance
☒ Public Services/Facilities
☒ Recreation/Parks
☒ Schools/Universities
☒ Septic Systems
☒ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☒ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Growth Inducement
☒ Land Use
☒ Cumulative Effects
☐ Other:

Present Land Use/Zoning/General Plan Designation:

multiple including, but not limited to; agriculture, industrial reserve, mixed use, commercial, and residential

Project Description: *(please use a separate page if necessary)*

The development of the Wastewater Collection System Master Plan for the City of Merced has evaluated and assessed the function, expansion, and replacement of the wastewater collection system within the City to accommodate future development. As identified in the Wastewater Collection System Master Plan, Alternative Plan A is the proposed Project for the development of this Draft Environmental Impact Report.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

X	Air Resources Board	X	Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Emergency Management Agency		Parks & Recreation, Department of
	California Highway Patrol		Pesticide Regulation, Department of
X	Caltrans District #10		Public Utilities Commission
	Caltrans Division of Aeronautics	X	Regional WQCB #5
	Caltrans Planning	X	Resources Agency
	Central Valley Flood Protection Board		Resources Recycling and Recovery, Department of
	Coachella Valley Mtns. Conservancy		S.F. Bay Conservation & Development Comm.
	Coastal Commission		San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
	Colorado River Board		San Joaquin River Conservancy
	Conservation, Department of		Santa Monica Mtns. Conservancy
	Corrections, Department of		State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of	X	SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
X	Fish & Game Region #4		Tahoe Regional Planning Agency
	Food & Agriculture, Department of		Toxic Substances Control, Department of
X	Forestry and Fire Protection, Department of	X	Water Resources, Department of
	General Services, Department of		
	Health Services, Department of		Other:
	Housing & Community Development		Other:
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date July 9, 2018 Ending Date August 7th, 2018

Lead Agency (Complete if applicable):

Consulting Firm: Stantec Consulting Services
Address: 3875 Atherton Road
City/State/Zip: Rocklin, Califonria, 95765
Contact: Kim Clyma
Phone: (916)773-8100

Applicant: Ken Elwin, City of Merced
Address: 678 W 18th Street
City/State/Zip: Merced, CA 95340
Phone: (209)385-6800

Signature of Lead Agency Representative: _____ **Date:** 7/6/18

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

NOP Distribution List

County: Merced **SCH#** 2018071019

Resources Agency

Resources Agency
Nadell Gayou

- ☐ **Dept. of Boating & Waterways**
  Denise Peterson
- ☐ **California Coastal Commission**
  Allyson Hitt
- ☐ **Colorado River Board**
  Elsa Contreras
- ☐ **Dept. of Conservation**
  Crina Chan
- ☐ **Cal Fire**
  Dan Foster
- ☒ **Central Valley Flood Protection Board**
  James Herota
- ☐ **Office of Historic Preservation**
  Ron Parsons

Dept of Parks & Recreation
Environmental Stewardship Section

- ☐ **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- ■ **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- ☐ **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- ☐ **Fish & Wildlife Region 1**
  Curt Babcock
- ☐ **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- ☐ **Fish & Wildlife Region 2**
  Jeff Drongesen
- ☐ **Fish & Wildlife Region 3**
  Craig Weightman
- ■ **Fish & Wildlife Region 4**
  Julie Vance
- ☐ **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- ☐ **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- ☐ **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- ☐ **California Department of Education**
  Lesley Taylor
- ☐ **OES (Office of Emergency Services)**
  Monique Wilber
- ☐ **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- ☐ **Dept. of General Services**
  Cathy Buck
  Environmental Services Section
- ☐ **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions,Boards

- ☐ **Delta Protection Commission**
  Erik Vink
- ☐ **Delta Stewardship Council**
  Anthony Navasero
- ☐ **California Energy Commission**
  Eric Knight
- ■ **Native American Heritage Comm.**
  Debbie Treadway
- ■ **Public Utilities Commission**
  Supervisor
- ☐ **Santa Monica Bay Restoration**
  Guangyu Wang
- ☐ **State Lands Commission**
  Jennifer Deleong
- ☐ **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- ■ **Caltrans - Division of Aeronautics**
  Philip Crimmins
- ■ **Caltrans – Planning HQ LD-IGR**
  Christian Bushong
- ☐ **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- ☐ **Caltrans, District 1**
  Rex Jackman
- ☐ **Caltrans, District 2**
  Marcelino Gonzalez
- ☐ **Caltrans, District 3**
  Susan Zanchi - North
- ☐ **Caltrans, District 4**
  Patricia Maurice
- ☐ **Caltrans, District 5**
  Larry Newland
- ☐ **Caltrans, District 6**
  Michael Navarro
- ☐ **Caltrans, District 7**
  Dianna Watson
- ☐ **Caltrans, District 8**
  Mark Roberts
- ☐ **Caltrans, District 9**
  Gayle Rosander
- ■ **Caltrans, District 10**
  Tom Dumas
- ☐ **Caltrans, District 11**
  Jacob Armstrong
- ☐ **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- ☐ **Airport & Freight**
  Jack Wursten
  - ☐ **Transportation Projects**
    Nesamani Kalandiyur
  - ■ **Industrial/Energy Projects**
    Mike Tollstrup
- ☐ **California Department of Resources, Recycling & Recovery**
  Kevin Taylor/Jeff Esquivel
- ■ **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- ■ **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- ■ **State Water Resources Control Board**
  Div. Drinking Water #____
- ☐ **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- ☐ **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- ■ **Dept. of Toxic Substances Control Reg. #**_____
  CEQA Tracking Center
- ☐ **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- ☐ **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- ☐ **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- ☐ **RWQCB 3**
  Central Coast Region (3)
- ☐ **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- ☐ **RWQCB 5S**
  Central Valley Region (5)
  - ■ **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - ☐ **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- ☐ **RWQCB 6**
  Lahontan Region (6)
  - ☐ **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- ☐ **RWQCB 7**
  Colorado River Basin Region (7)
- ☐ **RWQCB 8**
  Santa Ana Region (8)
- ☐ **RWQCB 9**
  San Diego Region (9)

- ☐ **Other** _____
- ☐ _____
  Conservancy

Last Updated 5/22/18

City of Merced
678 West 18th Street
Merced, CA 95340

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City of Merced

Notice of Preparation of a Draft Environmental Impact Report

Date: July 9, 2018

Project Title: City of Merced Sewer Master Plan Update

To: Responsible Agencies, Organizations, and Interested Parties

Lead Agency: City of Merced
678 W 18th St
Merced, CA 95340
(209) 385-6800

Contact: Ken Elwin, PE, Public Works Director, City of Merced

INTRODUCTION

The City of Merced (City) will prepare an Environmental Impact Report (EIR) that addresses the potential impacts of implementing the proposed Updated Wastewater Collection System (WCS) Master Plan (Master Plan or proposed Project) to address key wastewater infrastructure needs within the City. Your input is requested in the form of written comments regarding the scope of the EIR including potential environmental impacts and alternatives to be considered.

The EIR is being prepared in compliance with the California Environmental Quality Act (CEQA). Under CEQA, upon deciding to prepare and EIR, the City, as lead agency, must issue a Notice of Preparation (NOP) to inform trustee agencies, the public, and responsible agencies of the decision. Accordingly, the purpose of this NOP is to provide information describing the Master Plan including associated potential environmental effects to those in the public who may wish to comment regarding the scope and content of the information to be included in the EIR. Agencies should comment on such information as is related to their statutory responsibilities in connection with the Master Plan.

The EIR will provide an evaluation of potential environmental impacts associated with implementation of the Master Plan at a project- and program-level where appropriate. The Master Plan location, description, and environmental resource areas that may be affected by development of the Master Plan are described below. The EIR will evaluate potentially significant environmental impacts of the Master Plan, on both a direct and indirect, and cumulative basis; identify mitigation measures that may be feasible to lessen or avoid such impacts; and identify alternatives that may lessen one or more potentially significant impact to the Master Plan.

PROJECT LOCATION/SETTING

Figure 1, Project Vicinity, shows the setting of the proposed Project area in the Merced County region. The proposed Project is located entirely within the boundaries shown in the City's *Merced Vision 2030 General Plan*, including the University of California at Merced (UC Merced) campus and additional community planning areas (Figure 2). This area includes the area within existing City limits, as well as the authorized sphere-of-influence (SOI) for the City, as recognized by the Merced County Local Agency Formation Commission (LAFCo).

PROJECT DESCRIPTION

Development of the WCS Master Plan has been an iterative process from 2002 to 2017 to evaluate and assess function, expansion, and replacement of the wastewater collection system within the City to accommodate existing and future development. Wastewater generated within the City is collected in a series of pipelines which the City owns, operates, and maintains. The system includes over 400 miles of gravity sewers which collect wastewater from a majority of residential users, as well as, commercial users, industrial users, and public uses.

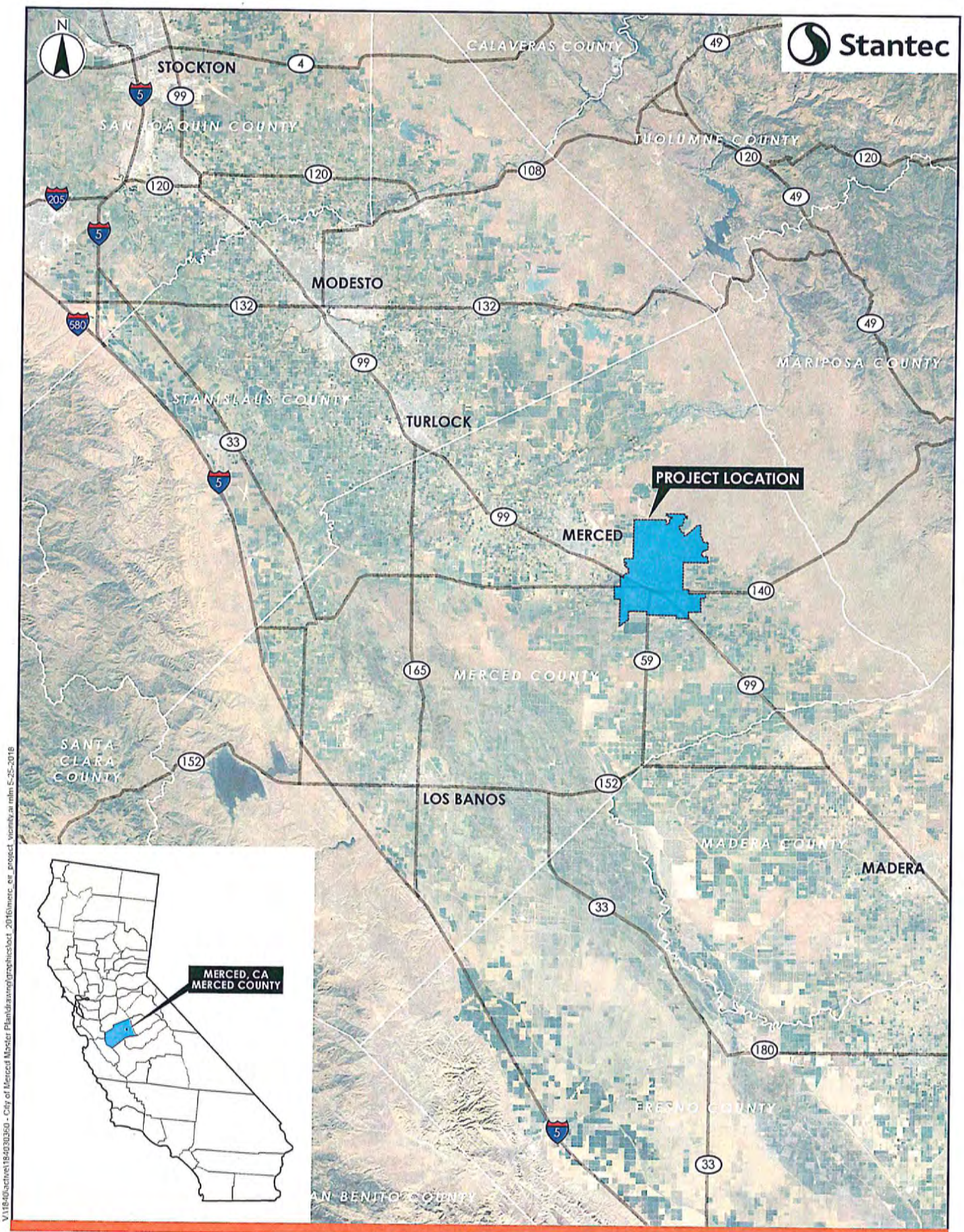
The current Master Plan identifies potential capacity constraints within the existing sewer system, assesses the future demand for these services, and develops recommendations for short- and long-term Capital Improvement Projects (CIP) to address the identified issues needed to serve the anticipated future capacity. During preparation of the Master Plan the City attempted to minimize impacts to the four natural streams that flow through the City: Fahrens Creek, Black Rascal Creek, Cottonwood Creek and Bear Creek, while working to maximize gravity flow of the sewer system to reduce energy and pump station costs.

This most recent draft Master Plan, released in December 2017, incorporated elements from other planning documents that have been developed, including the *Merced Vision 2030 General Plan* and the University of California (UC) Merced 2020 Project Addendum Long Range Development EIS/EIR. These planning documents, combined with the Master Plan, have led to the identification of Alternative Plan A as the preferred alternative to address the long-range sewer system planning needs for the City.

PROJECT ELEMENTS

The purpose of the Master Plan is to:

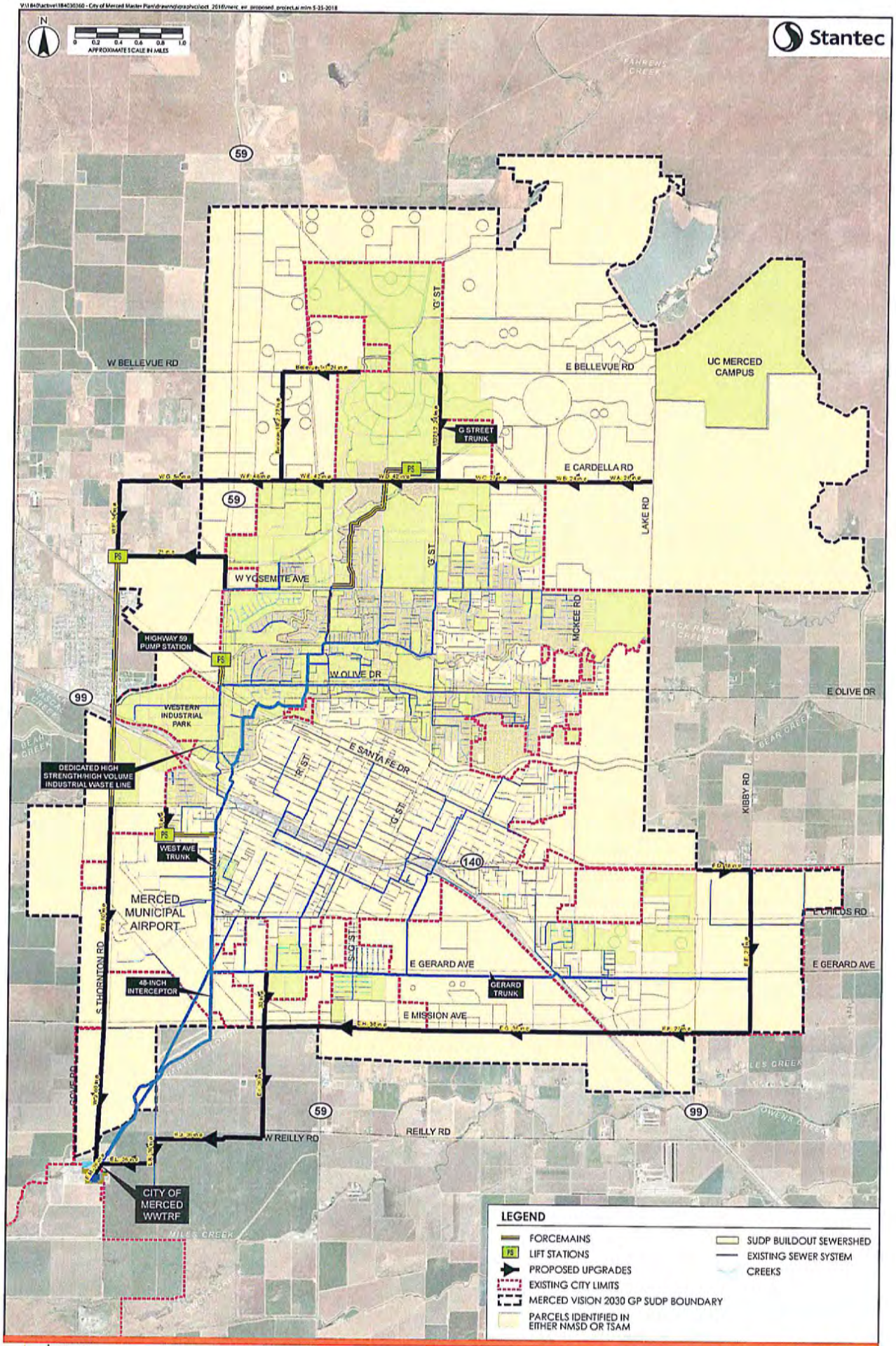
1. Update land use and wastewater flows accommodating the *Merced Vision 2030 General Plan*;
2. Assess the available capacity of the City's major sewers;
3. Determine the best means to sewer the build-out of the *Merced Vision 2030 General Plan* SUDP;
4. Develop an interim service plan and CIP for City growth; and
5. Establish a sewer repair and replacement program.



V:\1840\active\184030350 - City of Merced Master Plan\drawing\graphics\oct_2016\merc_ea_project_vicinity.ai mlm 5-25-2018

City of Merced
Wastewater Collection System Master Plan
Environmental Impact Report

Figure 1
Project Vicinity



City of Merced
Wastewater Collection System Master Plan
Environmental Impact Report

Figure 2
Proposed Project

ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The EIR will analyze potentially significant impacts that result from construction and operation of the Master Plan. Pursuant to section 15063(a) of the CEQA Guidelines, the EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA statute and the CEQA Guidelines including:

- Aesthetics and Visual Resources
- Agriculture and Forestry Resources
- Air Quality and Greenhouse Gases
- Biological Resources
- Cultural and Tribal Resources
- Energy Resources
- Geology, Soils, and Mineral Resources
- Hazards, Hazardous Materials, and Wildfires
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services and Utilities
- Recreation
- Transportation and Traffic

Potential environmental impacts associated with implementation of the Master Plan are anticipated to be analyzed at project-level where feasible and a program-level for all other considerations. Preliminary screenings indicate that any potential adverse effects can be avoided, redesigned, minimized and/or mitigated through the development of alternatives or adoption of appropriate mitigation measures. The EIR will consider a range of potential temporary construction-period impacts, permanent impacts; and cumulative impacts.

SUBMITTING COMMENTS

Comments and suggestions as to the appropriate scope of analysis in the EIR are invited from all interested parties. Written comments or questions concerning the EIR for the WCS Master Plan should be directed to the City's public works director at the following address by **5:00 PM on August 7th, 2018.**

Ken Elwin, PE, City of Merced Public Works Director
678 W. 18th Street
Merced, CA 95340
E-mail: elwink@cityofmerced.org

All comments should please include the name, email address, phone number, and mailing address of the contact person submitting the written response. In the event no response or request for additional time is received by any responsible agency or trustee agency by the end of the review period on **August 7th, 2018**, the City may presume that the responsible agency or trustee agency has no response.

SCOPING MEETING

A public scoping meeting will be held to receive comments on environmental issues that should be addressed in the Draft EIR as well as the range of practicable alternatives to be evaluated in the Draft EIR. The address, date, and time of this meeting are as follows:

Date: **Tuesday, July 24, 2018**
Time: **5:30 –7:30 pm**
Place: Merced Civic Center, Sam Pipes Room
678 W. 18th Street
Merced, CA 95340

Appendix B AIR QUALITY

B.1 CITY OF MERCED 2017 WASTEWATER COLLECTION SYSTEM MASTER PLAN CONSTRUCTION AND OPERATIONS ASSUMPTIONS MEMORANDUM FOR AIR QUALITY AND GREENHOUSE GASES

B.2 CALEEMOD RESULTS

To:	Ken Elwin	From:	Elena Nuno, Air Quality Specialist and Kim Clyma, JD, Project Manager
	City of Merced 1776 Grogan Avenue Merced, CA 95340		Stantec 3875 Atherton Road Rocklin, CA 95765
File:	184030360	Date:	July 6, 2020

Reference: City of Merced 2017 Wastewater Collection System Master Plan Update Construction and Operations Assumptions Memorandum for Air Quality and Greenhouse Gases

This memorandum provides construction and operation details associated with implementation of the City of Merced 2017 Wastewater Collection System Master Plan (2017 WCSMP). The intent of the memorandum is to document assumptions and estimates to support the air quality and greenhouse gas modeling for the 2017 WCSMP Program. The modeling results and information contained in this memorandum are used to support the Draft Environmental Impact Report assessment of construction and operational impacts associated with the Program and proposed Projects.

MODELING ASSUMPTIONS

The specific Projects identified in the 2017 WCSMP and the Draft EIR are within the of the San Joaquin Valley Air Basin governed by the San Joaquin Valley Air Pollution Control District. The following assumptions were used as inputs into the California Emissions Estimator Model (CalEEMod) to quantify 2017 WCSMP emissions.

CONSTRUCTION ASSUMPTIONS

Construction Schedule

Construction of the Program is anticipated over the course of reasonable build-out of the Merced Vision 2030 General Plan. The construction period of the Program as a whole is conservatively estimated to be from 2022 to approximately 2045; however, construction would occur until reasonable build out of the SUDP/SOI is achieved. Specific projects identified by the Program such as the Northern and Southern Trunk Sewer Projects would occur in the more near term estimated to begin in approximately 2022. Duration of active construction activities associated with these proposed Projects and the proposed WWTRF Expansion Projects, and the Program in general are illustrated in Table 1. It is anticipated that the proposed Trunk Sewer Projects would be completed by approximately the fourth quarter of 2027; however, this date is highly variable and dependent on many unpredictable factors. These target dates provide flexibility in construction scheduling and Project timing. For modeling purposes it was assumed that the proposed Projects would be operational by 2027 but it is possible that they could be operational as early as 2024 or as late as 2045 depending on how reasonable buildout occurs, since they'd be installed as demand warrants. This realistically extends the date reasonable build-out is achieved beyond the year 2045. Table 1 provides approximate estimates of duration for each construction stage. These durations were estimated conservatively to quantify the most significant potential air quality/greenhouse gas impacts that could result from implementation of the Program and proposed Projects.

Table 1 Estimated Construction Activity Schedule[i]

Construction Stage	Program Combined Activities	Northern Trunk Sewer Project	Southern Trunk Sewer Project	WWTRF Expansion Project (per 4 to 5 Mgal/day)
Site Preparation/Grading	300 days	60 days	60 days	90 days[ii]
Facilities Construction	1,800 days	500 days[iii]	330 days [ii]	264 days[iv]
Paving	180 days	15 days[v]	15 days [iii]	60 days
Architectural Coating	90 days	30 days[vi]	5 days [vii]	60 days

For the purpose of the air quality modeling, construction of all components in the same timeframe would result in the most conservative (worst case) scenario for air quality emissions. It is likely that construction of individual components would not happen concurrently, but to achieve disclosure of the most significant potential impact that could occur, model inputs were set up to assume all activities would occur simultaneously. If individual projects are undertaken in a step-wise manner, Program and proposed Project emissions would be less than those modeled because the emissions would be spread out over time instead of occurring all at once. Additionally, more stringent regulatory requirements beginning in October of 2020 (such as the California Air Resources Board (CARB) In-Use Off-Road Diesel-Fueled Fleets rule) would lower estimated construction emissions by further restricting construction equipment emissions after the late 2020-time frame. It is expected that any construction previously schedule prior to that date would have lowered emission estimates if construction were delayed until after the regulations take effect.

Construction Footprint Assumptions

Table 2 illustrates the assumptions used for direct impact ground disturbances, total site footprints, staging areas, and total site graded areas assumed for the proposed Projects and estimated for a representative Program activity. These values were used as applicable as inputs into the air quality modeling.

Table 2 Construction Footprint Assumptions

Program Component	Impact Length (ft)	Impact Width (ft)	Trenchless Impact Area (sq ft)	Total Footprint Area (sq ft[ac])	Staging Areas (sq ft[ac])	Total – Graded Area[viii] (sq ft[ac])
Northern Trunk Pipeline	~92,456	~10	~80,000	~1,009,560 [23.18]	~566,280[13]	**1,570,840 [36.06]**
Southern Trunk Pipeline	~51,031	~10	~80,000	~590,310 [13.55]	~435,600[10]	**1,025,910 [23.55]**
WWTRF 4 to 5 Mgal/d	n/a	n/a	n/a	~980,100 [22.5]	W/in footprint	**980,100 [22.5]**
Representative Program Activity	~5,000	~10	TBD	~50,000 [1.15]	~217,800 [5]	**267,800 [6.15]**

Construction Off-Road Equipment

Construction emissions can vary substantially from day to day, depending on the amount of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly particulate matter or PM_{10}) from disturbed soil.

The construction equipment lists for typical types of projects associated with the Program are provided in Tables 3 through 6. Similar to construction durations, the construction fleet modeled is based on a reasonable

approximation of construction equipment and often times overestimated for the purpose of resulting in reasonably conservative model results.

Table 3 Northern Trunk Sewer Project Construction Equipment Assumptions[ix]

Construction Stage	Equipment	Unit Amount	Hours Per Day	Horsepower	Load Factor
Site Preparation / Grading	Rubber Tired Dozers	1	4	247	0.4
	Tractors/Loaders/Backhoes	2	8	97	0.37
	Excavators	2	8	158	0.38
	Dump Truck	1	4	402	0.38
Pipeline and Facility Construction	Cranes	1	1	231	0.29
	Forklifts	1	5	89	0.2
	Generator Sets[x]	2	8	84	0.74
	Tractors/Loaders/Backhoes	3	4	97	0.37
	Welders[xi]	1	3	46	0.45
Paving	Pavers	2	7	130	0.42
	Paving Equipment	2	7	132	0.36
	Rollers	2	7	80	0.38
Architectural Coating	Air Compressors	3	4	78	0.48

Table 4 Southern Trunk Sewer Project Construction Equipment Assumptions[xii]

Construction Stage	Equipment	Unit Amount	Hours Per Day	Horsepower	Load Factor
Site Preparation / Grading	Rubber Tired Dozers	1	4	247	0.4
	Tractors/Loaders/Backhoes	2	4	97	0.37
	Excavators	2	4	158	0.38
Pipeline and Facility Construction	Forklifts	1	4	89	0.2
	Generator Sets[xiii]	2	8	84	0.74
	Tractors/Loaders/Backhoes	2	4	97	0.37
	Welders[xiv]	1	2	46	0.45
Paving	Pavers	2	6	130	0.42
	Paving Equipment	2	6	132	0.36
	Rollers	2	6	80	0.38
Architectural Coating	Air Compressors	2	4	78	0.48

Table 5 WWTRF (4 to 5 Mgal/d) Expansion Project Construction Equipment Assumptions

Construction Stage	Equipment	Unit Amount	Hours Per Day	Horsepower	Load Factor
Site Preparation / Grading	Rubber Tired Dozers	1	2	247	0.4
	Tractors/Loaders/Backhoes	3	2	97	0.37
	Scraper	2	1	367	0.48
	Excavators	3	2	158	0.38
	Graders	1	2	187	0.41
Pipeline and Facility Construction	Cranes	1	1	231	0.29
	Forklifts	2	1	89	0.2
	Generator Sets [x]	1	8	84	0.74
	Tractors/Loaders/Backhoes	2	2	97	0.37
	Welders [xi]	1	1	46	0.45
Paving	Pavers	1	4	130	0.42
	Paving Equipment	4	4	132	0.36
	Rollers	2	4	80	0.38
Architectural Coating	Air Compressors	4	4	78	0.48

Table 6 Representative Program Activity Construction Equipment Assumptions

Construction Stage	Equipment	Unit Amount	Hours Per Day	Horsepower	Load Factor
Site Preparation / Grading	Rubber Tired Dozers	1	4	247	0.4
	Tractors/Loaders/Backhoes	2	4	97	0.37
	Excavators	2	4	158	0.38
Pipeline and Facility Construction	Forklifts	1	4	89	0.2
	Generator Sets[xv]	2	8	84	0.74
	Tractors/Loaders/Backhoes	2	4	97	0.37
	Welders[xvi]	1	2	46	0.45
Paving	Pavers	2	6	130	0.42
	Paving Equipment	2	6	132	0.36
	Rollers	2	6	80	0.38
Architectural Coating	Air Compressors	2	4	78	0.48

On-Road Construction-Related Vehicle Trips

On-road construction emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10}). Tables 7 through 9 provide a summary of the estimated construction-related on-road vehicle trips. If one load of material is delivered, the CalEEMod model assumes that one haul truck importing material will also have a return trip with an empty truck (e.g., 2 one-way trips).

The fleet mix for worker trips is light-duty passenger vehicles to light-duty trucks. The vendor trips fleet mix is composed of a mixture of medium and heavy-duty diesel trucks. The hauling trips are assumed to be 100 percent heavy-duty diesel truck trips. These estimates are provided for air quality modeling purposes, however, may not be representative of daily scenarios during construction activities, and therefore may differ from what is included for traffic impacts in the Draft EIR.

Table 7 Construction Related Worker Vehicle Trips[xvii]

Construction Stage	Trips				Average Length (mi) [xviii]
	Northern Pipeline (per day) [xiv]	Southern Pipeline (per day) [xiv]	WWTRF (per day) [xiv]	Program (per day)[xix]	
Site Preparation / Grading	30	15	15	12	10.8
Pipeline and/or Facility Construction	55	30	50	20	10.8
Paving	20	10	10	7	10.8
Architectural Coating	3	3	5	3	10.8

Table 8 Construction Related Vendor Vehicle Trips

Construction Stage	Trips				Average Length (mi) [xx]
	Northern Pipeline (per day) [xvi]	Southern Pipeline (per day) [xvi]	WWTRF (per day) [xvi]	Program (per day)[xxi]	
Site Preparation / Grading	10	5	5	5	7.3
Pipeline and Facility Construction	75	45	60	30	7.3
Paving	10	5	5	5	7.3
Architectural Coating	0	0	0	0	7.3

Table 9 Construction Related One Way Haul Vehicle Trips[xxii]

Construction Stage	Northern Pipeline (total)	Southern Pipeline (total)	WWTRF (total)	Program (total)[xxiii]	Avg. Trip Length (mi) [xxiv]
Site Preparation / Grading	130[xxv]	80 [xxiv]	20[xxvi]	60	20
Pipeline and Facility Construction	1,200[xxvii]	1,000 [xxvii]	500[xxviii]	500	20
Paving	40[xxix]	30 [xxix]	10	10	20
Architectural Coating	0	0	0	0	20

OPERATIONAL MODELING ASSUMPTIONS

Operational emissions are those emissions that occur during operation of the Program. The only substantial new sources of operational air quality emissions associated with operation of the Program would be potential increased truck trips associated with solids handling and disposal from the WWTRF and occasional worker trips associated with maintenance and upkeep of the Program components throughout the City. Maintenance and additional worker trips would equate to approximately 10 additional trips per year which would result in a negligible about of emissions and are therefore not included in the model. Additionally, the increase in truck trips for the biosolids could reach a maximum of 621 truck trips per year, which would equate to an additional 2 trips per day if all biosolids would require hauling offsite to a disposal facility. The City anticipated biosolids could continue to be land applied at the WWTRF and agricultural areas near the WWTRF, however, if all biosolids would require hauling offsite for disposal the additional 2 truck trips per day would not constitute a substantial increase based on modeling inputs and therefore were not modeled. Consequently, the change in operational conditions from the Program was negligible and did not warrant consideration in the modeling.

SUMMARY

Estimated construction equipment and durations for the Program are just that, estimates. Implementation of construction activities is anticipated to happen approximately as outlined in this memorandum, however some variability such as delays, increases in duration, or modifications in necessary equipment are anticipated. This memo was prepared to document the most conservative reasonable estimates of how long-term implementation of the Program would look. To this point, the construction schedule utilized in the analysis represents a conservative (worst case) scenario since emission factors for construction equipment decrease as the number of years in the analysis increase, due to improvements in technology and more stringent regulatory requirements. As a result, construction emissions would decrease if the construction schedule were to last or be spread out over additional years. The duration of construction activity and associated equipment represent a reasonable approximation of the expected construction fleet as require per CEQA guidelines. Minor changes to actual construction requirements from the assumptions included herein are not anticipated to significantly alter model results or disclosure of potential Program impacts.

ASSUMPTION NOTES

[i] For modeling, durations assume start date and estimated number of active construction days per phase. Assumes max emissions in shortest duration. Active days would be over duration of reasonable build-out. Construction equipment quantities and hours of use were adjusted to conserve the total hours of equipment use for the duration of construction phases.
[ii] Conservative approximations for several site preparation projects.
[iii] Assumes construction of the pipeline 22 days a month for 15 months.
[iv] Assumes 4 to 5 million gallons per day (Mgal/day) expansion would take 12 months for 22 days a month.
[v] Assumes temporary paving as the pipeline progresses and a permanent pave at project completion.
[vi] Assumes architectural coatings for 20 manholes.
[vii] Assumes architectural coatings for 20 manholes.
[viii] Graded area is sum of staging areas, pipeline, and trenchless piping
[ix] Estimated for construction of the northern sewer alignment and pump station..
[x] Assumes dewatering would only occur for a third of total duration. Assumes other uses such as temporary field office power will not require generator.
[xi] Conservatively assumes welding will be needed. May vary based on pipe selection
[xii] Estimated for construction of the southern trunk sewer alignment.
[xiii] Assumes dewatering would only occur for a third of total duration. Assumes other uses such as temporary field office power will not require generator.
[xiv] Conservatively assumes welding will be needed. May vary based on pipe selection
[xv] Assumes dewatering would only occur for a third of total duration. Assumes other uses such as temporary field office power will not require generator.
[xvi] Conservatively assumes welding will be needed. May vary based on pipe selection
[xvii] Assumes trips are based on engineering estimates based on typical projects with similar scope and scale.
[xviii] Assumes CalEEMod default trip lengths for worker trips were used.
[xix] Estimates for a representative, or typical, project that would occur during Program implementation.
[xx] CalEEMod default trip lengths for vendor trips were used for WCSMP impact calculations.
[xxi] Estimates for a representative, or typical, project that would occur during Program implementation.
[xxii] Assumes delivery of materials such as concrete and fill materials
[xxiii] Estimates for a representative, or typical, project that would occur during Program implementation.
[xxiv] CalEEMod default trip lengths for haul trips were used.
[xxv] Assumes 22 days of site preparation/grading needed per month for 3 months and assumed one third of the Project is “off-road” and does not need site preparation and two thirds of 120 trips is approximately 80 trips.
[xxvi] Assumes 2 trips per day for 2 weeks
[xxvii] Assumes 10,000CY and 10CY per truck capacity

[xxviii] Assumes 5,000CY and 10CY per truck capacity
[xxix] Assumes two trips per day for 15 days

City of Merced Wastewater Collection System Master Plan EIR-Northern Trunk Sewer Pipelines

San Joaquin Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	36.06	1,570,840.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Air Quality Memorandum for assumptions.

Land Use - See Air Quality Memorandum for assumptions.

Construction Phase - See Air Quality Memorandum for assumptions- Dates are defualt, but total number of days matches assumptions in Air Qulaity Memo

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See AQ memo for assumptions on equipment

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Trips and VMT - See Air Quality Memorandum for assumptions.

Grading - See Air Quality Memorandum for assumptions.

Architectural Coating - Square footage for architectural coatings for manholes

Vehicle Trips - See AQ Memo for assumptions

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Energy Use -

Water And Wastewater - Water/wastewtaer no applicable to pipelines

Solid Waste - no solid waste assumed for pipelines

Fleet Mix -

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	720,080.00	500.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	2,160,240.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	0.00
tblArchitecturalCoating	EF_Parking	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	0.00
tblConstructionPhase	NumDays	35.00	30.00
tblConstructionPhase	NumDays	45.00	60.00
tblConstructionPhase	NumDays	35.00	15.00
tblGrading	AcresOfGrading	0.00	36.06
tblLandUse	LandUseSquareFeet	1,000.00	1,570,840.00
tblLandUse	LotAcreage	0.02	36.06
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	1.00
tblOffRoadEquipment	UsageHours	8.00	5.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	7.00	4.00
tblOffRoadEquipment	UsageHours	8.00	3.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	1.24	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	130.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,200.00
tblTripsAndVMT	HaulingTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	236.00	75.00
tblTripsAndVMT	VendorTripNumber	0.00	10.00
tblTripsAndVMT	WorkerTripNumber	23.00	30.00
tblTripsAndVMT	WorkerTripNumber	605.00	55.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	121.00	3.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CC_TTP	28.00	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00

tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	0.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2040	2.3121	1.9743	5.7600e-003	0.2207	0.0735	0.2941	0.0821	0.0702	0.1523	0.0000	520.8964	520.8964	0.0651	0.0000	522.5228
2023	0.1812	2.0652	1.9098	6.0600e-003	0.1308	0.0595	0.1903	0.0362	0.0576	0.0939	0.0000	549.1017	549.1017	0.0460	0.0000	550.2515
2024	0.0400	0.4058	0.4389	1.1900e-003	0.0286	0.0127	0.0413	7.6900e-003	0.0122	0.0199	0.0000	107.1527	107.1527	0.0117	0.0000	107.4450
Maximum	**0.2040**	**2.3121**	**1.9743**	**6.0600e-003**	**0.2207**	**0.0735**	**0.2941**	**0.0821**	**0.0702**	**0.1523**	**0.0000**	**549.1017**	**549.1017**	**0.0651**	**0.0000**	**550.2515**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.2040	2.2526	1.9743	5.7600e-003	0.2207	0.0735	0.2941	0.0821	0.0702	0.1523	0.0000	520.8961	520.8961	0.0651	0.0000	522.5225
2023	0.1812	2.0652	1.9098	6.0600e-003	0.1308	0.0595	0.1903	0.0362	0.0576	0.0939	0.0000	549.1015	549.1015	0.0460	0.0000	550.2512
2024	0.0400	0.4058	0.4389	1.1900e-003	0.0286	0.0127	0.0413	7.6900e-003	0.0122	0.0199	0.0000	107.1526	107.1526	0.0117	0.0000	107.4450
Maximum	**0.2040**	**2.2526**	**1.9743**	**6.0600e-003**	**0.2207**	**0.0735**	**0.2941**	**0.0821**	**0.0702**	**0.1523**	**0.0000**	**549.1015**	**549.1015**	**0.0651**	**0.0000**	**550.2512**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**1.24**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2022	3-31-2022	0.5403	0.4805
2	4-1-2022	6-30-2022	0.6533	0.6533
3	7-1-2022	9-30-2022	0.6605	0.6605
4	10-1-2022	12-31-2022	0.6637	0.6637
5	1-1-2023	3-31-2023	0.5557	0.5557
6	4-1-2023	6-30-2023	0.5602	0.5602
7	7-1-2023	9-30-2023	0.5663	0.5663
8	10-1-2023	12-31-2023	0.5680	0.5680
9	1-1-2024	3-31-2024	0.4104	0.4104
10	4-1-2024	6-30-2024	0.0262	0.0262
		Highest	0.6637	0.6637

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Grading	1/1/2022	3/24/2022	5	60	

2	Pipeline and Appurtenant Facilities Construction	Building Construction	3/25/2022	2/22/2024	5	500	
3	Paving	Paving	2/23/2024	3/14/2024	5	15	
4	Architectural Coating	Architectural Coating	3/15/2024	4/25/2024	5	30	

Acres of Grading (Site Preparation Phase): 36.06

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 500; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	2	8.00	158	0.38
Site Preparation	Graders	0	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	4.00	247	0.40
Site Preparation	Scrapers	0	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Pipeline and Appurtenant Facilities Construction	Cranes	1	1.00	231	0.29
Pipeline and Appurtenant Facilities Construction	Forklifts	1	5.00	89	0.20
Pipeline and Appurtenant Facilities Construction	Generator Sets	2	8.00	84	0.74
Pipeline and Appurtenant Facilities Construction	Tractors/Loaders/Backhoes	3	4.00	97	0.37
Pipeline and Appurtenant Facilities Construction	Welders	1	3.00	46	0.45
Paving	Pavers	2	7.00	130	0.42
Paving	Paving Equipment	2	7.00	132	0.36
Paving	Rollers	2	7.00	80	0.38
Architectural Coating	Air Compressors	3	4.00	78	0.48
Site Preparation	Off-Highway Trucks	1	4.00	402	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

Site Preparation	9	30.00	10.00	130.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline and Appurtenant Facilities	8	55.00	75.00	1,200.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	20.00	10.00	40.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	2	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1076	0.0000	0.1076	0.0509	0.0000	0.0509	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0418	0.3929	0.4267	8.1000e-004		0.0187	0.0187		0.0172	0.0172	0.0000	71.1524	71.1524	0.0230	0.0000	71.7277
Total	**0.0418**	**0.3929**	**0.4267**	**8.1000e-004**	**0.1076**	**0.0187**	**0.1263**	**0.0509**	**0.0172**	**0.0681**	**0.0000**	**71.1524**	**71.1524**	**0.0230**	**0.0000**	**71.7277**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.5000e-004	0.0149	2.3800e-003	5.0000e-005	1.1100e-003	4.0000e-005	1.1500e-003	3.0000e-004	4.0000e-005	3.5000e-004	0.0000	4.7368	4.7368	2.5000e-004	0.0000	4.7431
Vendor	8.8000e-004	0.0308	5.4700e-003	8.0000e-005	1.9600e-003	8.0000e-005	2.0300e-003	5.6000e-004	8.0000e-005	6.4000e-004	0.0000	7.8183	7.8183	5.8000e-004	0.0000	7.8328
Worker	3.1900e-003	2.0200e-003	0.0213	7.0000e-005	7.0800e-003	5.0000e-005	7.1200e-003	1.8800e-003	4.0000e-005	1.9200e-003	0.0000	5.9137	5.9137	1.4000e-004	0.0000	5.9173

Total	**4.5200e-003**	**0.0478**	**0.0292**	**2.0000e-004**	**0.0102**	**1.7000e-004**	**0.0103**	**2.7400e-003**	**1.6000e-004**	**2.9100e-003**	**0.0000**	**18.4687**	**18.4687**	**9.7000e-004**	**0.0000**	**18.4932**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1076	0.0000	0.1076	0.0509	0.0000	0.0509	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0418	0.3334	0.4267	8.1000e-004		0.0187	0.0187		0.0172	0.0172	0.0000	71.1524	71.1524	0.0230	0.0000	71.7277
Total	**0.0418**	**0.3334**	**0.4267**	**8.1000e-004**	**0.1076**	**0.0187**	**0.1263**	**0.0509**	**0.0172**	**0.0681**	**0.0000**	**71.1524**	**71.1524**	**0.0230**	**0.0000**	**71.7277**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.5000e-004	0.0149	2.3800e-003	5.0000e-005	1.1100e-003	4.0000e-005	1.1500e-003	3.0000e-004	4.0000e-005	3.5000e-004	0.0000	4.7368	4.7368	2.5000e-004	0.0000	4.7431
Vendor	8.8000e-004	0.0308	5.4700e-003	8.0000e-005	1.9600e-003	8.0000e-005	2.0300e-003	5.6000e-004	8.0000e-005	6.4000e-004	0.0000	7.8183	7.8183	5.8000e-004	0.0000	7.8328
Worker	3.1900e-003	2.0200e-003	0.0213	7.0000e-005	7.0800e-003	5.0000e-005	7.1200e-003	1.8800e-003	4.0000e-005	1.9200e-003	0.0000	5.9137	5.9137	1.4000e-004	0.0000	5.9173
Total	**4.5200e-003**	**0.0478**	**0.0292**	**2.0000e-004**	**0.0102**	**1.7000e-004**	**0.0103**	**2.7400e-003**	**1.6000e-004**	**2.9100e-003**	**0.0000**	**18.4687**	**18.4687**	**9.7000e-004**	**0.0000**	**18.4932**

3.3 Pipeline and Appurtenant Facilities Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1134	1.0151	1.2364	2.0600e-003		0.0521	0.0521		0.0505	0.0505	0.0000	176.7010	176.7010	0.0244	0.0000	177.3100
Total	**0.1134**	**1.0151**	**1.2364**	**2.0600e-003**		**0.0521**	**0.0521**		**0.0505**	**0.0505**	**0.0000**	**176.7010**	**176.7010**	**0.0244**	**0.0000**	**177.3100**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0564	8.9800e-003	1.9000e-004	8.7200e-003	1.7000e-004	8.8900e-003	2.2600e-003	1.6000e-004	2.4300e-003	0.0000	17.8749	17.8749	9.6000e-004	0.0000	17.8989
Vendor	0.0226	0.7873	0.1399	2.1000e-003	0.0500	2.0200e-003	0.0520	0.0144	1.9400e-003	0.0164	0.0000	199.7640	199.7640	0.0148	0.0000	200.1351
Worker	0.0199	0.0126	0.1332	4.1000e-004	0.0442	2.9000e-004	0.0445	0.0118	2.7000e-004	0.0120	0.0000	36.9353	36.9353	9.0000e-004	0.0000	36.9579
Total	**0.0442**	**0.8563**	**0.2821**	**2.7000e-003**	**0.1029**	**2.4800e-003**	**0.1054**	**0.0285**	**2.3700e-003**	**0.0308**	**0.0000**	**254.5742**	**254.5742**	**0.0167**	**0.0000**	**254.9919**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.1134	1.0151	1.2364	2.0600e-003		0.0521	0.0521		0.0505	0.0505	0.0000	176.7008	176.7008	0.0244	0.0000	177.3098
Total	**0.1134**	**1.0151**	**1.2364**	**2.0600e-003**		**0.0521**	**0.0521**		**0.0505**	**0.0505**	**0.0000**	**176.7008**	**176.7008**	**0.0244**	**0.0000**	**177.3098**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0564	8.9800e-003	1.9000e-004	8.7200e-003	1.7000e-004	8.8900e-003	2.2600e-003	1.6000e-004	2.4300e-003	0.0000	17.8749	17.8749	9.6000e-004	0.0000	17.8989
Vendor	0.0226	0.7873	0.1399	2.1000e-003	0.0500	2.0200e-003	0.0520	0.0144	1.9400e-003	0.0164	0.0000	199.7640	199.7640	0.0148	0.0000	200.1351
Worker	0.0199	0.0126	0.1332	4.1000e-004	0.0442	2.9000e-004	0.0445	0.0118	2.7000e-004	0.0120	0.0000	36.9353	36.9353	9.0000e-004	0.0000	36.9579
Total	**0.0442**	**0.8563**	**0.2821**	**2.7000e-003**	**0.1029**	**2.4800e-003**	**0.1054**	**0.0285**	**2.3700e-003**	**0.0308**	**0.0000**	**254.5742**	**254.5742**	**0.0167**	**0.0000**	**254.9919**

3.3 Pipeline and Appurtenant Facilities Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1355	1.2147	1.5938	2.6600e-003		0.0582	0.0582		0.0565	0.0565	0.0000	228.6280	228.6280	0.0309	0.0000	229.4009
Total	**0.1355**	**1.2147**	**1.5938**	**2.6600e-003**		**0.0582**	**0.0582**		**0.0565**	**0.0565**	**0.0000**	**228.6280**	**228.6280**	**0.0309**	**0.0000**	**229.4009**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.4900e-003	0.0494	9.6800e-003	2.3000e-004	9.0300e-003	8.0000e-005	9.1100e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	22.3594	22.3594	8.5000e-004	0.0000	22.3807
Vendor	0.0203	0.7865	0.1494	2.6500e-003	0.0646	7.8000e-004	0.0654	0.0187	7.5000e-004	0.0194	0.0000	252.1191	252.1191	0.0132	0.0000	252.4487
Worker	0.0240	0.0146	0.1570	5.1000e-004	0.0572	3.7000e-004	0.0575	0.0152	3.4000e-004	0.0155	0.0000	45.9952	45.9952	1.0400e-003	0.0000	46.0213
Total	**0.0457**	**0.8505**	**0.3161**	**3.3900e-003**	**0.1308**	**1.2300e-003**	**0.1321**	**0.0362**	**1.1700e-003**	**0.0374**	**0.0000**	**320.4737**	**320.4737**	**0.0151**	**0.0000**	**320.8507**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1355	1.2147	1.5938	2.6600e-003		0.0582	0.0582		0.0565	0.0565	0.0000	228.6278	228.6278	0.0309	0.0000	229.4006
Total	**0.1355**	**1.2147**	**1.5938**	**2.6600e-003**		**0.0582**	**0.0582**		**0.0565**	**0.0565**	**0.0000**	**228.6278**	**228.6278**	**0.0309**	**0.0000**	**229.4006**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	1.4900e-003	0.0494	9.6800e-003	2.3000e-004	9.0300e-003	8.0000e-005	9.1100e-003	2.3700e-003	8.0000e-005	2.4500e-003	0.0000	22.3594	22.3594	8.5000e-004	0.0000	22.3807
Vendor	0.0203	0.7865	0.1494	2.6500e-003	0.0646	7.8000e-004	0.0654	0.0187	7.5000e-004	0.0194	0.0000	252.1191	252.1191	0.0132	0.0000	252.4487
Worker	0.0240	0.0146	0.1570	5.1000e-004	0.0572	3.7000e-004	0.0575	0.0152	3.4000e-004	0.0155	0.0000	45.9952	45.9952	1.0400e-003	0.0000	46.0213
Total	**0.0457**	**0.8505**	**0.3161**	**3.3900e-003**	**0.1308**	**1.2300e-003**	**0.1321**	**0.0362**	**1.1700e-003**	**0.0374**	**0.0000**	**320.4737**	**320.4737**	**0.0151**	**0.0000**	**320.8507**

3.3 Pipeline and Appurtenant Facilities Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0190	0.1710	0.2387	4.0000e-004		7.5900e-003	7.5900e-003		7.3500e-003	7.3500e-003	0.0000	34.2992	34.2992	4.5500e-003	0.0000	34.4130
Total	**0.0190**	**0.1710**	**0.2387**	**4.0000e-004**		**7.5900e-003**	**7.5900e-003**		**7.3500e-003**	**7.3500e-003**	**0.0000**	**34.2992**	**34.2992**	**4.5500e-003**	**0.0000**	**34.4130**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	7.2600e-003	1.4300e-003	3.0000e-005	7.8900e-003	1.0000e-005	7.9000e-003	1.9600e-003	1.0000e-005	1.9700e-003	0.0000	3.3285	3.3285	1.3000e-004	0.0000	3.3317
Vendor	2.9500e-003	0.1170	0.0211	4.0000e-004	9.7000e-003	1.2000e-004	9.8100e-003	2.8000e-003	1.1000e-004	2.9100e-003	0.0000	37.5319	37.5319	2.0100e-003	0.0000	37.5821
Worker	3.3500e-003	1.9600e-003	0.0217	7.0000e-005	8.5700e-003	5.0000e-005	8.6300e-003	2.2800e-003	5.0000e-005	2.3300e-003	0.0000	6.6370	6.6370	1.4000e-004	0.0000	6.6405

Total	**6.5200e-003**	**0.1263**	**0.0443**	**5.0000e-004**	**0.0262**	**1.8000e-004**	**0.0263**	**7.0400e-003**	**1.7000e-004**	**7.2100e-003**	**0.0000**	**47.4974**	**47.4974**	**2.2800e-003**	**0.0000**	**47.5543**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0190	0.1710	0.2387	4.0000e-004		7.5900e-003	7.5900e-003		7.3500e-003	7.3500e-003	0.0000	34.2992	34.2992	4.5500e-003	0.0000	34.4130
Total	**0.0190**	**0.1710**	**0.2387**	**4.0000e-004**		**7.5900e-003**	**7.5900e-003**		**7.3500e-003**	**7.3500e-003**	**0.0000**	**34.2992**	**34.2992**	**4.5500e-003**	**0.0000**	**34.4130**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.2000e-004	7.2600e-003	1.4300e-003	3.0000e-005	7.8900e-003	1.0000e-005	7.9000e-003	1.9600e-003	1.0000e-005	1.9700e-003	0.0000	3.3285	3.3285	1.3000e-004	0.0000	3.3317
Vendor	2.9500e-003	0.1170	0.0211	4.0000e-004	9.7000e-003	1.2000e-004	9.8100e-003	2.8000e-003	1.1000e-004	2.9100e-003	0.0000	37.5319	37.5319	2.0100e-003	0.0000	37.5821
Worker	3.3500e-003	1.9600e-003	0.0217	7.0000e-005	8.5700e-003	5.0000e-005	8.6300e-003	2.2800e-003	5.0000e-005	2.3300e-003	0.0000	6.6370	6.6370	1.4000e-004	0.0000	6.6405
Total	**6.5200e-003**	**0.1263**	**0.0443**	**5.0000e-004**	**0.0262**	**1.8000e-004**	**0.0263**	**7.0400e-003**	**1.7000e-004**	**7.2100e-003**	**0.0000**	**47.4974**	**47.4974**	**2.2800e-003**	**0.0000**	**47.5543**

3.4 Paving - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.4800e-003	0.0625	0.0960	1.5000e-004		3.0700e-003	3.0700e-003		2.8300e-003	2.8300e-003	0.0000	13.1424	13.1424	4.2500e-003	0.0000	13.2487
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.4800e-003**	**0.0625**	**0.0960**	**1.5000e-004**		**3.0700e-003**	**3.0700e-003**		**2.8300e-003**	**2.8300e-003**	**0.0000**	**13.1424**	**13.1424**	**4.2500e-003**	**0.0000**	**13.2487**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.1000e-003	6.1000e-004	1.0000e-005	3.4000e-004	1.0000e-005	3.5000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.4224	1.4224	6.0000e-005	0.0000	1.4238
Vendor	1.5000e-004	6.0000e-003	1.0800e-003	2.0000e-005	5.0000e-004	1.0000e-005	5.0000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	1.9247	1.9247	1.0000e-004	0.0000	1.9273
Worker	4.7000e-004	2.7000e-004	3.0400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9283	0.9283	2.0000e-005	0.0000	0.9287
Total	**7.1000e-004**	**9.3700e-003**	**4.7300e-003**	**4.0000e-005**	**2.0400e-003**	**3.0000e-005**	**2.0600e-003**	**5.5000e-004**	**3.0000e-005**	**5.8000e-004**	**0.0000**	**4.2754**	**4.2754**	**1.8000e-004**	**0.0000**	**4.2799**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	6.4800e-003	0.0625	0.0960	1.5000e-004		3.0700e-003	3.0700e-003		2.8300e-003	2.8300e-003	0.0000	13.1424	13.1424	4.2500e-003	0.0000	13.2487
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**6.4800e-003**	**0.0625**	**0.0960**	**1.5000e-004**		**3.0700e-003**	**3.0700e-003**		**2.8300e-003**	**2.8300e-003**	**0.0000**	**13.1424**	**13.1424**	**4.2500e-003**	**0.0000**	**13.2487**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.1000e-003	6.1000e-004	1.0000e-005	3.4000e-004	1.0000e-005	3.5000e-004	9.0000e-005	1.0000e-005	1.0000e-004	0.0000	1.4224	1.4224	6.0000e-005	0.0000	1.4238
Vendor	1.5000e-004	6.0000e-003	1.0800e-003	2.0000e-005	5.0000e-004	1.0000e-005	5.0000e-004	1.4000e-004	1.0000e-005	1.5000e-004	0.0000	1.9247	1.9247	1.0000e-004	0.0000	1.9273
Worker	4.7000e-004	2.7000e-004	3.0400e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9283	0.9283	2.0000e-005	0.0000	0.9287
Total	**7.1000e-004**	**9.3700e-003**	**4.7300e-003**	**4.0000e-005**	**2.0400e-003**	**3.0000e-005**	**2.0600e-003**	**5.5000e-004**	**3.0000e-005**	**5.8000e-004**	**0.0000**	**4.2754**	**4.2754**	**1.8000e-004**	**0.0000**	**4.2799**

3.5 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4200e-003	0.0366	0.0543	9.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	7.6598	7.6598	4.3000e-004	0.0000	7.6705
Total	**7.1600e-003**	**0.0366**	**0.0543**	**9.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**7.6598**	**7.6598**	**4.3000e-004**	**0.0000**	**7.6705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	8.0000e-005	9.1000e-004	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2785	0.2785	1.0000e-005	0.0000	0.2786
Total	**1.4000e-004**	**8.0000e-005**	**9.1000e-004**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2785**	**0.2785**	**1.0000e-005**	**0.0000**	**0.2786**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.4200e-003	0.0366	0.0543	9.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	7.6598	7.6598	4.3000e-004	0.0000	7.6705
Total	**7.1600e-003**	**0.0366**	**0.0543**	**9.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**7.6598**	**7.6598**	**4.3000e-004**	**0.0000**	**7.6705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	8.0000e-005	9.1000e-004	0.0000	3.6000e-004	0.0000	3.6000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2785	0.2785	1.0000e-005	0.0000	0.2786
Total	**1.4000e-004**	**8.0000e-005**	**9.1000e-004**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**1.0000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.2785**	**0.2785**	**1.0000e-005**	**0.0000**	**0.2786**

City of Merced Wastewater Collection System Master Plan EIR-Southern Trunk Sewer

San Joaquin Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	23.55	1,025,910.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Air Quality Memorandum for assumptions.

Land Use - See Air Quality Memorandum for assumptions.

Construction Phase - See Air Quality Memorandum for assumptions- defualt dates used, but total days changed to match the assumptions in the AQ Memo

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See AQ memo for assumptions on equipment

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Trips and VMT - See Air Quality Memorandum for assumptions.

Grading - See Air Quality Memorandum for assumptions.

Architectural Coating - Articetural coating assumed for manholes only

Vehicle Trips - no operational trips assumed for pipelines

Energy Use -

Water And Wastewater - no water/wastewater needs for pipelines

Solid Waste - no soild waste genreation assumed for pipelines

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	512,955.00	500.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,538,865.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	0.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	370.00	330.00
tblConstructionPhase	NumDays	35.00	60.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	PhaseEndDate	9/15/2023	7/28/2023
tblConstructionPhase	PhaseEndDate	7/21/2023	6/30/2023
tblConstructionPhase	PhaseEndDate	2/18/2022	3/25/2022
tblConstructionPhase	PhaseEndDate	8/18/2023	7/21/2023
tblConstructionPhase	PhaseStartDate	8/19/2023	7/22/2023
tblConstructionPhase	PhaseStartDate	2/19/2022	3/26/2022
tblConstructionPhase	PhaseStartDate	7/22/2023	7/1/2023
tblGrading	AcresOfGrading	150.00	23.55
tblLandUse	LandUseSquareFeet	1,000.00	1,025,910.00
tblLandUse	LotAcreage	0.02	23.55
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	80.00
tblTripsAndVMT	HaulingTripNumber	0.00	1,000.00
tblTripsAndVMT	HaulingTripNumber	0.00	30.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	168.00	45.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	20.00	15.00
tblTripsAndVMT	WorkerTripNumber	431.00	30.00
tblTripsAndVMT	WorkerTripNumber	15.00	10.00
tblTripsAndVMT	WorkerTripNumber	86.00	3.00
tblVehicleTrips	ST_TR	1.32	0.00
tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1048	1.2975	0.9466	3.1900e-003	0.2600	0.0366	0.2965	0.1191	0.0349	0.1541	0.0000	290.2928	290.2928	0.0334	0.0000	291.1269
2023	0.0528	0.6131	0.5299	1.8500e-003	0.0434	0.0165	0.0599	0.0119	0.0160	0.0279	0.0000	168.6791	168.6791	0.0145	0.0000	169.0410
Maximum	**0.1048**	**1.2975**	**0.9466**	**3.1900e-003**	**0.2600**	**0.0366**	**0.2965**	**0.1191**	**0.0349**	**0.1541**	**0.0000**	**290.2928**	**290.2928**	**0.0334**	**0.0000**	**291.1269**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1048	1.2975	0.9466	3.1900e-003	0.2600	0.0366	0.2965	0.1191	0.0349	0.1541	0.0000	290.2926	290.2926	0.0334	0.0000	291.1267
2023	0.0528	0.6131	0.5299	1.8500e-003	0.0434	0.0165	0.0599	0.0119	0.0160	0.0279	0.0000	168.6790	168.6790	0.0145	0.0000	169.0409
Maximum	**0.1048**	**1.2975**	**0.9466**	**3.1900e-003**	**0.2600**	**0.0366**	**0.2965**	**0.1191**	**0.0349**	**0.1541**	**0.0000**	**290.2926**	**290.2926**	**0.0334**	**0.0000**	**291.1267**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)

1	1-1-2022	3-31-2022	0.3261	0.3261
2	4-1-2022	6-30-2022	0.3554	0.3554
3	7-1-2022	9-30-2022	0.3594	0.3594
4	10-1-2022	12-31-2022	0.3616	0.3616
5	1-1-2023	3-31-2023	0.2971	0.2971
6	4-1-2023	6-30-2023	0.2993	0.2993
7	7-1-2023	9-30-2023	0.0653	0.0653
		Highest	0.3616	0.3616

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Grading	1/1/2022	3/25/2022	5	60	
2	Pipeline and Appurtenant Facilities Construction	Building Construction	3/26/2022	6/30/2023	5	330	
3	Paving	Paving	7/1/2023	7/21/2023	5	15	
4	Architectural Coating	Architectural Coating	7/22/2023	7/28/2023	5	5	

Acres of Grading (Site Preparation Phase): 23.55

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 500; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	3	2.00	158	0.38
Site Preparation	Graders	1	2.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	2.00	247	0.40
Site Preparation	Scrapers	2	1.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	3	2.00	97	0.37

Pipeline and Appurtenant Facilities Construction	Cranes	1	1.00	231	0.29
Pipeline and Appurtenant Facilities Construction	Forklifts	2	1.00	89	0.20
Pipeline and Appurtenant Facilities Construction	Generator Sets	1	8.00	84	0.74
Pipeline and Appurtenant Facilities Construction	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Pipeline and Appurtenant Facilities Construction	Welders	1	1.00	46	0.45
Paving	Pavers	1	4.00	130	0.42
Paving	Paving Equipment	4	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	4	4.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	8	15.00	5.00	80.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Pipeline and Appurtenant Facilities	9	30.00	45.00	1,000.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	10.00	5.00	30.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1932	0.0000	0.1932	0.1007	0.0000	0.1007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0238	0.2501	0.2112	4.1000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	36.3489	36.3489	0.0118	0.0000	36.6428

Total	**0.0238**	**0.2501**	**0.2112**	**4.1000e-004**	**0.1932**	**0.0110**	**0.2041**	**0.1007**	**0.0101**	**0.1108**	**0.0000**	**36.3489**	**36.3489**	**0.0118**	**0.0000**	**36.6428**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	9.3500e-003	1.4900e-003	3.0000e-005	6.8000e-004	3.0000e-005	7.1000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9643	2.9643	1.6000e-004	0.0000	2.9683
Vendor	4.5000e-004	0.0157	2.7800e-003	4.0000e-005	9.9000e-004	4.0000e-005	1.0300e-003	2.9000e-004	4.0000e-005	3.3000e-004	0.0000	3.9754	3.9754	3.0000e-004	0.0000	3.9828
Worker	1.6200e-003	1.0200e-003	0.0109	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.0069	3.0069	7.0000e-005	0.0000	3.0088
Total	**2.3500e-003**	**0.0260**	**0.0151**	**1.0000e-004**	**5.2700e-003**	**9.0000e-005**	**5.3600e-003**	**1.4400e-003**	**9.0000e-005**	**1.5300e-003**	**0.0000**	**9.9467**	**9.9467**	**5.3000e-004**	**0.0000**	**9.9599**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1932	0.0000	0.1932	0.1007	0.0000	0.1007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0238	0.2501	0.2112	4.1000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	36.3488	36.3488	0.0118	0.0000	36.6427
Total	**0.0238**	**0.2501**	**0.2112**	**4.1000e-004**	**0.1932**	**0.0110**	**0.2041**	**0.1007**	**0.0101**	**0.1108**	**0.0000**	**36.3488**	**36.3488**	**0.0118**	**0.0000**	**36.6427**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.8000e-004	9.3500e-003	1.4900e-003	3.0000e-005	6.8000e-004	3.0000e-005	7.1000e-004	1.9000e-004	3.0000e-005	2.2000e-004	0.0000	2.9643	2.9643	1.6000e-004	0.0000	2.9683
Vendor	4.5000e-004	0.0157	2.7800e-003	4.0000e-005	9.9000e-004	4.0000e-005	1.0300e-003	2.9000e-004	4.0000e-005	3.3000e-004	0.0000	3.9754	3.9754	3.0000e-004	0.0000	3.9828
Worker	1.6200e-003	1.0200e-003	0.0109	3.0000e-005	3.6000e-003	2.0000e-005	3.6200e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.0069	3.0069	7.0000e-005	0.0000	3.0088
Total	**2.3500e-003**	**0.0260**	**0.0151**	**1.0000e-004**	**5.2700e-003**	**9.0000e-005**	**5.3600e-003**	**1.4400e-003**	**9.0000e-005**	**1.5300e-003**	**0.0000**	**9.9467**	**9.9467**	**5.3000e-004**	**0.0000**	**9.9599**

3.3 Pipeline and Appurtenant Facilities Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0522	0.4736	0.5532	9.6000e-004		0.0239	0.0239		0.0232	0.0232	0.0000	82.2318	82.2318	0.0105	0.0000	82.4948
Total	**0.0522**	**0.4736**	**0.5532**	**9.6000e-004**		**0.0239**	**0.0239**		**0.0232**	**0.0232**	**0.0000**	**82.2318**	**82.2318**	**0.0105**	**0.0000**	**82.4948**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	2.1300e-003	0.0708	0.0113	2.4000e-004	7.7100e-003	2.1000e-004	7.9200e-003	2.0500e-003	2.0000e-004	2.2500e-003	0.0000	22.4570	22.4570	1.2100e-003	0.0000	22.4872
Vendor	0.0135	0.4701	0.0835	1.2600e-003	0.0298	1.2100e-003	0.0310	8.6200e-003	1.1600e-003	9.7700e-003	0.0000	119.2621	119.2621	8.8600e-003	0.0000	119.4837
Worker	0.0108	6.8300e-003	0.0723	2.2000e-004	0.0240	1.6000e-004	0.0241	6.3700e-003	1.5000e-004	6.5200e-003	0.0000	20.0463	20.0463	4.9000e-004	0.0000	20.0585
Total	**0.0264**	**0.5477**	**0.1671**	**1.7200e-003**	**0.0615**	**1.5800e-003**	**0.0631**	**0.0170**	**1.5100e-003**	**0.0185**	**0.0000**	**161.7654**	**161.7654**	**0.0106**	**0.0000**	**162.0294**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0522	0.4736	0.5532	9.6000e-004		0.0239	0.0239		0.0232	0.0232	0.0000	82.2317	82.2317	0.0105	0.0000	82.4947
Total	**0.0522**	**0.4736**	**0.5532**	**9.6000e-004**		**0.0239**	**0.0239**		**0.0232**	**0.0232**	**0.0000**	**82.2317**	**82.2317**	**0.0105**	**0.0000**	**82.4947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1300e-003	0.0708	0.0113	2.4000e-004	7.7100e-003	2.1000e-004	7.9200e-003	2.0500e-003	2.0000e-004	2.2500e-003	0.0000	22.4570	22.4570	1.2100e-003	0.0000	22.4872
Vendor	0.0135	0.4701	0.0835	1.2600e-003	0.0298	1.2100e-003	0.0310	8.6200e-003	1.1600e-003	9.7700e-003	0.0000	119.2621	119.2621	8.8600e-003	0.0000	119.4837
Worker	0.0108	6.8300e-003	0.0723	2.2000e-004	0.0240	1.6000e-004	0.0241	6.3700e-003	1.5000e-004	6.5200e-003	0.0000	20.0463	20.0463	4.9000e-004	0.0000	20.0585
Total	**0.0264**	**0.5477**	**0.1671**	**1.7200e-003**	**0.0615**	**1.5800e-003**	**0.0631**	**0.0170**	**1.5100e-003**	**0.0185**	**0.0000**	**161.7654**	**161.7654**	**0.0106**	**0.0000**	**162.0294**

3.3 Pipeline and Appurtenant Facilities Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0314	0.2846	0.3582	6.2000e-004		0.0135	0.0135		0.0131	0.0131	0.0000	53.4605	53.4605	6.7000e-003	0.0000	53.6280
Total	**0.0314**	**0.2846**	**0.3582**	**6.2000e-004**		**0.0135**	**0.0135**		**0.0131**	**0.0131**	**0.0000**	**53.4605**	**53.4605**	**6.7000e-003**	**0.0000**	**53.6280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0312	6.1100e-003	1.5000e-004	7.2500e-003	5.0000e-005	7.3100e-003	1.8800e-003	5.0000e-005	1.9300e-003	0.0000	14.1158	14.1158	5.4000e-004	0.0000	14.1292
Vendor	6.0800e-003	0.2360	0.0448	8.0000e-004	0.0194	2.3000e-004	0.0196	5.6000e-003	2.2000e-004	5.8300e-003	0.0000	75.6357	75.6357	3.9500e-003	0.0000	75.7346
Worker	6.5300e-003	3.9700e-003	0.0428	1.4000e-004	0.0156	1.0000e-004	0.0157	4.1400e-003	9.0000e-005	4.2400e-003	0.0000	12.5442	12.5442	2.8000e-004	0.0000	12.5513
Total	**0.0136**	**0.2711**	**0.0937**	**1.0900e-003**	**0.0422**	**3.8000e-004**	**0.0426**	**0.0116**	**3.6000e-004**	**0.0120**	**0.0000**	**102.2957**	**102.2957**	**4.7700e-003**	**0.0000**	**102.4151**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0314	0.2846	0.3582	6.2000e-004		0.0135	0.0135		0.0131	0.0131	0.0000	53.4605	53.4605	6.7000e-003	0.0000	53.6279
Total	**0.0314**	**0.2846**	**0.3582**	**6.2000e-004**		**0.0135**	**0.0135**		**0.0131**	**0.0131**	**0.0000**	**53.4605**	**53.4605**	**6.7000e-003**	**0.0000**	**53.6279**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.4000e-004	0.0312	6.1100e-003	1.5000e-004	7.2500e-003	5.0000e-005	7.3100e-003	1.8800e-003	5.0000e-005	1.9300e-003	0.0000	14.1158	14.1158	5.4000e-004	0.0000	14.1292
Vendor	6.0800e-003	0.2360	0.0448	8.0000e-004	0.0194	2.3000e-004	0.0196	5.6000e-003	2.2000e-004	5.8300e-003	0.0000	75.6357	75.6357	3.9500e-003	0.0000	75.7346
Worker	6.5300e-003	3.9700e-003	0.0428	1.4000e-004	0.0156	1.0000e-004	0.0157	4.1400e-003	9.0000e-005	4.2400e-003	0.0000	12.5442	12.5442	2.8000e-004	0.0000	12.5513
Total	**0.0136**	**0.2711**	**0.0937**	**1.0900e-003**	**0.0422**	**3.8000e-004**	**0.0426**	**0.0116**	**3.6000e-004**	**0.0120**	**0.0000**	**102.2957**	**102.2957**	**4.7700e-003**	**0.0000**	**102.4151**

3.4 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4300e-003	0.0432	0.0631	1.0000e-004		2.1700e-003	2.1700e-003		1.9900e-003	1.9900e-003	0.0000	8.6454	8.6454	2.8000e-003	0.0000	8.7153

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4300e-003**	**0.0432**	**0.0631**	**1.0000e-004**		**2.1700e-003**	**2.1700e-003**		**1.9900e-003**	**1.9900e-003**	**0.0000**	**8.6454**	**8.6454**	**2.8000e-003**	**0.0000**	**8.7153**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.3700e-003	4.7000e-004	1.0000e-005	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	1.0750	1.0750	4.0000e-005	0.0000	1.0760
Vendor	8.0000e-005	3.0300e-003	5.7000e-004	1.0000e-005	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.9697	0.9697	5.0000e-005	0.0000	0.9710
Worker	2.5000e-004	1.5000e-004	1.6500e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4825	0.4825	1.0000e-005	0.0000	0.4827
Total	**4.0000e-004**	**5.5500e-003**	**2.6900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**1.1100e-003**	**3.0000e-004**	**0.0000**	**3.0000e-004**	**0.0000**	**2.5271**	**2.5271**	**1.0000e-004**	**0.0000**	**2.5297**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.4300e-003	0.0432	0.0631	1.0000e-004		2.1700e-003	2.1700e-003		1.9900e-003	1.9900e-003	0.0000	8.6454	8.6454	2.8000e-003	0.0000	8.7153
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.4300e-003**	**0.0432**	**0.0631**	**1.0000e-004**		**2.1700e-003**	**2.1700e-003**		**1.9900e-003**	**1.9900e-003**	**0.0000**	**8.6454**	**8.6454**	**2.8000e-003**	**0.0000**	**8.7153**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.3700e-003	4.7000e-004	1.0000e-005	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	1.0750	1.0750	4.0000e-005	0.0000	1.0760
Vendor	8.0000e-005	3.0300e-003	5.7000e-004	1.0000e-005	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.9697	0.9697	5.0000e-005	0.0000	0.9710
Worker	2.5000e-004	1.5000e-004	1.6500e-003	1.0000e-005	6.0000e-004	0.0000	6.0000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.4825	0.4825	1.0000e-005	0.0000	0.4827
Total	**4.0000e-004**	**5.5500e-003**	**2.6900e-003**	**3.0000e-005**	**1.1100e-003**	**0.0000**	**1.1100e-003**	**3.0000e-004**	**0.0000**	**3.0000e-004**	**0.0000**	**2.5271**	**2.5271**	**1.0000e-004**	**0.0000**	**2.5297**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	8.6900e-003	0.0121	2.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.7022	1.7022	1.0000e-004	0.0000	1.7047
Total	**3.0200e-003**	**8.6900e-003**	**0.0121**	**2.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.7022**	**1.7022**	**1.0000e-004**	**0.0000**	**1.7047**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	1.6000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0483	0.0483	0.0000	0.0000	0.0483
Total	**3.0000e-005**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0483**	**0.0483**	**0.0000**	**0.0000**	**0.0483**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2800e-003	8.6900e-003	0.0121	2.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.7022	1.7022	1.0000e-004	0.0000	1.7047
Total	**3.0200e-003**	**8.6900e-003**	**0.0121**	**2.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.7022**	**1.7022**	**1.0000e-004**	**0.0000**	**1.7047**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	1.6000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0483	0.0483	0.0000	0.0000	0.0483
Total	**3.0000e-005**	**2.0000e-005**	**1.6000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0483**	**0.0483**	**0.0000**	**0.0000**	**0.0483**

City of Merced Wastewater Collection System Master Plan EIR-WWTRF 4-5 Mgd

San Joaquin Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	22.50	980,100.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2027
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Air Quality Memorandum for assumptions

Land Use - See Air Quality Memorandum for assumptions.

Construction Phase - See Air Quality Memorandum for assumptions- default vaules used for the start/end dates, but total number of days is consistent with AQ Memo

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Trips and VMT - See Air Quality Memorandum for assumptions.

Grading - See Air Quality Memorandum for assumptions.

Architectural Coating - Assumes 4-5 Mgd increase at WWTRF would require 1-2 small new structures.

Vehicle Trips - operational trips for WWTRF calculated in separate model

Energy Use -

Water And Wastewater - operational imapcts for WWTRF assumed in separate model

Solid Waste - operational impacts at WWTRF assumed in separate model

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	490,050.00	1,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,470,150.00	1,000.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	0.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	370.00	264.00
tblConstructionPhase	NumDays	35.00	90.00
tblConstructionPhase	NumDays	20.00	60.00
tblEnergyUse	LightingElect	2.70	2.78
tblEnergyUse	T24E	1.96	2.05
tblEnergyUse	T24NG	17.03	17.11
tblGrading	AcresOfGrading	135.00	22.50
tblLandUse	LandUseSquareFeet	1,000.00	980,100.00
tblLandUse	LotAcreage	0.02	22.50
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	3.00

tblOffRoadEquipment	UsageHours	6.00	4.00
tblOffRoadEquipment	UsageHours	7.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblOffRoadEquipment	UsageHours	7.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	1.00
tblSolidWaste	LandfillCaptureGasFlare	94.00	0.00
tblSolidWaste	LandfillNoGasCapture	6.00	0.00
tblSolidWaste	SolidWasteGenerationRate	1.24	0.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	HaulingTripNumber	0.00	500.00
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	161.00	60.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	25.00	15.00
tblTripsAndVMT	WorkerTripNumber	412.00	50.00
tblTripsAndVMT	WorkerTripNumber	18.00	10.00
tblTripsAndVMT	WorkerTripNumber	82.00	5.00
tblVehicleTrips	CC_TL	7.30	0.00
tblVehicleTrips	CNW_TL	7.30	0.00
tblVehicleTrips	CW_TL	9.50	0.00
tblVehicleTrips	ST_TR	1.32	0.00

tblVehicleTrips	SU_TR	0.68	0.00
tblVehicleTrips	WD_TR	6.97	0.00
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToDistribute	1,272.00	0.00
tblWater	ElectricityIntensityFactorToSupply	2,117.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1150	1.3852	1.0109	3.4200e-003	0.3617	0.0386	0.4003	0.1720	0.0366	0.2086	0.0000	311.1279	311.1279	0.0386	0.0000	312.0916
2023	0.0718	0.7429	0.7660	2.1600e-003	0.0458	0.0245	0.0703	0.0126	0.0235	0.0361	0.0000	195.2126	195.2126	0.0219	0.0000	195.7608
Maximum	**0.1150**	**1.3852**	**1.0109**	**3.4200e-003**	**0.3617**	**0.0386**	**0.4003**	**0.1720**	**0.0366**	**0.2086**	**0.0000**	**311.1279**	**311.1279**	**0.0386**	**0.0000**	**312.0916**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1150	1.3852	1.0109	3.4200e-003	0.3617	0.0386	0.4003	0.1720	0.0366	0.2086	0.0000	311.1277	311.1277	0.0386	0.0000	312.0914

2023	0.0718	0.7429	0.7660	2.1600e-003	0.0458	0.0245	0.0703	0.0126	0.0235	0.0361	0.0000	195.2125	195.2125	0.0219	0.0000	195.7607
Maximum	**0.1150**	**1.3852**	**1.0109**	**3.4200e-003**	**0.3617**	**0.0386**	**0.4003**	**0.1720**	**0.0366**	**0.2086**	**0.0000**	**311.1277**	**311.1277**	**0.0386**	**0.0000**	**312.0914**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2022**	**3-31-2022**	0.3155	0.3155
2	**4-1-2022**	**6-30-2022**	0.3694	0.3694
3	**7-1-2022**	**9-30-2022**	0.4070	0.4070
4	**10-1-2022**	**12-31-2022**	0.4095	0.4095
5	**1-1-2023**	**3-31-2023**	0.3347	0.3347
6	**4-1-2023**	**6-30-2023**	0.2740	0.2740
7	**7-1-2023**	**9-30-2023**	0.1662	0.1662
		Highest	0.4095	0.4095

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Grading	1/1/2022	5/6/2022	5	90	
2	Facility Construction	Building Construction	5/7/2022	5/11/2023	5	264	
3	Paving	Paving	5/12/2023	8/3/2023	5	60	
4	Architectural Coating	Architectural Coating	8/4/2023	10/26/2023	5	60	

Acres of Grading (Site Preparation Phase): 22.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,000; Non-Residential Outdoor: 1,000; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	3	2.00	158	0.38
Site Preparation	Graders	1	2.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	2.00	247	0.40
Site Preparation	Scrapers	2	1.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	3	2.00	97	0.37
Facility Construction	Cranes	1	1.00	231	0.29
Facility Construction	Forklifts	2	1.00	89	0.20
Facility Construction	Generator Sets	1	8.00	84	0.74
Facility Construction	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Facility Construction	Welders	1	1.00	46	0.45
Paving	Pavers	1	4.00	130	0.42
Paving	Paving Equipment	4	4.00	132	0.36
Paving	Rollers	2	4.00	80	0.38
Architectural Coating	Air Compressors	4	4.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	10	15.00	5.00	20.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Facility Construction	8	50.00	60.00	500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	10.00	5.00	10.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	4	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2829	0.0000	0.2829	0.1503	0.0000	0.1503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0357	0.3752	0.3168	6.2000e-004		0.0165	0.0165		0.0151	0.0151	0.0000	54.5233	54.5233	0.0176	0.0000	54.9642
Total	**0.0357**	**0.3752**	**0.3168**	**6.2000e-004**	**0.2829**	**0.0165**	**0.2994**	**0.1503**	**0.0151**	**0.1654**	**0.0000**	**54.5233**	**54.5233**	**0.0176**	**0.0000**	**54.9642**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.3400e-003	3.7000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7411	0.7411	4.0000e-005	0.0000	0.7421
Vendor	6.7000e-004	0.0235	4.1700e-003	6.0000e-005	1.4900e-003	6.0000e-005	1.5500e-003	4.3000e-004	6.0000e-005	4.9000e-004	0.0000	5.9631	5.9631	4.4000e-004	0.0000	5.9742
Worker	2.4300e-003	1.5400e-003	0.0163	5.0000e-005	5.4000e-003	4.0000e-005	5.4300e-003	1.4300e-003	3.0000e-005	1.4700e-003	0.0000	4.5104	4.5104	1.1000e-004	0.0000	4.5132
Total	**3.1700e-003**	**0.0274**	**0.0208**	**1.2000e-004**	**7.0600e-003**	**1.1000e-004**	**7.1600e-003**	**1.9100e-003**	**1.0000e-004**	**2.0100e-003**	**0.0000**	**11.2146**	**11.2146**	**5.9000e-004**	**0.0000**	**11.2294**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					0.2829	0.0000	0.2829	0.1503	0.0000	0.1503	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0357	0.3752	0.3168	6.2000e-004		0.0165	0.0165		0.0151	0.0151	0.0000	54.5233	54.5233	0.0176	0.0000	54.9641
Total	**0.0357**	**0.3752**	**0.3168**	**6.2000e-004**	**0.2829**	**0.0165**	**0.2994**	**0.1503**	**0.0151**	**0.1654**	**0.0000**	**54.5233**	**54.5233**	**0.0176**	**0.0000**	**54.9641**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	7.0000e-005	2.3400e-003	3.7000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.7411	0.7411	4.0000e-005	0.0000	0.7421
Vendor	6.7000e-004	0.0235	4.1700e-003	6.0000e-005	1.4900e-003	6.0000e-005	1.5500e-003	4.3000e-004	6.0000e-005	4.9000e-004	0.0000	5.9631	5.9631	4.4000e-004	0.0000	5.9742
Worker	2.4300e-003	1.5400e-003	0.0163	5.0000e-005	5.4000e-003	4.0000e-005	5.4300e-003	1.4300e-003	3.0000e-005	1.4700e-003	0.0000	4.5104	4.5104	1.1000e-004	0.0000	4.5132
Total	**3.1700e-003**	**0.0274**	**0.0208**	**1.2000e-004**	**7.0600e-003**	**1.1000e-004**	**7.1600e-003**	**1.9100e-003**	**1.0000e-004**	**2.0100e-003**	**0.0000**	**11.2146**	**11.2146**	**5.9000e-004**	**0.0000**	**11.2294**

3.3 Facility Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0444	0.4025	0.4702	8.1000e-004		0.0203	0.0203		0.0198	0.0198	0.0000	69.8970	69.8970	8.9400e-003	0.0000	70.1206
Total	**0.0444**	**0.4025**	**0.4702**	**8.1000e-004**		**0.0203**	**0.0203**		**0.0198**	**0.0198**	**0.0000**	**69.8970**	**69.8970**	**8.9400e-003**	**0.0000**	**70.1206**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.1300e-003	0.0376	5.9900e-003	1.3000e-004	3.9000e-003	1.1000e-004	4.0100e-003	1.0400e-003	1.1000e-004	1.1500e-003	0.0000	11.9303	11.9303	6.4000e-004	0.0000	11.9463
Vendor	0.0153	0.5327	0.0946	1.4200e-003	0.0338	1.3700e-003	0.0352	9.7700e-003	1.3100e-003	0.0111	0.0000	135.1637	135.1637	0.0100	0.0000	135.4148
Worker	0.0153	9.6800e-003	0.1024	3.1000e-004	0.0340	2.3000e-004	0.0342	9.0300e-003	2.1000e-004	9.2400e-003	0.0000	28.3989	28.3989	6.9000e-004	0.0000	28.4163
Total	**0.0317**	**0.5800**	**0.2031**	**1.8600e-003**	**0.0717**	**1.7100e-003**	**0.0734**	**0.0198**	**1.6300e-003**	**0.0215**	**0.0000**	**175.4929**	**175.4929**	**0.0114**	**0.0000**	**175.7774**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0444	0.4025	0.4702	8.1000e-004		0.0203	0.0203		0.0198	0.0198	0.0000	69.8969	69.8969	8.9400e-003	0.0000	70.1205
Total	**0.0444**	**0.4025**	**0.4702**	**8.1000e-004**		**0.0203**	**0.0203**		**0.0198**	**0.0198**	**0.0000**	**69.8969**	**69.8969**	**8.9400e-003**	**0.0000**	**70.1205**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	1.1300e-003	0.0376	5.9900e-003	1.3000e-004	3.9000e-003	1.1000e-004	4.0100e-003	1.0400e-003	1.1000e-004	1.1500e-003	0.0000	11.9303	11.9303	6.4000e-004	0.0000	11.9463
Vendor	0.0153	0.5327	0.0946	1.4200e-003	0.0338	1.3700e-003	0.0352	9.7700e-003	1.3100e-003	0.0111	0.0000	135.1637	135.1637	0.0100	0.0000	135.4148
Worker	0.0153	9.6800e-003	0.1024	3.1000e-004	0.0340	2.3000e-004	0.0342	9.0300e-003	2.1000e-004	9.2400e-003	0.0000	28.3989	28.3989	6.9000e-004	0.0000	28.4163
Total	**0.0317**	**0.5800**	**0.2031**	**1.8600e-003**	**0.0717**	**1.7100e-003**	**0.0734**	**0.0198**	**1.6300e-003**	**0.0215**	**0.0000**	**175.4929**	**175.4929**	**0.0114**	**0.0000**	**175.7774**

3.3 Facility Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0227	0.2058	0.2590	4.5000e-004		9.7700e-003	9.7700e-003		9.4900e-003	9.4900e-003	0.0000	38.6561	38.6561	4.8400e-003	0.0000	38.7771
Total	**0.0227**	**0.2058**	**0.2590**	**4.5000e-004**		**9.7700e-003**	**9.7700e-003**		**9.4900e-003**	**9.4900e-003**	**0.0000**	**38.6561**	**38.6561**	**4.8400e-003**	**0.0000**	**38.7771**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.3000e-004	0.0141	2.7600e-003	7.0000e-005	3.5900e-003	2.0000e-005	3.6100e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	6.3792	6.3792	2.4000e-004	0.0000	6.3853
Vendor	5.8700e-003	0.2275	0.0432	7.7000e-004	0.0187	2.3000e-004	0.0189	5.4000e-003	2.2000e-004	5.6200e-003	0.0000	72.9206	72.9206	3.8100e-003	0.0000	73.0159
Worker	7.8700e-003	4.7900e-003	0.0516	1.7000e-004	0.0188	1.2000e-004	0.0189	4.9900e-003	1.1000e-004	5.1100e-003	0.0000	15.1173	15.1173	3.4000e-004	0.0000	15.1259

Total	**0.0142**	**0.2464**	**0.0976**	**1.0100e-003**	**0.0411**	**3.7000e-004**	**0.0414**	**0.0113**	**3.5000e-004**	**0.0117**	**0.0000**	**94.4172**	**94.4172**	**4.3900e-003**	**0.0000**	**94.5271**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0227	0.2058	0.2590	4.5000e-004		9.7700e-003	9.7700e-003		9.4900e-003	9.4900e-003	0.0000	38.6560	38.6560	4.8400e-003	0.0000	38.7771
Total	**0.0227**	**0.2058**	**0.2590**	**4.5000e-004**		**9.7700e-003**	**9.7700e-003**		**9.4900e-003**	**9.4900e-003**	**0.0000**	**38.6560**	**38.6560**	**4.8400e-003**	**0.0000**	**38.7771**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.3000e-004	0.0141	2.7600e-003	7.0000e-005	3.5900e-003	2.0000e-005	3.6100e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	6.3792	6.3792	2.4000e-004	0.0000	6.3853
Vendor	5.8700e-003	0.2275	0.0432	7.7000e-004	0.0187	2.3000e-004	0.0189	5.4000e-003	2.2000e-004	5.6200e-003	0.0000	72.9206	72.9206	3.8100e-003	0.0000	73.0159
Worker	7.8700e-003	4.7900e-003	0.0516	1.7000e-004	0.0188	1.2000e-004	0.0189	4.9900e-003	1.1000e-004	5.1100e-003	0.0000	15.1173	15.1173	3.4000e-004	0.0000	15.1259
Total	**0.0142**	**0.2464**	**0.0976**	**1.0100e-003**	**0.0411**	**3.7000e-004**	**0.0414**	**0.0113**	**3.5000e-004**	**0.0117**	**0.0000**	**94.4172**	**94.4172**	**4.3900e-003**	**0.0000**	**94.5271**

3.4 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0177	0.1727	0.2522	3.9000e-004		8.6600e-003	8.6600e-003		7.9700e-003	7.9700e-003	0.0000	34.5814	34.5814	0.0112	0.0000	34.8611
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1727**	**0.2522**	**3.9000e-004**		**8.6600e-003**	**8.6600e-003**		**7.9700e-003**	**7.9700e-003**	**0.0000**	**34.5814**	**34.5814**	**0.0112**	**0.0000**	**34.8611**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.9000e-004	1.6000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.3583	0.3583	1.0000e-005	0.0000	0.3587
Vendor	3.1000e-004	0.0121	2.3000e-003	4.0000e-005	9.9000e-004	1.0000e-005	1.0100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	3.8788	3.8788	2.0000e-004	0.0000	3.8838
Worker	1.0000e-003	6.1000e-004	6.5900e-003	2.0000e-005	2.4000e-003	2.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.9299	1.9299	4.0000e-005	0.0000	1.9310
Total	**1.3300e-003**	**0.0135**	**9.0500e-003**	**6.0000e-005**	**3.4800e-003**	**3.0000e-005**	**3.5100e-003**	**9.5000e-004**	**2.0000e-005**	**9.7000e-004**	**0.0000**	**6.1670**	**6.1670**	**2.5000e-004**	**0.0000**	**6.1735**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Off-Road	0.0177	0.1727	0.2522	3.9000e-004		8.6600e-003	8.6600e-003		7.9700e-003	7.9700e-003	0.0000	34.5814	34.5814	0.0112	0.0000	34.8610
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0177**	**0.1727**	**0.2522**	**3.9000e-004**		**8.6600e-003**	**8.6600e-003**		**7.9700e-003**	**7.9700e-003**	**0.0000**	**34.5814**	**34.5814**	**0.0112**	**0.0000**	**34.8610**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	7.9000e-004	1.6000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.3583	0.3583	1.0000e-005	0.0000	0.3587
Vendor	3.1000e-004	0.0121	2.3000e-003	4.0000e-005	9.9000e-004	1.0000e-005	1.0100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	3.8788	3.8788	2.0000e-004	0.0000	3.8838
Worker	1.0000e-003	6.1000e-004	6.5900e-003	2.0000e-005	2.4000e-003	2.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.9299	1.9299	4.0000e-005	0.0000	1.9310
Total	**1.3300e-003**	**0.0135**	**9.0500e-003**	**6.0000e-005**	**3.4800e-003**	**3.0000e-005**	**3.5100e-003**	**9.5000e-004**	**2.0000e-005**	**9.7000e-004**	**0.0000**	**6.1670**	**6.1670**	**2.5000e-004**	**0.0000**	**6.1735**

3.5 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1042	0.1449	2.4000e-004		5.6700e-003	5.6700e-003		5.6700e-003	5.6700e-003	0.0000	20.4260	20.4260	1.2200e-003	0.0000	20.4566
Total	**0.0153**	**0.1042**	**0.1449**	**2.4000e-004**		**5.6700e-003**	**5.6700e-003**		**5.6700e-003**	**5.6700e-003**	**0.0000**	**20.4260**	**20.4260**	**1.2200e-003**	**0.0000**	**20.4566**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.1000e-004	3.2900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9649	0.9649	2.0000e-005	0.0000	0.9655
Total	**5.0000e-004**	**3.1000e-004**	**3.2900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9649**	**0.9649**	**2.0000e-005**	**0.0000**	**0.9655**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0153	0.1042	0.1449	2.4000e-004		5.6700e-003	5.6700e-003		5.6700e-003	5.6700e-003	0.0000	20.4260	20.4260	1.2200e-003	0.0000	20.4566
Total	**0.0153**	**0.1042**	**0.1449**	**2.4000e-004**		**5.6700e-003**	**5.6700e-003**		**5.6700e-003**	**5.6700e-003**	**0.0000**	**20.4260**	**20.4260**	**1.2200e-003**	**0.0000**	**20.4566**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	3.1000e-004	3.2900e-003	1.0000e-005	1.2000e-003	1.0000e-005	1.2100e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9649	0.9649	2.0000e-005	0.0000	0.9655
Total	**5.0000e-004**	**3.1000e-004**	**3.2900e-003**	**1.0000e-005**	**1.2000e-003**	**1.0000e-005**	**1.2100e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9649**	**0.9649**	**2.0000e-005**	**0.0000**	**0.9655**

City of Merced Wastewater Collection System Master Plan EIR-WWTRF 4-5 Mgd

San Joaquin Valley Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2024
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See Air Quality Memorandum for assumptions

Land Use - See Air Quality Memorandum for assumptions.

Construction Phase - See Air Quality Memorandum for assumptions- default vaules used for the start/end dates, but total number of days is consistent with AQ Memo.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Off-road Equipment - See Air Quality Memorandum for assumptions.

Trips and VMT - See Air Quality Memorandum for assumptions.

Grading - See Air Quality Memorandum for assumptions.

Architectural Coating - Assumes 4-5 Mgd increase at WWTRF would require 1-2 small new structures.

Vehicle Trips - See AQ memoradum for assumptions

Consumer Products - only mobile emissions modeled

Area Coating - only mobile modeled

Landscape Equipment - only mobile modeled

Energy Use - Only mobile modeled

Water And Wastewater - only mobile modeled

Solid Waste - only mobile modeled

Fleet Mix - See AQ Memo for Assumptions

Stationary Sources - Emergency Generators and Fire Pumps -

Stationary Sources - Emergency Generators and Fire Pumps EF - Tier 4

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,500.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	150.00	0.00
tblAreaCoating	ReapplicationRatePercent	10	0
tblConstructionPhase	NumDays	5.00	365.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	LightingElect	2.70	0.00
tblEnergyUse	NT24E	4.16	0.00
tblEnergyUse	NT24NG	3.84	0.00
tblEnergyUse	T24E	1.96	0.00
tblEnergyUse	T24NG	17.03	0.00
tblFleetMix	HHD	0.11	1.00
tblFleetMix	LDA	0.52	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	4.6110e-003	0.00
tblFleetMix	MCY	5.0750e-003	0.00
tblFleetMix	MDV	0.11	0.00

tblFleetMix	MH	6.5400e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	1.7790e-003	0.00
tblFleetMix	SBUS	9.2500e-004	0.00
tblFleetMix	UBUS	1.4580e-003	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblSolidWaste	SolidWasteGenerationRate	1.24	0.00
tblStationaryGeneratorsPumpsEF	NOX_EF	2.85	2.20
tblStationaryGeneratorsPumpsEF	PM10_EF	0.15	0.02
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	100.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	CC_TL	7.30	20.00
tblVehicleTrips	CC_TTP	28.00	100.00
tblVehicleTrips	CNW_TTP	13.00	0.00
tblVehicleTrips	CW_TTP	59.00	0.00
tblVehicleTrips	DV_TP	5.00	0.00
tblVehicleTrips	PB_TP	3.00	0.00
tblVehicleTrips	PR_TP	92.00	100.00
tblVehicleTrips	ST_TR	1.32	1.70
tblVehicleTrips	SU_TR	0.68	1.70
tblVehicleTrips	WD_TR	6.97	1.70
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	1.4600e-003	0.0478	9.38E-03	2.3000e-004	5.2900e-003	8.0000e-005	5.3700e-003	1.4500e-003	8.0000e-005	1.5300e-003	0.0000	21.8866	21.8866	8.6000e-004	0.0000	21.9081
Stationary	0.0492	0.1062	0.1255	2.4000e-004		7.2000e-004	7.2000e-004		7.2400e-003	7.2400e-003	0.0000	22.8478	22.8478	3.2000e-003	0.0000	22.9279
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0546**	**0.1540**	**0.1349**	**4.7000e-004**	**5.2900e-003**	**8.0000e-004**	**6.0900e-003**	**1.4500e-003**	**7.3200e-003**	**8.7700e-003**	**0.0000**	**44.7345**	**44.7345**	**4.0600e-003**	**0.0000**	**44.8361**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.4600e-003	0.0478	9.3800e-003	2.3000e-004	5.2900e-003	8.0000e-005	5.3700e-003	1.4500e-003	8.0000e-005	1.5300e-003	0.0000	21.8866	21.8866	8.6000e-004	0.0000	21.9081
Unmitigated	1.4600e-003	0.0478	9.3800e-003	2.3000e-004	5.2900e-003	8.0000e-005	5.3700e-003	1.4500e-003	8.0000e-005	1.5300e-003	0.0000	21.8866	21.8866	8.6000e-004	0.0000	21.9081

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	1.70	1.70	1.70	12,376	12,376
Total	1.70	1.70	1.70	12,376	12,376

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	20.00	7.30	0.00	100.00	0.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	0.000000

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	24	100	600	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (300 - 750 HP)	0.0492	0.1062	0.1255	2.4000e-004		7.2000e-004	7.2000e-004		7.2400e-003	7.2400e-003	0.0000	22.8478	22.8478	3.2000e-003	0.0000	22.9279
Total	**0.0492**	**0.1062**	**0.1255**	**2.4000e-004**		**7.2000e-004**	**7.2000e-004**		**7.2400e-003**	**7.2400e-003**	**0.0000**	**22.8478**	**22.8478**	**3.2000e-003**	**0.0000**	**22.9279**

Year	New Project Component	lbs/day				
		ROG	CO	NO_x	PM_{10}	$PM_{2.5}$
2022	Northern Trunk Sewer	1.55	14.96	17.52	2.23	1.15
	Southern Trunk Sewer	0.79	7.17	9.83	2.25	1.17
	WWTRF 4 to 5 Mgal/d	0.87	7.66	10.49	3.03	1.58
	Total	**3.21**	**29.79**	**37.84**	**7.51**	**3.90**
	SJVAPCD Screening Thresholds	**-**	**100**	**100**	**100**	**100**
	Individually Exceed Threshold	**No**	**No**	**No**	**No**	**No**
	Exceed Threshold when Combined	**No**	**No**	**Yes**	**No**	**No**
2023	Northern Trunk Sewer	1.37	14.47	15.65	1.44	0.71
	Southern Trunk Sewer	0.70	7.02	8.12	0.79	0.37
	WWTRF 4 to 5 Mgal/d	0.67	7.13	6.91	0.02	0.65
	Total	**2.74**	**28.61**	**30.68**	**2.26**	**1.73**
	SJVAPCD Screening Thresholds	**-**	**100**	**100**	**100**	**100**
	Individually Exceed Threshold	**No**	**No**	**No**	**No**	**No**
	Exceed Threshold when Combined	**-**	**Yes**	**Yes**	**No**	**No**
2024	Northern Trunk Sewer	0.96	10.58	9.78	1.00	0.48
	Southern Trunk Sewer	0.00	0.00	0.00	0.00	0.00
	WWTRF 4 to 5 Mgal/d	0.00	0.00	0.00	0.00	0.00
	Total	**0.96**	**10.58**	**9.78**	**1.00**	**0.48**
	SJVAPCD Screening Thresholds	**-**	**100**	**100**	**100**	**100**
	Individually Exceed Threshold	**No**	**No**	**No**	**No**	**No**
	Exceed Threshold when Combined	**No**	**No**	**No**	**No**	**No**

Fuel Consumption Summary

Source Category	Fuel Consumption (gal) Diesel	Gasoline
Offroad Equipment	112,198	0
Heavy Duty Trucks	7,616	0
Vendor Trucks	36,532	0
Worker Vehicles	0	69,855
Total Fuel Consumption	**156,347**	**69,855**

Merced County Fuel Consumption (2018) [1]

Source	Fuel Type	Gallons (Retail)	Percent of Project Compared to County
Off-Road/HHDT/MHDT	Diesel	39,000,000	0.401%
LDT2	Gasoline	132,000,000	0.053%

Notes:

1. California Energy Commission, California Annual Retail Fuel Outlet Report Results (CEC-A15), 2018
https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html
https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/2010-2018_A15_Results_ada.xlsx
Accessed June 2020.

Off-Road Equipment

Fuel Consumption: Equipment ≤ 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.408
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0574
Total HP-HR <100	842,487
Total Diesel Fuel (gal)	**48,352**

Fuel Consumption: Equipment > 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.367
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0516
Total HP-HR >100	172,953
Total Diesel Fuel (gal)	**8,929**

Total diesel gallons (off-road equipment): 57,281

Construction Phase	Equipment	# of Equipment	Hours/Day	HP	Load	Days	Total HP-HR
Site Prep/Grading	Rubber Tired Dozer	1	4	247	0.4	60	23,712
Site Prep/Grading	Tractors/Loaders/Backhoes	2	8	97	0.37	60	34,454
Site Prep/Grading	Dump Truck	1	4	402	0.38	60	36,662
Site Prep/Grading	Excavators	2	8	158	0.38	60	57,638
Pipeline and Facility Construction	Crane	1	1	231	0.29	500	33,495
Pipeline and Facility Construction	Forklifts	1	5	89	0.2	500	44,500
Pipeline and Facility Construction	Generator Sets	2	8	84	0.74	500	497,280
Pipeline and Facility Construction	Tractors/Loaders/Backhoes	3	4	97	0.37	500	215,340
Pipeline and Facility Construction	Welders	1	3	46	0.45	500	31,050
Paving	Pavers	2	7	130	0.42	15	11,466
Paving	Paving Equipment	2	7	132	0.36	15	9,979
Paving	Rollers	2	7	80	0.38	15	6,384
Architectural Coating	Air Compressors	3	4	78	0.48	30	13,478
						Total >100HP	172,953
						Total <100HP	842,487

Notes:

1. CARB, 2017 Off-road Diesel Emission Factors

Construction Phase	Equipment	# of Equipment	Hours/Day	HP	Load	Days	Total HP-HR

https://ww3.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017_v7.xlsx

Off-Road Equipment

Fuel Consumption: Equipment ≤ 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.408
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0574
Total HP-HR <100	484,309
Total Diesel Fuel (gal)	**27,795**

Fuel Consumption: Equipment > 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.367
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0516
Total HP-HR >100	70,913
Total Diesel Fuel (gal)	**3,661**

Total diesel gallons (off-road equipment): 31,456

Construction Phase	Equipment	# of Equipment	Hours/Day	HP	Load	Days	Total HP-HR
Site Prep/Grading	Rubber Tired Dozer	1	4	247	0.4	60	23,712
Site Prep/Grading	Tractors/Loaders/Backhoes	2	4	97	0.37	60	17,227
Site Prep/Grading	Excavators	2	4	158	0.38	60	28,819
Pipeline and Facility Construction	Forklifts	1	4	89	0.2	330	23,496
Pipeline and Facility Construction	Generator Sets	2	8	84	0.74	330	328,205
Pipeline and Facility Construction	Tractors/Loaders/Backhoes	2	4	97	0.37	330	94,750
Pipeline and Facility Construction	Welders	1	2	46	0.45	330	13,662
Paving	Pavers	2	6	130	0.42	15	9,828
Paving	Paving Equipment	2	6	132	0.36	15	8,554
Paving	Rollers	2	6	80	0.38	15	5,472
Architectural Coating	Air Compressors	2	4	78	0.48	5	1,498
						Total >100HP	70,913
						Total <100HP	484,309

Notes:
1. CARB, 2017 Off-road Diesel Emission Factors
https://ww3.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017_v7.xlsx

Off-Road Equipment

Fuel Consumption: Equipment ≤ 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.408
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0574
Total HP-HR <100	253,960
Total Diesel Fuel (gal)	**14,575**

Fuel Consumption: Equipment > 100HP	Value
Brake Specific Fuel Consumption Factor (lb/hp-hr)[1]	0.367
Fuel Density (lb/gal)[1]	7.11
Consumption Factor (gal/hp-hr)	0.0516
Total HP-HR >100	172,124
Total Diesel Fuel (gal)	**8,886**

Total diesel gallons (off-road equipment): 23,461

Construction Phase	Equipment	# of Equipment	Hours/Day	HP	Load	Days	Total HP-HR
Site Prep/Grading	Rubber Tired Dozer	1	2	247	0.4	90	17,784
Site Prep/Grading	Tractors/Loaders/Backhoes	3	2	97	0.37	90	19,381
Site Prep/Grading	Scrapers	2	1	367	0.48	90	31,709
Site Prep/Grading	Excavators	3	2	158	0.38	90	32,422
Site Prep/Grading	Graders	1	2	187	0.41	90	13,801
Pipeline and Facility Construction	Cranes	1	1	231	0.29	264	17,685
Pipeline and Facility Construction	Forklifts	2	1	89	0.2	264	9,398
Pipeline and Facility Construction	Generator Sets	1	8	84	0.74	264	131,282
Pipeline and Facility Construction	Tractors/Loaders/Backhoes	2	2	97	0.37	264	37,900
Pipeline and Facility Construction	Welders	1	1	46	0.45	264	5,465
Paving	Pavers	1	4	130	0.42	60	13,104
Paving	Paving Equipment	4	4	132	0.36	60	45,619
Paving	Rollers	2	4	80	0.38	60	14,592
Architectural Coating	Air Compressors	4	4	78	0.48	60	35,942
						Total >100HP	172,124
						Total <100HP	253,960

Notes:
1. CARB, 2017 Off-road Diesel Emission Factors
https://ww3.arb.ca.gov/msei/ordiesel/ordas_ef_fcf_2017_v7.xlsx

HHDT Trucks

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1380
Total VMT (mi):	22,194
Total diesel gallons	**3,062**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	46
Total diesel gallons	**14**

Total diesel gallons: 3,076

Construction Activity	Total Workdays	# of Truck Trips/day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	1.33	20	HHDT	1,596	7
Facilities Construction	330	3.03	20	HHDT	19,998	83
Paving	15	2	20	HHDT	600	3
Architectural Coating	5	0	20	HHDT	0	0
				Total VMT:	**22,194**	
				Total Idle-Hours:		**46**

1. CARB, EMFAC2017 (Merced County; HHDT; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

HHDT Trucks

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1380
Total VMT (mi):	22,194
Total diesel gallons	**3,062**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	46
Total diesel gallons	**14**

Total diesel gallons: 3,076

Construction Activity	Total Workdays	# of Truck Trips/day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	1.33	20	HHDT	1,596	7
Facilities Construction	330	3.03	20	HHDT	19,998	83
Paving	15	2	20	HHDT	600	3
Architectural Coating	5	0	20	HHDT	0	0
				Total VMT:	**22,194**	
				Total Idle-Hours:		**46**

1. CARB, EMFAC2017 (Merced County; HHDT; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

HHDT Trucks

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1380
Total VMT (mi):	10,567
Total diesel gallons	**1,458**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	22
Total diesel gallons	**7**

Total diesel gallons: 1,465

Construction Activity	Total Workdays	# of Truck Trips/day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	90	0.22	20	HHDT	396	2
Facilities Construction	264	1.89	20	HHDT	9,979	42
Paving	60	0.16	20	HHDT	192	1
Architectural Coating	60	0	20	HHDT	0	0
				Total VMT:	**10,567**	
				Total Idle-Hours:		**22**

1. CARB, EMFAC2017 (Merced County; HHDT; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

LDT2 Vehicles

Onroad Travel Consumption	Value
EMFAC2017 Gas Fuel Consumption Factor (gal/mi):[1]	0.1725
Total VMT (mi):	118,422
Total gasoline gallons	**20,427**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.3900
Total Idle-Hours per Year:	457
Total gasoline gallons	**64**

Total gasoline gallons: 20,491

Construction Activity	Total Workdays	# of Trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	15	10.8	LDT2	9,720	75
Facilities Construction	330	30	10.8	LDT2	106,920	825
Paving	15	10	10.8	LDT2	1,620	13
Architectural Coating	5	3	10.8	LDT2	162	1
				Total VMT:	**118,422**	
				Total Idle-Hours:		**457**

1. CARB, EMFAC2017 (Merced County; LDT2; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

LDT2 Vehicles

Onroad Travel Consumption	Value
EMFAC2017 Gasoline Fuel Consumption Factor (gal/mi):[1]	0.1725
Total VMT (mi):	118,422
Total gasoline gallons	**20,427**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.3900
Total Idle-Hours per Year:	457
Total gasoline gallons	**64**

Total gasoline gallons: 20,491

Construction Activity	Total Workdays	# of trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	15	10.8	LDT2	9,720	75
Facilities Construction	330	30	10.8	LDT2	106,920	825
Paving	15	10	10.8	LDT2	1,620	13
Architectural Coating	5	3	10.8	LDT2	162	1
				Total VMT:	**118,422**	
				Total Idle-Hours:		**457**

1. CARB, EMFAC2017 (Merced County; LDT2; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

LDT2 Vehicles

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1725
Total VMT (mi):	166,860
Total diesel gallons	**28,782**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.3900
Total Idle-Hours per Year:	644
Total diesel gallons	**90**

Total diesel gallons: 28,873

Construction Activity	Total Workdays	# of trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	90	15	10.8	LDT2	14,580	113
Facilities Construction	264	50	10.8	LDT2	142,560	1,100
Paving	60	10	10.8	LDT2	6,480	50
Architectural Coating	60	5	10.8	LDT2	3,240	25
				Total VMT:	**166,860**	
				Total Idle-Hours:		**644**

1. CARB, EMFAC2017 (Merced County; LDT2; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

MHDT Vehciles

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1047
Total VMT (mi):	111,143
Total diesel gallons	**11,632**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	634
Total diesel gallons	**192**

Total diesel gallons: 11,824

Construction Activity	Total Workdays	# of Trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	5	7.3	LDT2	2,190	25
Facilities Construction	330	45	7.3	LDT2	108,405	1,238
Paving	15	5	7.3	LDT2	548	6
Architectural Coating	5	0	7.3	LDT2	0	0
				Total VMT:	**111,143**	
				Total Idle-Hours:		**634**

1. CARB, EMFAC2017 (Merced County; MHD; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

MHDT Vehciles

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1047
Total VMT (mi):	111,143
Total diesel gallons	**11,632**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	634
Total diesel gallons	**192**

Total diesel gallons: 11,824

Construction Activity	Total Workdays	# of Trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	60	5	7.3	LDT2	2,190	25
Facilities Construction	330	45	7.3	LDT2	108,405	1,238
Paving	15	5	7.3	LDT2	548	6
Architectural Coating	5	0	7.3	LDT2	0	0
				Total VMT:	**111,143**	
				Total Idle-Hours:		**634**

1. CARB, EMFAC2017 (Merced County; MHD; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

MHDT Vehciles

Onroad Travel Consumption	Value
EMFAC2017 Diesel Fuel Consumption Factor (gal/mi):[1]	0.1047
Total VMT (mi):	121,107
Total diesel gallons	**12,675**
Idling Consumption	**Value**
Idling Fuel Consumption Factor (gal/hr):[2]	0.8400
Total Idle-Hours per Year:	691
Total diesel gallons	**209**

Total diesel gallons: 12,884

Construction Activity	Total Workdays	# of Trips per day	Trip Length (miles)	EMFAC Vehicle Category	VMT	Idle Hours
Site Prep/Grading	90	5	7.3	LDT2	3,285	38
Facilities Construction	264	60	7.3	LDT2	115,632	1,320
Paving	60	5	7.3	LDT2	2,190	25
Architectural Coating	60	0	7.3	LDT2	0	0
				Total VMT:	**121,107**	
				Total Idle-Hours:		**691**

1. CARB, EMFAC2017 (Merced County; MHD; Annual; CY 2020; Aggregate MY; Aggregate Speed,DSL)
2. Department of Energy, Fact #861, 2015 Idle Fuel Consumption for Selected Gasoline and Diesel Vehicles, February 23, 2015. https://www.energy.gov/eere/vehicles/fact-861-february-23-2015-idle-fuel-consumption-selected-gasoline-and-diesel-vehicles

Region	Merced County
Vehicle Category	HHDT
Model Year	Aggregated
Speed	Aggregated
Calendar Year	2024
Fuel	DSL

Sum of VMT	Sum of Fuel Consumption
1544194.723	213.0420097

HHDT Fuel Consumption Factor

VMT (mi/day)	Fuel Consumption (1000 gal/day)	Fuel Consumption Rate (gal/mi)	Fuel Economy (mi/gal)
1544194.723	213.0420097	0.137963177	7.248310908

Region	Merced County
Vehicle Category	LDT2
Model Year	Aggregated
Speed	Aggregated
Calendar Year	2024
Fuel	Gas

Sum of VMT	Sum of Fuel Consumption
1235069.461	213.0420097

HHDT Fuel Consumption Factor

VMT (mi/day)	Fuel Consumption (1000 gal/day)	Fuel Consumption Rate (gal/mi)	Fuel Economy (mi/gal)
1235069.461	213.0420097	0.17249395	5.797304778

Merced WCSMP

Region	Merced County
Vehicle Category	LDT2
Model Year	Aggregated
Speed	Aggregated
Calendar Year	2024
Fuel	Gas

Sum of VMT	Sum of Fuel Consumption
174794.3172	18.29415124

HHDT Fuel Consumption Factor

VMT (mi/day)	Fuel Consumption (1000 gal/day)	Fuel Consumption Rate (gal/mi)	Fuel Economy (mi/gal)
174794.3172	18.29415124	0.104661018	9.554655742

Idling Fuel Consumption Factors

Column1	Column2	Column3	Column4	Column5
VEHICLE TYPE	FUEL TYPE	ENGINE SIZE (LITER)	GROSS VEHICLE WEIGHT (GVW) (LBS)	IDLING FUEL USE (GAL/HR WITH NO LOAD)
Compact Sedan	Gas	2	-	0.16
Large Sedan	Gas	4.6	-	0.39
Compact Sedan	Diesel	2	-	0.17
Medium Heavy Truck	Gas	7-May	19,700-26,000	0.84
Delivery Truck	Diesel	-	19,500	0.84
Tow Truck	Diesel	-	26,000	0.59
Medium Heavy Truck	Diesel	10-Jun	23,000-33,000	0.44
Transit Bus	Diesel	-	30,000	0.97
Combination Truck	Diesel	-	32,000	0.49
Bucket Truck	Diesel	-	37,000	0.9
Tractor-Semitrailer	Diesel	-	80,000	0.64

EMFAC2017 (v1.0.2) Emissions Inventory
Region Type: County
Region: MERCED
Calendar Year: 2024
Season: Annual
Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Fuel Consumption
MERCED	2024	HHDT	Aggregatec	Aggregatec	DSL	213.042
MERCED	2024	LDT2	Aggregatec	Aggregatec	GAS	49.42937
MERCED	2024	MHDT	Aggregatec	Aggregatec	DSL	18.29415

Appendix C BIOLOGICAL RESOURCES

C.1 SPECIAL STATUS SPECIES POTENTIAL FOR OCCURRENCE ASSESSMENT

The table below lists the special status plant and wildlife species identified to occur within the Biological Study Area (BSA) (within five miles of the Program Study Area) or in database queries as described in the Draft EIR environmental setting (Section 3.4.3) and evaluated for potential impacts in the Draft EIR impact analysis (Section 3.4.4).

Appendix C.1 Special Status Species Determined to Have a Low or Very Low to Nonexistent Potential to Occur within the Program Study Area.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				
Plants							
Adobe navarretia *Navarretia nigelliformis ssp. nigelliformis*	–	S3	4.2	328–3,280 feet (100–1,000 meters)	Valley and foothill grasslands; vernal pools; clay, mesic, serpentinite.	April–June	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. There are documented occurrences within the Merced Quad, however the Program Study Area is not within the elevation range of this species.
Beaked clarkia *Clarkia rostrata*	–	S2S3	1B.3	196–1,641 feet (60–500 meters)	Cismontane woodland; valley and foothill grassland.	April–May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	–	E, S2	1B.2	32–7,791 feet (10–2,375 meters)	Vernal pools; marshes, swamps; lake margins; clay.	April–August	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Brittlescale *Atriplex depressa*	–	S2	1B.2	3–1,050 feet (1–320 meters)	Chenopod scrub; meadows and seeps; playas; valley and foothill grassland; vernal pools; alkaline, clay.	April–October	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area; lacks suitable soils. No known occurrences within the BSA.
California alkali grass *Puccinellia simplex*	–	S2	1B.2	7–3,051 feet (2–930 meters)	Chenopod scrub; meadows and seeps; valley and foothill grassland; vernal pools; alkaline, vernally mesic; sinks, flats, and lake margins.	March–May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (1935) within the BSA.
Colusa grass *Neostapfia colusana*	T, X	E, S1	1B.1	16–656 feet (5–200 meters)	Large vernal pools; adobe.	May–August	**Low**. Limited to no suitable habitat within the Program Study Area. Known occurrences (1986, 2008, 2011, 2016) within the BSA and documented occurrences within the Merced Quad.
Delta button-celery *Eryngium racemosum*	–	E, S1	1B.1	10–98 feet (3–30 meters)	Riparian scrub; vernally mesic clay depressions.	June–October	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area. No known occurrences within the BSA.
Dwarf downingia *Downingia pusilla*	–	S2	2B.2	3–1,459 feet (1–445 meters)	Valley and foothill grassland; vernal pools; mesic.	March–May	**Low**. Limited suitable habitat within the Program Study Area. Two known occurrences (1999) within the BSA and documented occurrences within the Merced Quad.
Ewan's larkspur *Delphinium hansenii ssp. ewanianum*	–	S3	4.2	197–1,968 feet (60–600 meters)	Cismontane woodland; valley and foothill grassland; rocky	March–May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Forked hareleaf *Lagophylla dichotoma*	–	S2	1B.1	147–1,100 feet (45–335 meters)	Cismontane woodland; valley and foothill grassland; clay.	April–May	**Low**. Limited suitable habitat within the Program Study Area. One known occurrence (1915) within the BSA and documented occurrences within the Merced Quad.
Greene's Tuctoria *Tuctoria greenei*	E, X	R, S1	1B.1	98–3,510 feet (30–1,070 meters)	Vernal pools.	May–September	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Hairy Orcutt grass *Orcuttia pilosa*	E	E, S1	1B.1	151–656 feet (46–200 meters)	Vernal pools.	May–September	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (1938) within the BSA and documented occurrences within the Merced Quad.
Hartweg's golden sunburst *Pseudobahia bahiifolia*	E	E, S2	1B.1	49–492 feet (15–150 meters)	Cismontane woodland; valley and foothill grassland; clay, acidic.	March–April	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				
Heartscale *Atriplex cordulata var. cordulata*	–	S2	1B.2	0–1,837 feet (0–560 meters)	Chenopod scrub; meadows and seeps; valley and foothill grassland; sandy, saline, alkaline.	April–October	**Low**. Limited suitable habitat within the Program Study Area. Two known occurrences (1965 and 1988) within the BSA.
Henderson's bent grass *Agrostis hendersonii*	–	S2	3.2	230–1,001 feet (70–305 meters)	Valley and foothill grassland; vernal pools; mesic.	April–June	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (1937) within the BSA.
Hogwallow starfish *Hesperevax caulescens*	–	S3	4.2	0–1,656 feet (0–505 meters)	Valley and foothill grassland; shallow vernal pools; mesic, clay, alkaline.	March–June	**Low**. Limited suitable habitat within the Program Study Area. No known occurrences within the BSA. However, there are documented occurrences within the Merced Quad.
Hoover's calycadenia *Calycadenia hooveri*	–	S2	1B.3	213–984 feet (65–300 meters)	Cismontane woodland; valley and foothill grassland; rocky.	July–September	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Hoover's spurge *Euphorbia hooveri*	T, X	S1	1B.2	80–820 feet (25–250 meters)	Vernal pools.	July–October	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Keck's checkerbloom *Sidalcea keckii*	E	S2	1B.1	246–2,132 feet (75–650 meters)	Cismontane woodland; valley and foothill grassland; serpentinite, clay.	April–June	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (2005) within the BSA.
Lesser saltscale *Atriplex minuscula*	–	S2	1B.1	49–656 feet (15–200 meters)	Chenopod scrub; playas; valley and foothill grassland; alkaline, sandy.	May–October	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Merced phacelia *Phacelia ciliata var. opaca*	–	SH	3.2	196–492 feet (60–150 meters)	Valley and foothill grassland; clay, alkaline.	February–May	**Low**. Limited suitable habitat within the Program Study Area. Three known occurrences (1929, 1937, and 1977) within the BSA and documented occurrences within the Merced Quad.
Parry's rough tarplant *Centromadia parryi ssp. rudis*	–	S3	4.2	0–100 feet (0–300 meters)	Valley and foothill grassland; vernal pools.	May –October	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Pincushion navarretia *Navarretia myersii ssp. myersii*	–	S2	1B.1	66–1,083 feet (20–330 meters)	Vernal pools; acidic.	April–May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Recurved larkspur *Delphinium recurvatum*	–	S2	1B.2	10–2,592 feet (3–790 meters)	Valley and foothill grassland; chenopod scrub; cismontane woodland; alkaline.	March–June	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	T, X	E, S1	1B.1	33–2,478 feet (10–755 meters)	Vernal pools.	April–September	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. Known occurrences (1980, 1987, 2001, 2016) within the BSA and documented occurrences within the Merced Quad.
Sanford's arrowhead *Sagittaria sanfordii*	–	S3	1B.2	0–2,133 feet (0–650 meters)	Marshes and swamps; shallow freshwater.	May–November	**Low**. Limited suitable habitat within the Program Study Area. Three known occurrences (1980, 2010, 2012) within the BSA and documented occurrences within the Merced Quad.
Shining navarretia *Navarretia nigelliformis ssp. radians*	–	S2	1B.2	249–3,280 feet (76–1,000 meters)	Cismontane woodland; valley and foothill grassland; vernal pools; clay.	March–July	**Low**. Limited suitable habitat within the Program Study Area. Known occurrences (1999, 2001, 2006, 2009, 2017) within the BSA and documented occurrences within the Merced Quad. However, the Program Area is not within the elevation range for this species.
Small-flowered morning-glory *Convolvulus simulans*	–	S4	4.2	95–2,430 feet (30–740 meters)	Chaparral; openings; coastal scrub; valley and foothill grassland; clay; serpentinite seeps.	March–July	**Low**. Limited suitable habitat within the Program Study Area. No known occurrences within the BSA. However, there are documented occurrences within the Merced Quad.
Spiny-sepaled button-celery *Eryngium spinosepalum*	–	S2	1B.2	262–3,198 feet (80–975 meters)	Valley and foothill grassland; vernal pools.	April–June	**Very Low to Nonexistent**. Limited suitable habitat within the Program Study Area. Known occurrences (2001) within the BSA. However, the Program Area is not within the elevation range for this species.
Subtle orache *Atriplex subtilis*	–	S1	1B.2	131–328 feet (40–100 meters)	Valley and foothill grassland; alkaline.	June–October	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				
Succulent owl's-clover *Castilleja campestris ssp. succulenta*	T, X	E, S2S3	1B.2	164–2,461 feet (50–750 meters)	Vernal pools; acidic.	March–May	**Low**. Limited suitable habitat within the Program Study Area. Known occurrences (1997, 1999, 2001, 2004, 2008) within the BSA and documented occurrences within the Merced Quad.
Vernal pool smallscale *Atriplex persistens*	–	S2	1B.2	33–377 feet (10–115 meters)	Vernal pools; alkaline.	June–October	**Low**. Limited suitable habitat within the Program Study Area. Two known occurrences (1926, 2011) within the BSA.
Watershield *Brasenia*	–	S3	2B.3	95–7,220 feet (30–2,200 meters)	Freshwater marshes and swamp.	June–September	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Invertebrates							
Conservancy fairy shrimp *Branchinecta conservatio*	E, X	S1	N/A	Six disjoint populations in Tehama, Butte, Jepson, Solano, Sacramento, Glenn, Merced, and Ventura Counties.	Vernal pools.	November–April	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. Known occurrences within the BSA.
Midvalley fairy shrimp *Branchinecta mesovallensis*	–	S2S3	N/A	California's Central Valley; Southeastern Sacramento, Southern Sierra Foothill, San Joaquin, and Solano-Colusa Vernal Pool Regions.	Vernal pools.	Winter–Spring	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. Known occurrences within the BSA.
Molestan blister beetle *Lytta moesta*	–	S2	N/A	Central California	Associated with *Lupinus,* and *Trifolium wormskioldii* in dry vernal pools, and *Eriodium.*	April–July	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (unknown date) within the BSA.
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	S2	N/A	California Central Valley and foothills, majority below 500 feet (152 meters) elevation.	Elderberry shrubs (*Sambucus* sp.), with stems at least about one inch in diameter, along rivers and streams.	March–July	**Low**. Limited suitable habitat within the Program Study Area. No known occurrences within the BSA.
Vernal pool fairy shrimp *Branchinecta lynchi*	T, X	S3	N/A	Scattered throughout Central Valley, Coast Range, and Southern California.	Vernal pools.	December–May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. Multiple known occurrences within the BSA.
Vernal pool tadpole shrimp *Lepidurus packardi*	E, X	S3S4	N/A	Scattered throughout Central Valley. Shasta through Tulare Counties, and Alameda and Contra Costa Counties.	Ephemeral freshwater habitats. Alkaline pools; clay flats; vernal lakes; vernal pools; vernal swales; seasonal wetlands.	Winter–Spring	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. Known occurrences within the BSA.
Fish							
Delta smelt *Hypomesus transpacificus*	T	E, S1	N/A	From Suisun Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, Yolo Counties.	Estuaries, river channels, tidally influenced backwaters. Shallow, fresh or slightly brackish water upstream of mixing zone (spawning).	January–June (spawning)	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area. No known occurrences within the BSA.
Reptiles and Amphibians							
Blunt-nosed leopard lizard *Gambelia silus*	E	E, FP, S1	N/A	San Joaquin Valley and nearby valleys and foothills.	Inhabits sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief.	Year-round, breed May–June	**Low**. Limited suitable habitat within the Program Study Area. No known occurrences within the BSA.
California red-legged frog *Rana draytonii*	T	SSC, S2S3	N/A	Coastal Range of California, foothill range of Sierra Nevada mountains.	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Require animal burrows or other moist refuges for estivation.	Year-round, breed November–April	**Low**. No suitable breeding habitat within the Program Study Area. No known occurrences within the BSA.
California tiger salamander *Ambystoma californiense*	T, X	T, WL, S2S3	N/A	Central Valley, and additional isolated populations: Gray Lodge NWR, Sonoma County, and Santa Barbara County. 9–3,500 feet (3–1,067 meters)	Upland grassland, oak savanna, edges of mixed woodland and coniferous forest with vernal pools and ephemeral or perennial ponds for breeding.	Year-round, breed December–February	**Low**. Limited to no suitable habitat within the proposed Project area. There are known occurrences within the BSA; however, occurrences are farther from the Program Study Area than their known dispersal distance of approximately one mile. No habitat or species were observed during site surveys.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				
Giant gartersnake *Thamnophis gigas*	T	T, S2	N/A	Central Valley from Glenn County to the southern edge of San Francisco Bay Delta, and from Merced County to northern Fresno County. 0–400 feet (0–122 meters)	Highly aquatic, found in marshes, sloughs, irrigation ditches, canals, rice fields, slow-moving creeks with nearby vegetation.	Active March−October, breed in spring	**Low**. Limited suitable habitat within the Program Study Area. One known occurrence (1908) within the BSA .
Western pond turtle *Actinemys marmorata*	–	SSC, S3	N/A	West of the Sierra and Cascade Mountains and desert regions. 0–4,690 feet (0–1,430 meters)	Slow moving streams, marshes, wetlands, and ponds, at least 1.6 feet deep with overhanging vegetation and rock outcrops, and associated upland habitat, usually grasslands.	Year-round, breed April−May	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. One known occurrence (2006) within the BSA.
Western spadefoot *Spea hammondii*	–	SSC, S3	N/A	California Central Valley and adjacent foothills, southern Coastal Range. 0–4,460 feet (0–1,360 meters)	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Active October −May, breed January–May	**Low**. Limited suitable habitat within the Program Study Area. One known occurrence (2001) within the BSA.
Birds							
Bald eagle *Haliaeetus leucocephalus*	D	E, FP	N/A	Breeds in northern California, Sierra Nevada mountains and foothills, central coast range, inland southern California, and Santa Catalina Island. Winters throughout California except in arid southeastern areas.	Foraging areas include rivers, reservoirs, lakes, estuaries, and coastal marine ecosystems. Nests in large, old-growth, or dominant trees within one mile of foraging habitat.	Year-round	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area. One known occurrence within the BSA at Yosemite Lake northeast of the Program Study Area.
Burrowing owl *Athene cunicularia*	BCC	SCC	N/A	Year-round in southeastern California and the Central Valley. Also winters in arid coastal and foothill areas and can be found in northeastern California in the summer.	Open, dry annual or perennial grasslands, deserts, and scrublands with by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, California ground squirrel.	Year-round	**Moderate**. Suitable nesting and foraging habitat exist within the immediate vicinity of the proposed Projects and there are known occurrences within the BSA. No species were observed during site surveys.
Clark's grebe *Aechmophorus clarkii*	BCC	–	N/A	Year-round along the coast of California and in large inland lakes and reservoirs throughout the state. Winters throughout California except the Sierra Nevada and arid southeast.	Marine subtidal and estuarine waters, large lakes. Nests in tall emergent vegetation.	Year-round, wintering	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area. No known occurrences within the BSA.
Common yellowthroat *Geothlypis trichas*	BCC	–	N/A	Year-round in coastal and central California. Breeds in northern California and some desert areas. Migratory through desert and mountain ranges.	Wet meadows, fresh and saline wetlands, riparian, and grasslands with low, dense cover.	Wintering	**Low**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Ferruginous hawk *Buteo regalis*	BCC	WL	N/A	Modoc Plateau, Central Valley, Coast Ranges, and the deserts of southwestern California.	Open grasslands, agricultural areas, sagebrush, desert scrub, low foothills, and pinyon-juniper woodland.	Wintering (September–April)	**Low**. No suitable nesting habitat and limited to no suitable foraging habitat within the Program Study Area. One known occurrence (2006) within the BSA.
Golden eagle *Aquila chrysaetos*	–	FP, WL	N/A	Throughout California, except center of Central Valley. 0–11,500 feet (0–3,833 meters)	Rolling foothills, mountain areas, sage-juniper flats, and desert. Nests in cliff-walled canyons and large trees in open areas.	Year-round	**Low**. No suitable nesting habitat and limited to no suitable foraging habitat within the Program Study Area. No known occurrences within the BSA.
Lawrence's goldfinch *Spinus lawrencei*	BCC	–	N/A	Year-round in the southern coastal range of California. Also breeds in foothills surrounding the Central Valley.	Open oak woodland, chaparral, and pinyon and juniper woodlands near water sources.	Year-round, breeding	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area. No known occurrences within the BSA.
Long-billed curlew *Numenius americanus*	BCC	WL	N/A	Northeastern California, Central and Imperial Valleys, California coastline.	Estuaries, upland grasslands, wet meadows, croplands, and pastures.	Wintering (June–April)	**Low**. Limited suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Mountain plover *Charadrius montanus*	BCC	SSC	N/A	Central Valley, San Joaquin foothills, southern California.	Valley and foothill or other short grasslands, agricultural fields, grazed areas, chenopod scrub.	Wintering (September–March)	**Low**. Limited suitable nesting habitat within the Program Study Area. One known occurrence (1999) within the BSA.
Nuttall's woodpecker *Picoides nuttallii*	BCC	–	N/A	Central Valley, coastal ranges of California, and low elevations of the Cascade Range and Sierra Nevada.	Oak and riparian woodland.	Year-round	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				
Oak titmouse *Baeolophus inornatus*	BCC	–	N/A	Throughout California, from Mexican border to Humboldt Co., except San Joaquin Valley and eastern Sierra Nevada and southern California.	Oak and pine-oak woodland, valley and foothill grassland, riparian woodland, western juniper woodland.	Year-round	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Rufous hummingbird *Selasphorus rufus*	BCC	–	N/A	Northwestern California and the Sierra Nevada.	Riparian, open woodlands, scrub, chaparral, and mountain meadows.	Breeding (February–September)	**Low**. Limited suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Song sparrow ("Modesto" population) *Melospiza melodia*	BCC	SSC	N/A	Throughout California, except high elevation and most deserts.	Riparian, wetlands, and wet meadows, thickets, and coastal scrub.	Year-round	**Low**. Limited suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Swainson's hawk *Buteo swainsoni*	BCC	T	N/A	Northwestern and western United States and Canada (breeding)	For nesting, scattered stands of trees near agricultural fields and grasslands.	Breeding (March–September)	**Moderate.** Suitable nesting and foraging habitat exist within the immediate vicinity of the proposed Projects and there are known occurrences within the BSA.
Spotted towhee *Pipilo maculatus*	BCC	–	N/A	Throughout California, except high elevation and southern deserts.	Chaparral, shrub, riparian, and low-elevation deciduous and conifer forests. Prefers tall, dense shrubs and riparian thickets.	Year-round	**Low**. Limited suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Tricolored blackbird *Agelaius tricolor*	BCC	T, SSC	N/A	Highly colonial species, most numerous in Central Valley and Coastal Range.	Nest in wetlands cattails, willows, agricultural fields, blackberry thickets near stock ponds or irrigated pastures. Forage in cultivated fields and wetlands.	Year-round	**Low**. Limited to no suitable nesting and limited foraging habitat within the Program Study Area and adjacent areas. However, there are known occurrences within the BSA.
Whimbrel *Numenius phaeopus*	BCC	–	N/A	Coastal California, Central Valley, Imperial Valley, and Salton Sea.	Rocky intertidal, intertidal mudflats, sandy beach, estuarine, wet meadow, pasture.	Migration	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Wrentit *Chamaea fasciata*	BCC	–	N/A	Year-round throughout coastal ranges and foothills of California. Also winters in the Central Valley.	Chaparral, coastal scrub, and other dense shrubland.	Year-round	**Very Low to Nonexistent**. No suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.
Other nesting raptors and migratory birds	MBTA	FGC	N/A	Migrants and resident species	Tree, shrub, ground, grassland, and riparian vegetation.	February–August	**High.** Suitable habitat within the proposed Project corridors and adjacent areas and there are known occurrences of various species within the BSA.
Mammals							
Fresno kangaroo rat *Dipodomys nitratoides exilis*	E	E, SH	N/A	San Joaquin Valley floor, 200–1,800 feet (60–550 meters). Fresno County.	Chenopod scrub, alkali sink, dry, sandy grassland.	Year-round	**Very Low to Nonexistent**. Limited to no suitable habitat within the Program Study Area. No known occurrences within the BSA.
Hoary bat *Lasiurus cinereus*	–	S4	N/A	Throughout California from 0 –13,200 feet (0–4,125 meters).	Dense foliage, medium to large trees; open habitats or habitat mosaics with access to trees for cover.	Year-round depending on location and temperature	**Low**. Limited suitable habitat within the Program Study Area. One known occurrence (1918) within the BSA.
Merced kangaroo rat *Dipodomys heermanni dixoni*	–	S2S3	N/A	San Joaquin Valley, eastern Merced and Stanislaus counties.	Valley and foothill grassland with fine, deep, well-drained soil.	Year-round	**Low**. Limited suitable habitat within the Program Study Area. However, there are known occurrences within the BSA.
San Joaquin kit fox *Vulpes macrotis mutica*	E	T	N/A	San Joaquin Valley floor and surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi mountains.	Inhabits annual grasslands or grassy open stages with scattered shrubby vegetation.	Year-round	**Low**. Limited suitable habitat within the Program Study Area. However, there are four known occurrences of foraging adults within the BSA.
Western mastiff bat *Eumops perotis californicus*	–	SSC	N/A	Central Valley, Coastal Range, southern and eastern California.	Open semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, and chaparral. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	Year-round	**Low**. Limited suitable habitat within the Program Study Area. One known occurrence (1991) within the BSA.
Yellow-billed magpie *Pica nuttalli*	BCC	–	N/A	Central Valley, and coastal ranges from San Francisco Bay to Santa Barbara Co.	Open oak and riparian woodland, agricultural or urban areas with trees and grassland.	Year-round	**Low**. Limited suitable habitat within the Program Study Area and adjacent areas. No known occurrences within the BSA.

Common name Scientific name	Legal status			Geographic distribution/ Floristic province	Preferred habitat	Identification period	Level of potential to occur within the Program Study Area
	Federal	State	CNPS				

Notes:

Federal

T= threatened under federal Endangered Species Act

E = endangered under federal Endangered Species Act

BCC = bird of conservation concern

MBTA = Migratory Bird Treaty Act

– = no listing

CNPS = California Native Plant Society

NWR = National Wildlife Refuge

State

T = threatened under the California Endangered Species Act

SSC = Species of Special Concern

FGC = Fish and Game Code

– = no listing

Source: Cal EPA 2002, CaliforniaHerps 2018, CDFW 2006, CDFW 2018f–2018h, CDFW 2020b−2020c, CNPS 2018b, Cornell 2018, UC Davis 2018, USEPA 2010, USEPA 2016b, USFWS 2017c–2017f, USFWS 2018d, USFWS 2020a, WBWG 2017

C.2 BIOLOGICAL RESOURCES FIGURES

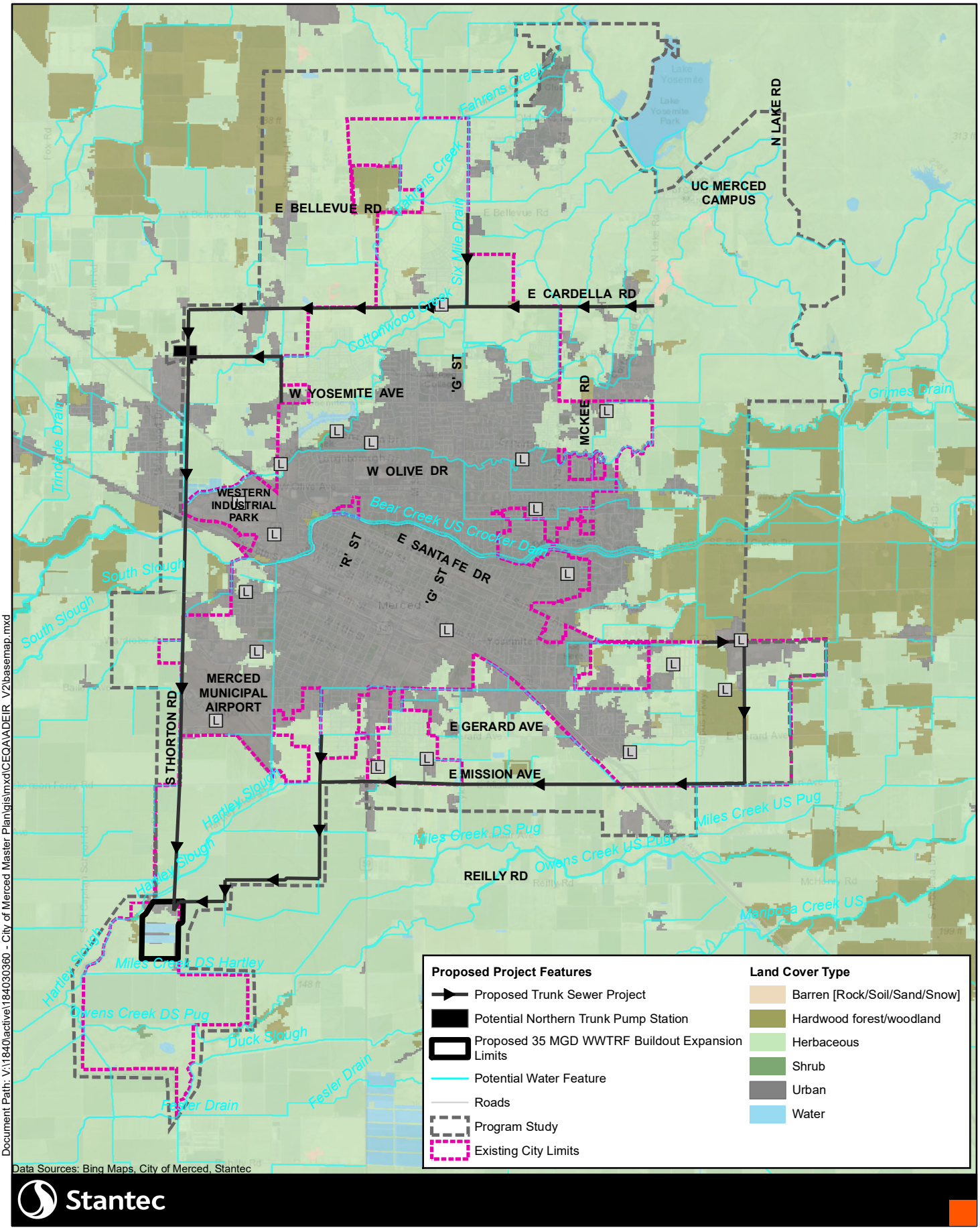


Figure 1
CalVeg Land Cover
City of Merced - Draft Environmental Impact Report

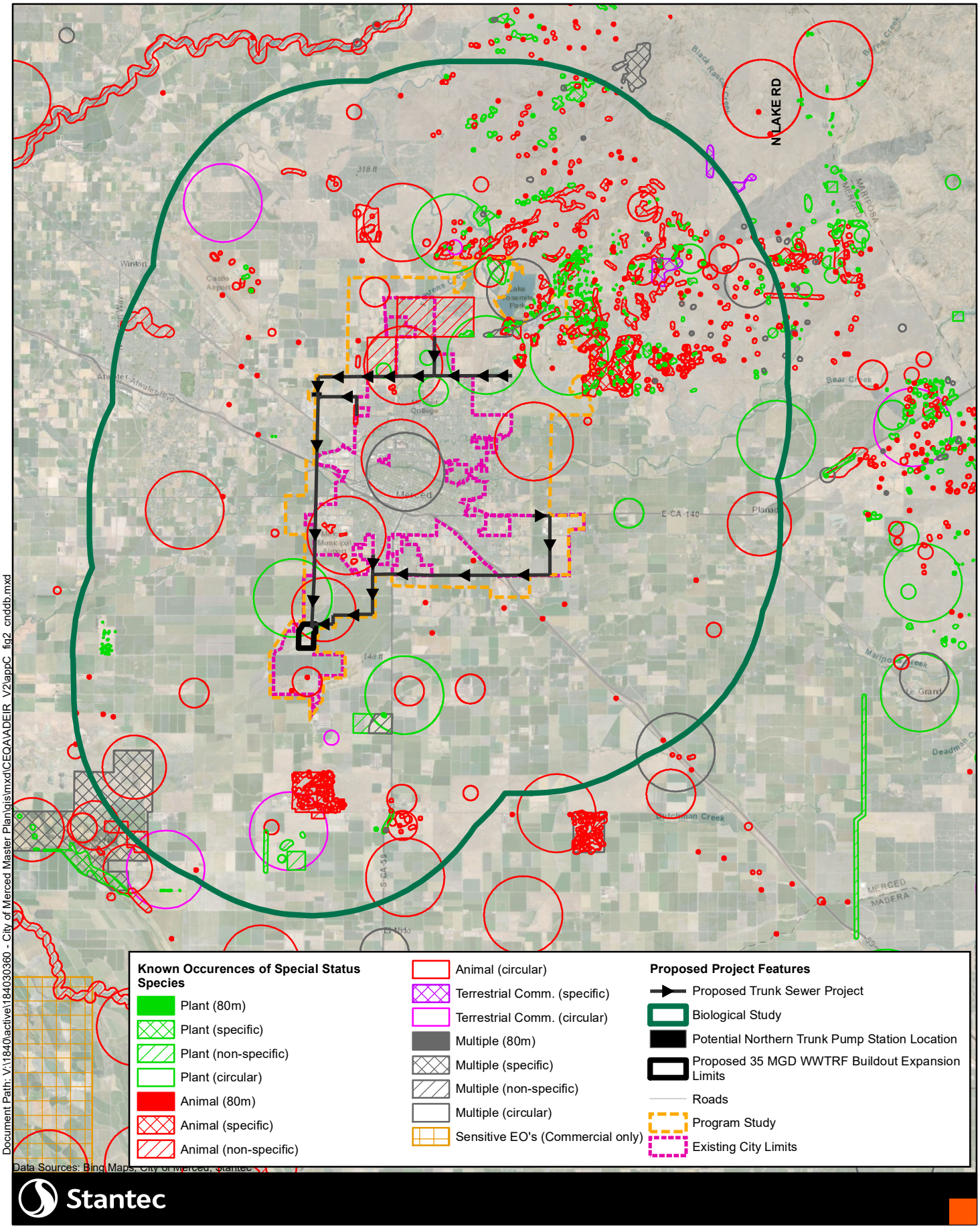
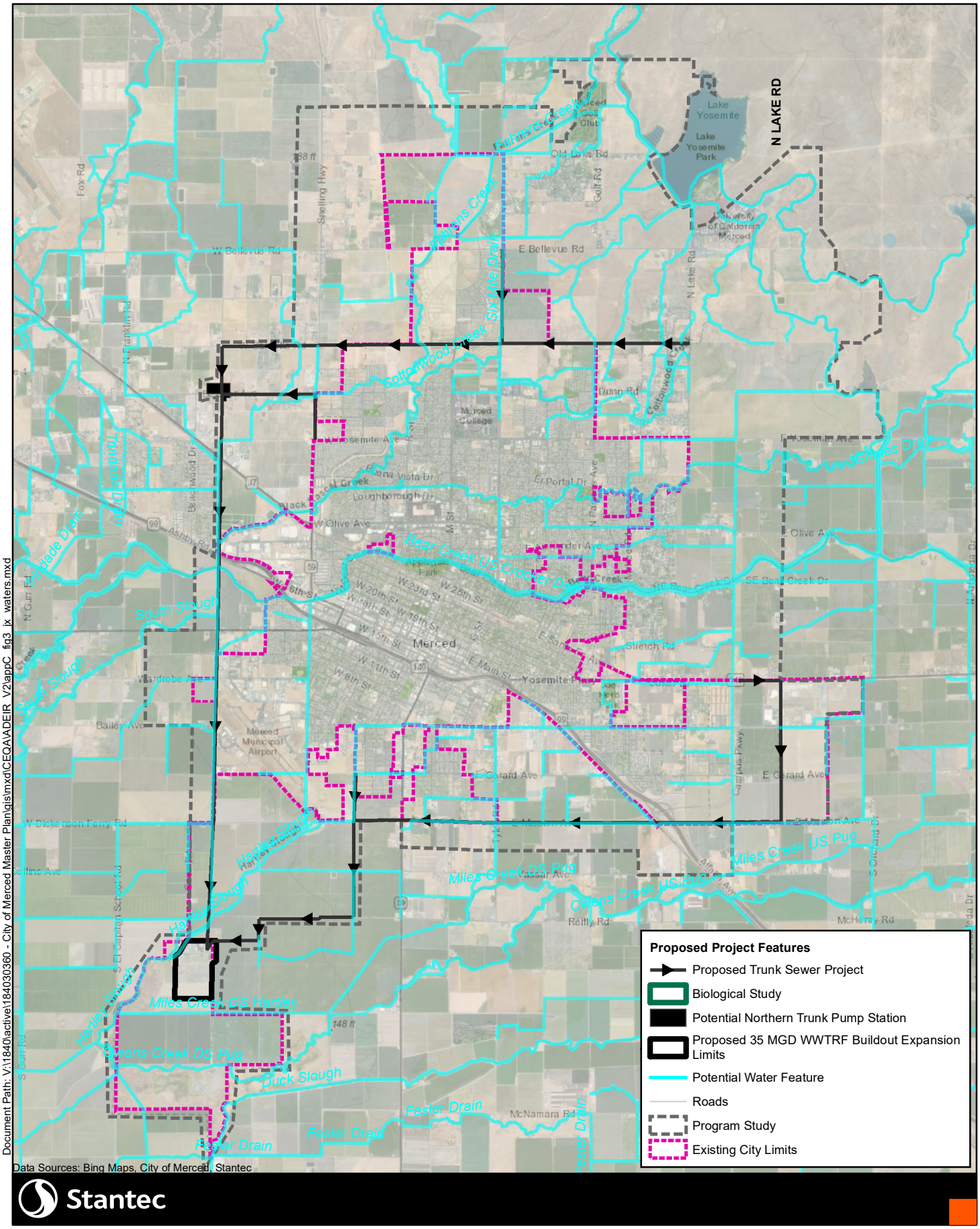


Figure 2
Known Occurences of Special Status Species
City of Merced - Draft Environmental Impact Report



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Figure 3
Potentially Jurisdictional Waters
City of Merced - Draft Environmental Impact Report

Appendix D CULTURAL RESOURCES

This is a confidential appendix that contains sensitive information. Not available for public distribution.

Appendix E ALTERNATIVE DEVELOPMENT BACKGROUND

ALTERNATIVE DEVELOPMENT BACKGROUND

The following section describes the alternatives identified, selected, and eliminated during the 2017 Wastewater Collection System Master Plan (WCSMP) process.

2017 WCSMP DEVELOPMENT ALTERNATIVES CONSIDERED

The alternatives ultimately selected for the 2017 WCSMP were the by-product of multiple iterations of alternative development since 2014. Table 1 below presents a summary of the key alternatives considered and illustrates evolution of alternative concepts and naming throughout the planning process.

Table 1 2017 WCSMP Alternative Development Summary

WCSMP Planning Process Alternative Name	Associated Alternatives / Previous Naming	Alternative Further Considered or Eliminated from Consideration for CEQA analysis
2014 Conceptual Sewer Master Plan Alternatives		
Eastern Trunk Servicing Concept	• Early concept for the 2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact • Early concept for the 2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact • Early concept for the Campus Parkway/Lake Road Alternative	Eliminated from the master planning process as a standalone concept after 2014. Evaluated here as an alternative pursuant to the California Environmental Quality Act (CEQA) requirements as the Campus Parkway/Lake Road Alternative.
Western Trunk Servicing Concept	• Early concept for the 2015 Alternative 1 – Western Trunk Alignment • Early concept for the 2016 Alternative 1 – Western Trunk Alignment • Early concept for the 2017 WCSMP Plan Preferred Alternative	Refined from this 2014 version, this alternative has been proposed as the preferred WCSMP alternative and is presented in detail in Section 2.0 of the Draft EIR.
Western Trunk Servicing Concept Variation – Campus Community	• Early concept for the 2015 Alternative 2 – Western Trunk Alignment, without the Campus Community • Early concept for the 2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact	Eliminated from the master planning process as a standalone concept after 2015. It was determined that the Campus Community would be included within the WCSMP service area as well as within the City of Merced (City) Vision 2030 General Plan (2030 General Plan) Specific Urban Development Plan (SUDP)/Sphere of Influence (SOI).
2015 Administrative Draft Sewer Master Plan		
2015 Alternative 1 – Western Trunk Alignment	• Revised from the 2014 Western Trunk Servicing Concept • Early concept for the 2016 Alternative 1 – Western Trunk Alignment • Early concept for the 2017 WCSMP Plan A Preferred Alternative	Refined from this 2014 version, this alternative has been proposed as the preferred WCSMP alternative and is presented in detail in Section 2.0 of the Draft EIR.

WCSMP Planning Process Alternative Name	Associated Alternatives / Previous Naming	Alternative Further Considered or Eliminated from Consideration for CEQA analysis
2015 Alternative 2 – Western Trunk Alignment, without the Campus Community	• Revised from the 2014 Western Trunk Servicing Concept Variation – Campus Community • Early concept for the 2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact	Eliminated from the master planning process as a standalone concept after 2015. It was determined that the Campus Community would be included within the WCSMP service area as well as within the 2030 General Plan SUDP/SOI.
2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact	• Revised from the 2014 Eastern Trunk Servicing Concept • Revised from the 2014 Western Trunk Servicing Concept Variation – Campus Community • Early concept for the 2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact • Partial concept for the Campus Parkway/Lake Road Alternative	Eliminated from the master planning process as a standalone concept after 2015. It was determined that the Campus Community would be included within the WCSMP service area as well as within the 2030 General Plan SUDP/SOI. Revised concept for the Campus Parkway/Lake Road Alternative.
2016 Administrative Draft Sewer Master Plan		
2016 Alternative 1 – Western Trunk Alignment	• Revised from the 2014 Western Trunk Servicing Concept • Revised from the 2015 Alternative 1 – Western Trunk Alignment • Early concept for the 2017 WCSMP Plan A Preferred Alternative	Refined from this 2015 version, this alternative has been proposed as the preferred WCSMP alternative and is presented in detail in Section 2.0 of the Draft EIR.
2016 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact	• Revised from the 2014 Eastern Trunk Servicing Concept • Revised from the 2014 Western Trunk Servicing Concept Variation – Campus Community • Revised from the 2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact • Partial concept for the Campus Parkway/Lake Road Alternative	Eliminated from the master planning process as a standalone concept after 2015. It was determined that the Campus Community would be included within the WCSMP service area as well as within the 2030 General Plan SUDP/SOI. Revised concept for the Campus Parkway/Lake Road Alternative.
2016 Satellite Treatment Facility	• Feasibility review of WCSMP Plan B Alternative – North Merced Wastewater Reclamation Treatment Facility	Refined from this 2016 feasibility assessment this alternative is considered within the Draft EIR as the WCSMP Plan B alternative.
2017 Wastewater Collection System Master Plan		
2017 WCSMP Plan A – "Proposed Program"	• Revised from the 2014 Western Trunk Servicing Concept • Revised from the 2015 Alternative 1 – Western Trunk Alignment • Revised from the 2016 Alternative 1 – Western Trunk Alignment	This alternative has been proposed as the preferred WCSMP alternative and is presented in detail in Section 2.0 of the Draft EIR.
2017 WCSMP Plan B Alternative	• 2016 Satellite Treatment Facility	This alternative is considered for further evaluation in this alternatives

WCSMP Planning Process Alternative Name	Associated Alternatives / Previous Naming	Alternative Further Considered or Eliminated from Consideration for CEQA analysis
– North Merced Wastewater Reclamation Treatment Facility		analysis consistent with CEQA requirements.
Notice of Preparation Scoping and Public Input		
Development-Based Decentralized Treatment Facilities Alternative	• Based on public input	Evaluated for feasibility and ability to meet WCSMP Objectives. Alternative doesn't meet objectives and is not feasible due to cost, potential to result in a substantial impact to water quality, burdensome National Pollution Discharge Elimination System (NPDES)/waste discharge permitting.
Campus Parkway/Lake Road Trunk Alternative	• Revised from the 2014 Eastern Trunk Servicing Concept • Evolved from part of the 2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact • Evolved from part of the 2016 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact	This alternative is considered for further evaluation in this alternatives analysis consistent with CEQA requirements.
No Project Alternative	• Based on CEQA requirement for a 'do nothing' alternative	Pursuant to CEQA requirements, this alternative is considered for further evaluation.

Wastewater Collection System Master Planning Alternatives

Alternative Concepts Development and Considerations 2014

In the early stages of the WCSMP update process (2013 and 2014), the City evaluated a number of different concepts for servicing the SUDP/SOI and meeting the needs of the future development identified in the (2030 General Plan. Similar to previous master planning documents, early WCSMP planning efforts determined that due to the capacity limitations of the existing wastewater collection system, new large trunk sewers are required to accommodate future development within the SUDP/SOI. Avoiding the impact of upsizing or paralleling existing trunk sewer which run through the existing City, generally along State Route (SR) 59 and through downtown Merced. City Public Works and Planning staff worked with consultants as well as University of California (UC) Merced and Campus Community representatives and other stakeholders within the SUDP/SOI to develop conceptual alternatives. The alternative development process involved evaluating a number of configurations for pump stations, force mains, and gravity sewers to establish the backbone conveyance infrastructure. Additional considerations for the concepts evaluated various scenarios of engineering and modeling assumptions to assess different service boundaries, sizing, and configuration concepts. At the time, specific emphasis was placed on the planning effort in the North Merced area, which included consideration of a number of approaches to servicing the area, including scenarios which involve:

- Alternative pipe alignments;
- Different assumptions on density of development;
- Inclusion of existing septic areas in servicing plans;

- Exclusion of existing septic areas from servicing plans;
- Inclusion of the Campus Community lands in servicing plans; and
- Exclusion of the Campus Community lands from servicing plans.

These scenarios were modeled in early 2014 to illustrate and assess what these conceptual ideas would look like. The resulting SUDP/SOI alternative servicing concepts generally identified two areas for large diameter trunk pipelines to transport new sewer flows in a north-south direction from north Merced to the existing Wastewater Treatment and Reclamation Facility (WWTRF). To serve full 2030 build-out conditions the City considered trunk alignments either 1) on the eastern side of the SUDP/SOI or 2) on the western side of the SUDP/SOI, referenced generally as the Western Trunk Servicing Concept and the Eastern Trunk Servicing Concept. With the two general alignment concepts established, system capacity was then evaluated to identify sizing requirements by considering different scenarios under which the SUDP/SOI would be served. These variations in the sizing and alignment of the Western and Eastern Trunk Concepts considered inclusion/exclusion of the UC Merced, Campus Community Area, and Septic Areas. Specifically, these considerations included:

- **Reduced UC Merced Contribution and Campus Community Removed** – this variation would be sized to receive a limited amount of flow received from UC Merced and no flow from the Campus Community.

- **Campus Community Removed** – this variation would be sized to receive all flow from UC Merced but no flow from the Campus Community.

- **UC Merced and Campus Community Removed** - this variation would not be sized to include flows from UC Merced or the Campus Community area. This assumed the UC Merced and Campus Community areas were served by separate collection and treatment systems.

- **Septic Area Removed**- this variation would exclude the areas of the SUDP/SOI with existing homes (currently in the County, but within the SUDP/SOI) in the eastern portion of the SUDP/SOI, on either side (north and south) of Bear Creek served by on-site sewer systems such as septic.

- **UC Merced, Campus Community, and Septic Removed** – this variation excludes both UC Merced and Campus Community as well as the areas in the eastern portion of the SUDP/SOI served by on-site systems.

After presentation to the City Council and stakeholders, City staff was directed to proceed with the two full build-out variations (i.e. servicing the entire SUDP/SOI) as well as a variation on the Western Trunk Servicing Concept that excluded the Campus Community. These selected primary alternative concepts as they were identified in 2014 include:

Eastern Trunk Servicing Concept

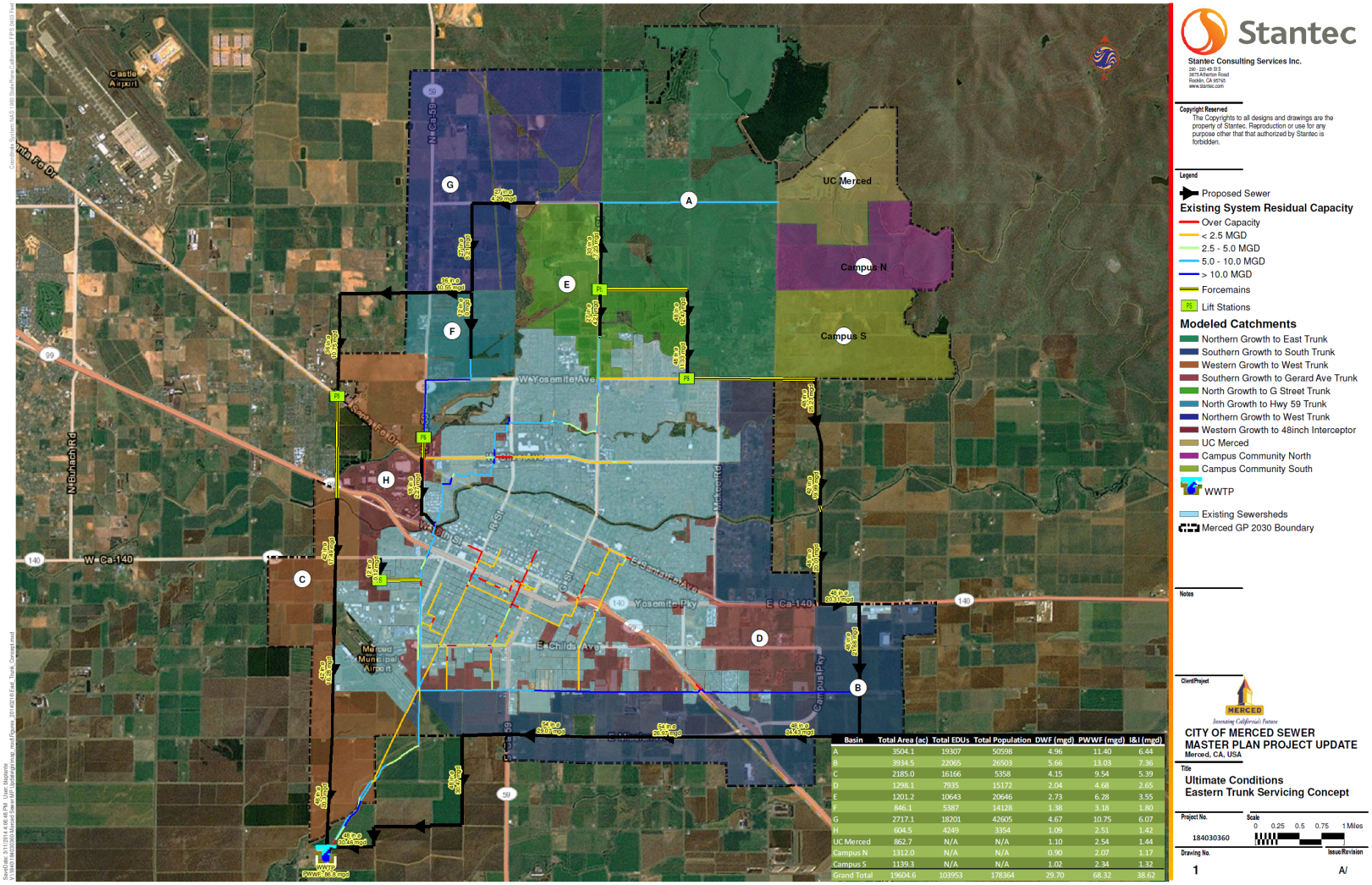
The Eastern Trunk Servicing Concept included new trunk sewers to accommodate future build-out development of the entire SUDP/SOI. The concept recommended that sewers be aligned to generally flow west to east and collect in a new large diameter trunk sewer in the eastern SUDP/SOI that would convey flows generally from north to south. North of Bear Creek sewer flows would trend from west to east to a large diameter trunk sewer running north-south on the eastern side of the SUDP/SOI. South of Bear Creek, recommended trunk sewers would flow generally north to south then east to west approximately following the alignment of Mission Avenue and Vassar Avenue. The existing system as well as the entire SUDP/SOI as the ultimate service area were considered with this concept consistent with the 2030 General Plan. This alternative is depicted in Figure 1.

Western Trunk Servicing Concept

The Western Trunk Servicing Concept included new trunk sewers to accommodate future build-out development of the entire SUDP/SOI. The concept recommended that sewers be aligned to generally flow east to west and collect in a new large diameter trunk sewer in the western SUDP/SOI that would convey flows from north to south. For the area north of Bear Creek the large diameter trunk line would primarily follow the alignment of Bellevue Road and Cardella Road east to west and Thornton Road north to south. In the southern portion of the SUDP/SOI a trunk sewer would flow generally north to south from Bear Creek then east to west approximately following the alignment of Mission Avenue and Vassar Avenue. The existing system as well as the entire SUDP/SOI as the ultimate service area were considered with this concept consistent with the 20130 General Plan. This alternative is depicted in Figure 2.

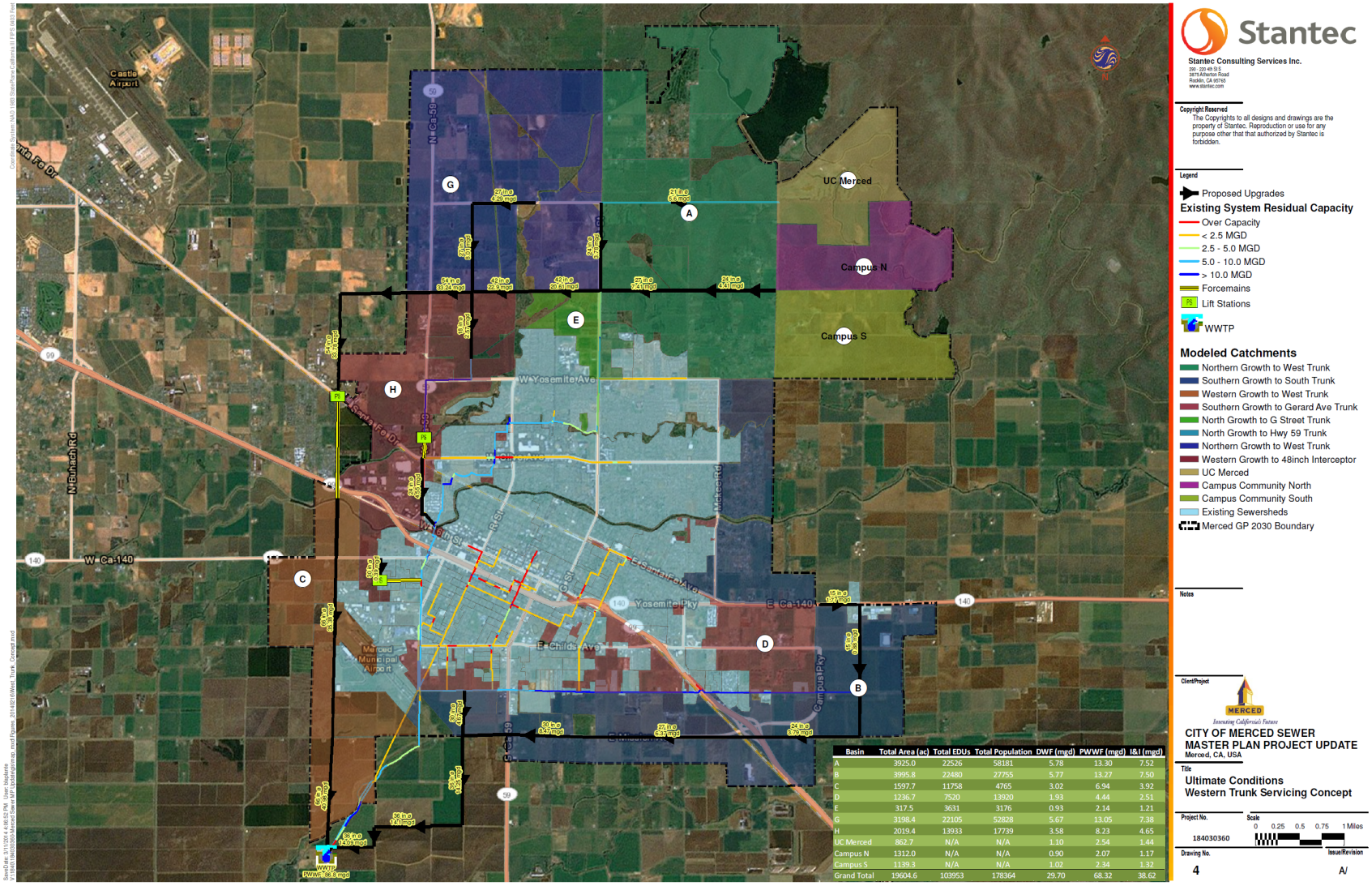
Western Trunk Servicing Concept Variation – Campus Community

In 2014, inclusion of the Campus Community lands was subject to development interests and whether these lands would receive wastewater service from the City was in question. To weigh the impact of this option, variations on the Western Trunk Servicing Concept that excluded the Campus Community or connected the Campus Community at a later date were considered. The concepts are identical to the Wester Trunk Servicing Concept at full build-out but would have reduced pipe sizing due to lower build-out sewer flows (due to the exclusion of the Campus Community from the ultimate service area) or would include an alignment for the Campus Community to connect to the system after the Western Trunk Servicing Concept is built. The latter required additional conveyance facilities which would have been the sole responsibility of the Campus Community. This alternative is depicted in Figure 3.



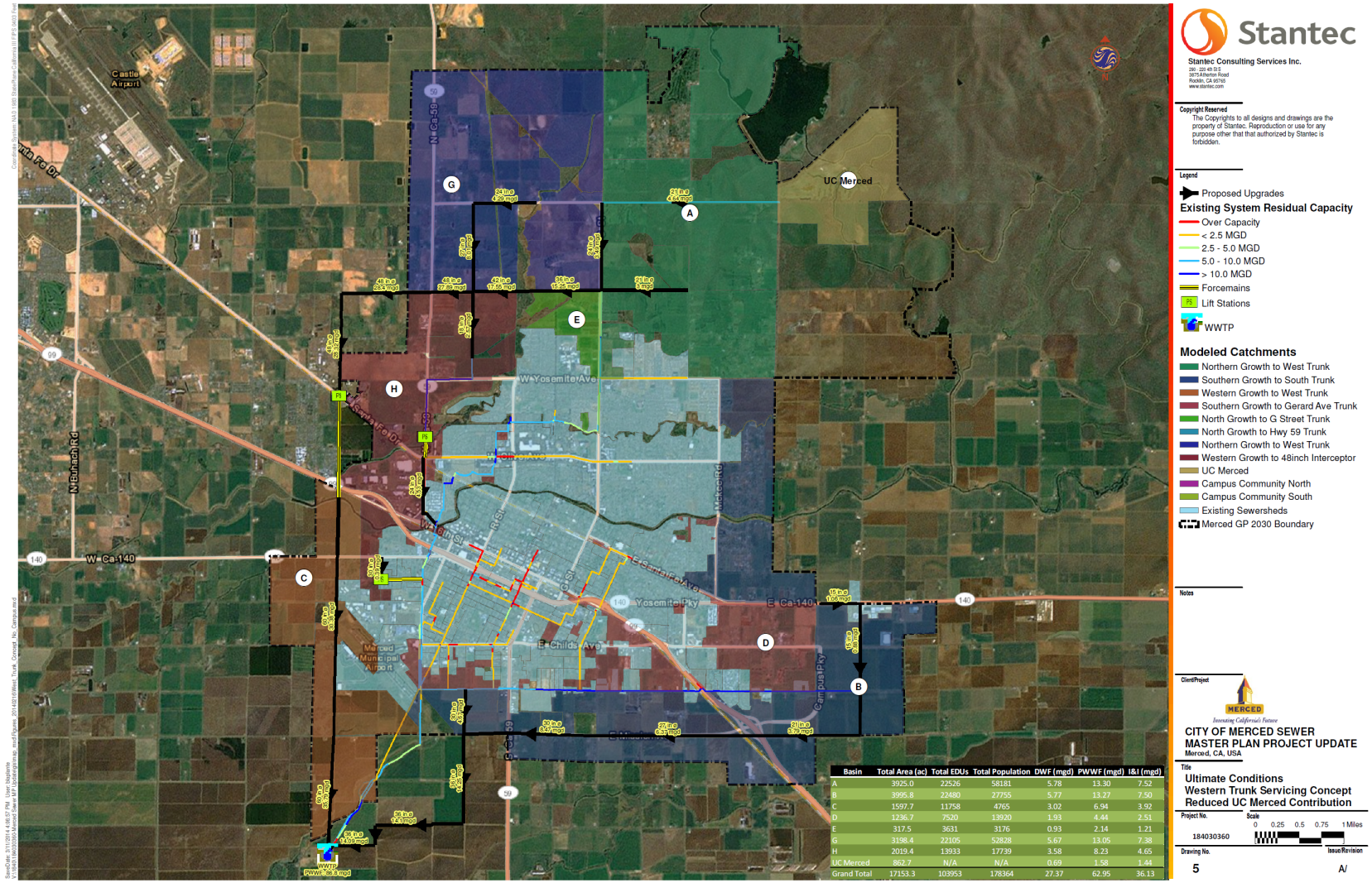
Basin	Total Area (ac)	Total EDUs	Total Population	DWF (mgd)	PWWF (mgd)	I&I (mgd)
A	3504.1	19307	50598	4.96	11.40	6.44
B	3934.5	22065	26503	5.66	13.03	7.36
C	2185.0	16166	5358	4.15	9.54	5.39
D	1298.1	7935	15172	2.04	4.68	2.65
E	1201.2	10643	20646	2.73	6.28	3.55
F	846.1	5387	14128	1.38	3.18	1.80
G	2717.1	18201	42605	4.67	10.75	6.07
H	604.5	4249	3354	1.09	2.51	1.42
UC Merced	862.7	N/A	N/A	1.10	2.54	1.44
Campus N	1312.0	N/A	N/A	0.90	2.07	1.17
Campus S	1139.3	N/A	N/A	1.02	2.34	1.32
Grand Total	19604.6	103953	178364	29.70	68.32	38.62

Figure 1 Eastern Trunk Servicing Concept



Basin	Total Area (ac)	Total EDUs	Total Population	DWF (mgd)	PWWF (mgd)	I&I (mgd)
A	3925.0	22526	58181	5.78	13.30	7.52
B	3995.8	22480	27755	5.77	13.27	7.50
C	1597.7	11758	4765	3.02	6.94	3.92
D	1236.7	7520	13920	1.93	4.44	2.51
E	317.5	3631	3176	0.93	2.14	1.21
G	3198.4	22105	52828	5.67	13.05	7.38
H	2019.4	13933	17739	3.58	8.23	4.65
UC Merced	862.7	N/A	N/A	1.10	2.54	1.44
Campus N	1312.0	N/A	N/A	0.90	2.07	1.17
Campus S	1139.3	N/A	N/A	1.02	2.34	1.32
Grand Total	19604.6	103953	178364	29.70	68.32	38.62

Figure 2 Western Trunk Servicing Concept



Basin	Total Area (ac)	Total EDUs	Total Population	DWF (mgd)	PWWF (mgd)	I&I (mgd)
A	3925.0	22526	58181	5.78	13.30	7.52
B	3995.8	22480	27755	5.77	13.27	7.50
C	1597.7	11758	4765	3.02	6.94	3.92
D	1236.7	7520	13920	1.93	4.44	2.51
E	317.5	3631	3176	0.93	2.14	1.21
G	3198.4	22105	52828	5.67	13.05	7.38
H	2019.4	13933	17739	3.58	8.23	4.65
UC Merced	862.7	N/A	N/A	0.69	1.58	1.44
Grand Total	17153.3	103953	178364	27.37	62.95	36.13

Figure 3 Western Trunk Servicing Concept – Excluding Campus Community

Alternatives Considered in the 2015 Administrative Draft Sewer Master Plan

The 2015 Administrative Draft Sewer Master Plan (2015 Admin Draft) (City of Merced 2015) presented three alternatives to meet long-term system needs that were carried through based on City Council's direction in 2014. The alternatives included:

2015 Alternative 1 – Western Trunk Alignment

This alternative, a refinement of the 2014 Western Trunk Servicing Concept would serve the entire SUDP/SOI, UC Merced and the Campus Community assuming build-out flow estimates (with density assumptions as described in Chapter 3 of the 2015 Admin Draft). Servicing the North Merced area via a large new trunk starting in the vicinity of the western boundary of the Campus Community properties, running east to west along Cardella Avenue, then south along Thornton Road to a pump station just north of Black Rascal Creek. A force main discharging from the new pump station north of Santa Fe Drive would extend to just south of CA 140, then transition to a new 60-inch gravity trunk from that point south to the WWTRF. Additionally, flow from the existing Highway 59 Pump Station would be diverted to the new pump station along Thornton Road, eliminating the long-term need to upgrade the existing forcemain and sewer along Highway 59 south of W Olive Avenue. Servicing in South Merced would be via a new trunk running east to west along E Mission Avenue which would intersect with a new trunk sewer running north to south along Tyler Road. The Tyler Road trunk would then turn west on Reilly Road and continue westward to the WWTRF. This alternative is depicted in Figure 4.

2015 Alternative 2 – Western Trunk Alignment, without the Campus Community

This alternative, a refinement to the Western Trunk Servicing Concept Variation for the Campus Community, was similar to the 2015 Alternative 1, with the exception being the North Merced area (area north of Bear Creek) would be served by a reduced capacity trunk sewer. As a result of excluding the Campus Community from participation in the new sewers and model demand due to uncertainty of whether the Campus Community area of the SUDP/SOI (located directly south of the UC Merced campus) would proceed with sewer service provided by the City. This alternative is depicted in Figure 5.

2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact

This alternative, an iteration of the Western Trunk Servicing Concept Variation combined with the Eastern Trunk Servicing Concept, planned for possible servicing of the Campus Community area if the area might require servicing after planning and constructing trunk sewers to serve the remainder of the SUDP/SOI had proceeded. This third and final alternative considered in the 2015 Admin Draft includes a new North Merced trunk sewer similar to Alternative 2 and the Western Trunk Servicing Concept, but as outlined in the Western Trunk Servicing Concept Variation would require construction of a separate trunk to accommodate the Campus Community area. In this case, the assumption is the Campus Community would require City sewer service but would not provide financing until after the 2015 Alternative 2 is planned and constructed. Rather than upsize the new Western trunk sewers to be equivalent to 2015 Alternative 1 sizing, a new trunk dedicated to the Campus Community would be constructed parallel to the new South Merced trunk. In addition, a trunk would be extended from the southern Campus Community boundary similar to the alignment in the concept for the Eastern Trunk Alignment Concept eliminated in 2014 to the SUDP/SOI where it would connect with the new parallel trunk. This alternative is depicted in Figure 6.

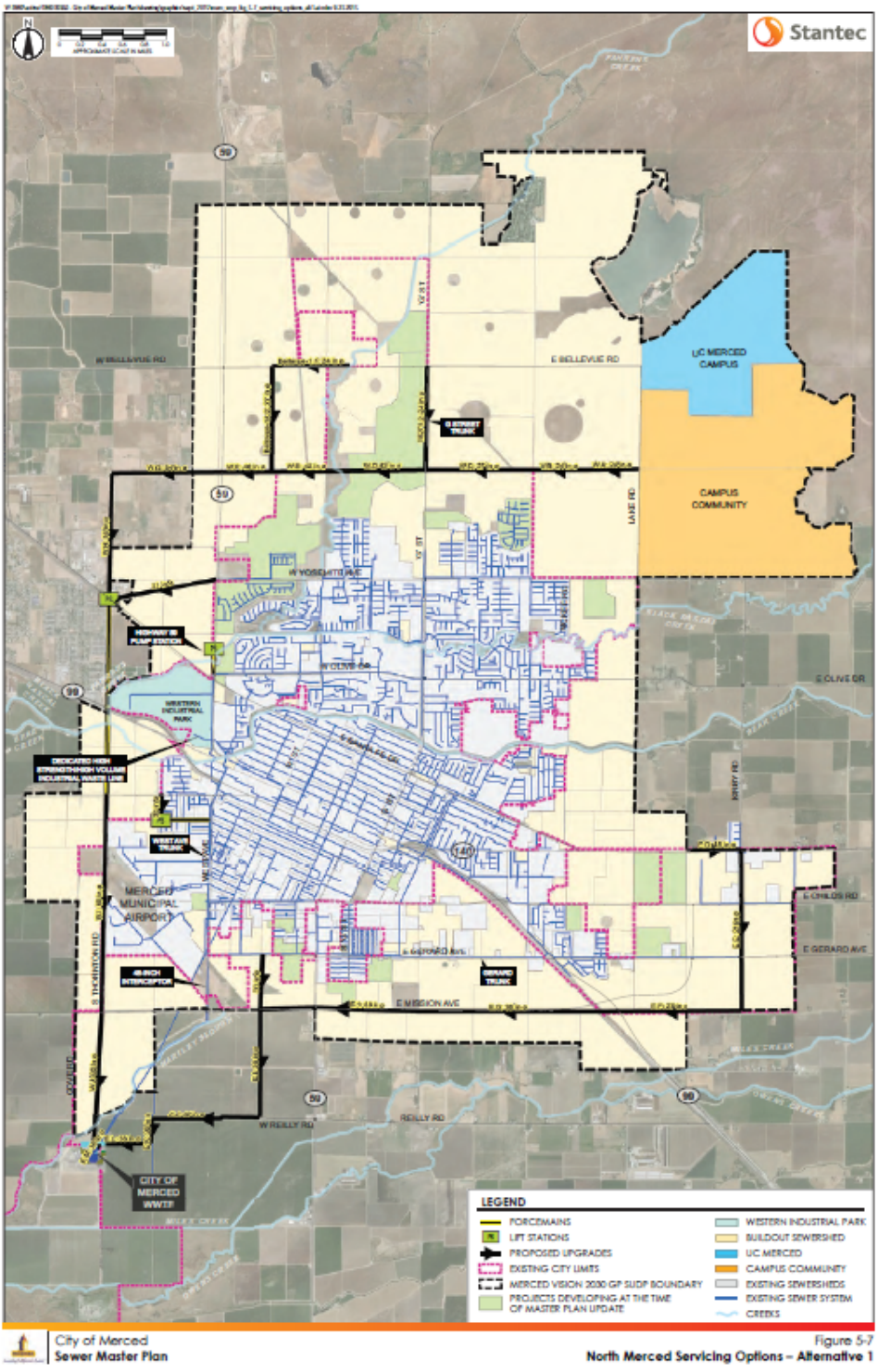


Figure 4 2015 Alternative 1 – Western Trunk Alignment

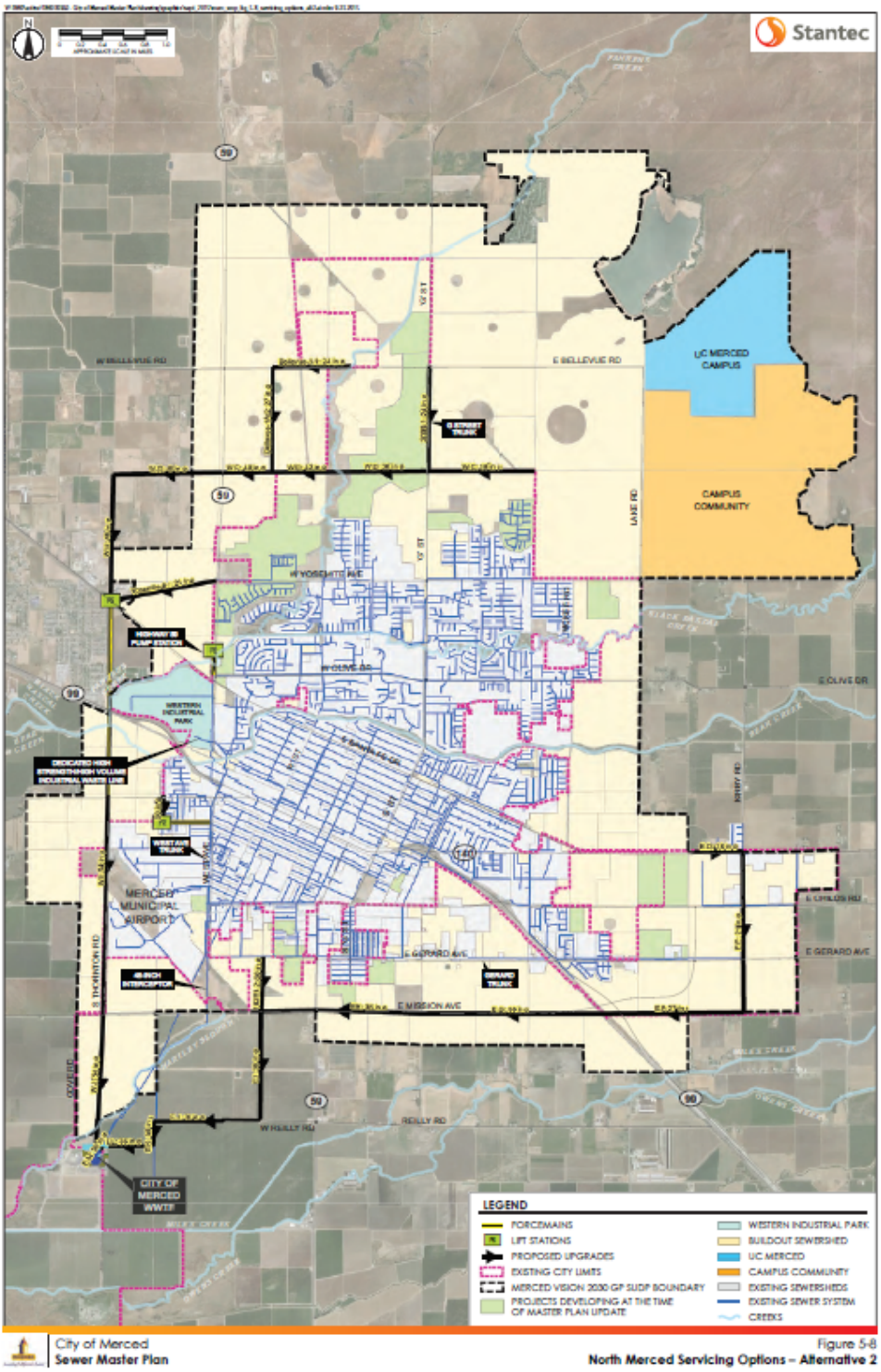


Figure 5 2015 Alternative 2 – Western Trunk Alignment without the Campus Community

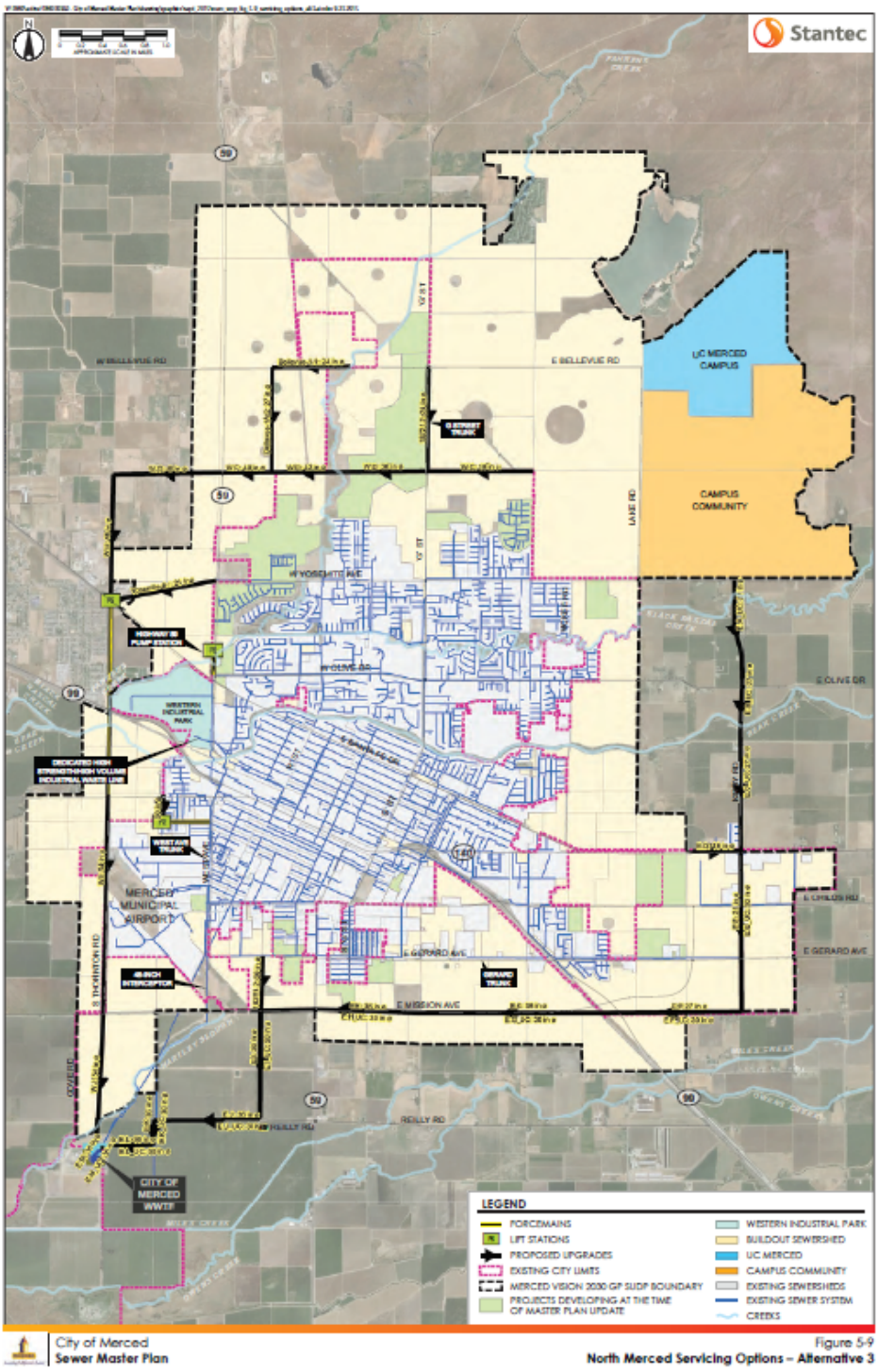


Figure 6 2015 Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact

Alternatives Considered in the 2016 Administrative Draft Sewer Master Plan

As the updated WCSMP was being developed and stakeholder input received, suggestions were made to revise the alternatives outlined in the 2015 Admin Draft. The 2016 Administrative Draft Sewer Master Plan (2016 Admin Draft) (City of Merced 2016) incorporated stakeholder input and suggestions and included the introduction of satellite treatment alternatives as well as layout and refinements to the alternatives included in the 2015 Admin Draft. The conclusions of the 2016 Admin Draft are similar to those presented in previous planning documents, reducing the list of alternative alignments and configurations to two primary options centered around whether the Campus Community connects to the City's system. These options are consistent with the 2015 Admin Draft Alternative 1 – Western Trunk Alignment and Alternative 3 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact. It should be noted, presentations of alternatives presented in the 2015 Admin Draft to stakeholders and the City Council resulted in the decision to eliminate the Western Trunk Alignment, without the Campus Community option (formerly Alternative 2) from further consideration.

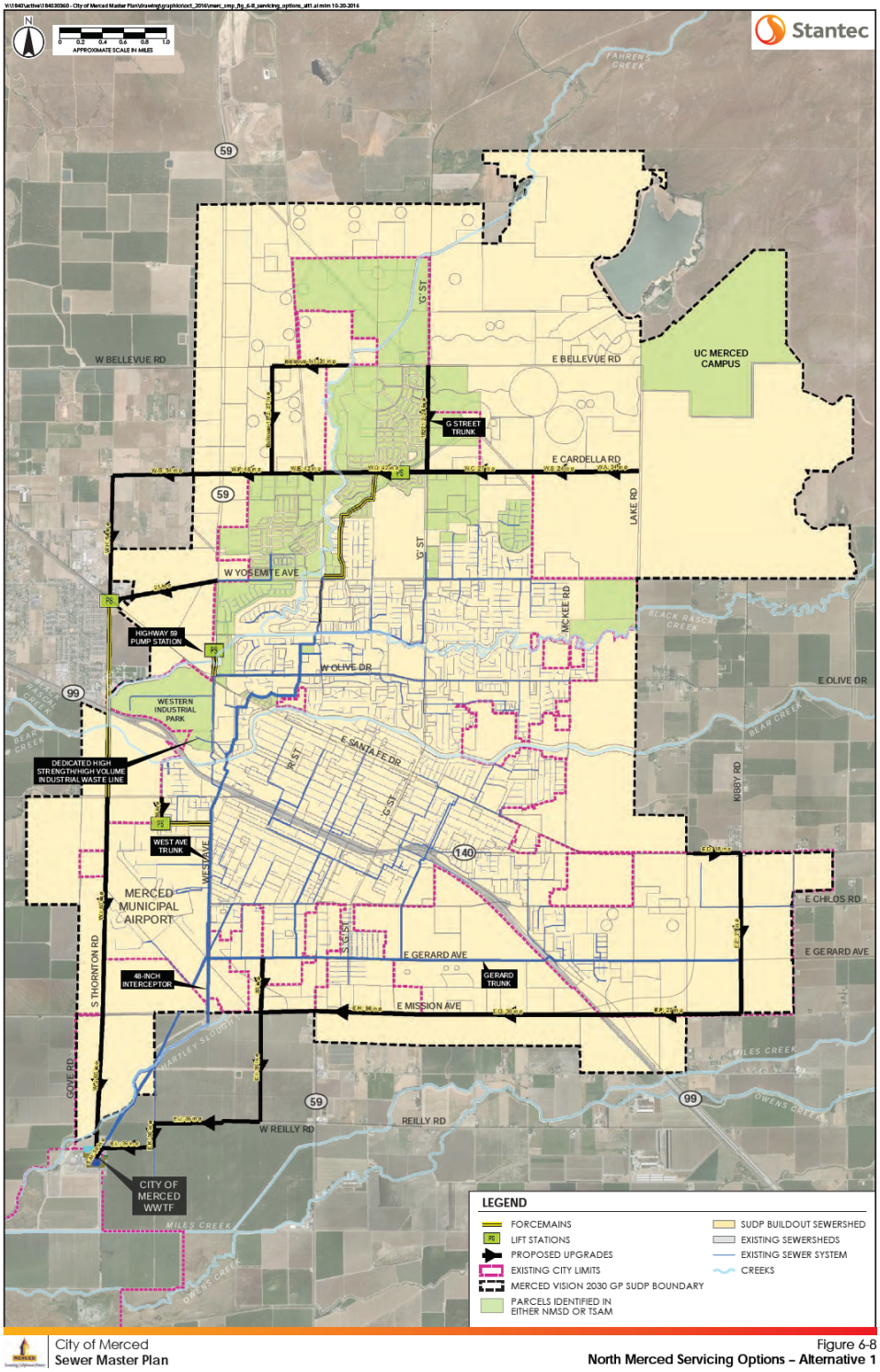
The two alternatives presented in the 2016 Admin Draft are summarized below, along with a description of the satellite treatment option:

2016 Alternative 1 – Western Trunk Alignment

Similar to the Western Trunk Servicing Concept presented in 2014 and the Western Trunk Alignment presented as Alternative 1 in 2015, this alternative is refined from those options and would serve the entire SUDP/SOI at current build-out flow estimates (with density assumptions as described in Chapter 3 of the 2016 Admin Draft). Servicing the North Merced area would occur via a large new trunk starting in the vicinity of the intersection of Cardella Road and Lake Road, running east to west along Cardella Road, then south along Thornton Road to a pump station just north of Black Rascal Creek. A force main discharging from the new pump station north of Santa Fe Drive would extend to just south of SR 140, then transition to a new 60-inch gravity trunk from that point south to the WWTRF. Additionally, flow from the existing Highway 59 Pump Station would be diverted to the new pump station along Thornton Road, eliminating the long-term need to upgrade the existing forcemain and sewer along SR 59 south of W Olive Avenue. Servicing in South Merced would be via a new trunk running east to west along E Mission Avenue which would intersect with a new trunk sewer running north to south west of SR 59. This trunk would then turn west on Reilly Road and continue westward to the WWTRF. This alternative is depicted in Figure 7.

2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community included, after the fact

Similar to Alternative 3 in the 2015 Admin Draft, the second primary alternative considered in 2016 assumed the Campus Community would develop at a later date which would preclude participation in the new Cardella and Thornton trunks described in 2016 Alternative 1. The Campus Community would be served in this alternative by a trunk line to the south from this special development area instead of to the west (the Cardella trunk) as shown in Alternative 1. Due to the uncertainty of when their share of the financing would be available under this scenario, a dedicated trunk would be constructed parallel to the new Alternative 1 South Merced trunk running along Mission Avenue which would be sized according to estimates of flow from the balance of the SUDP/SOI south of Bear Creek, and consistent with the sizing described in Alternative 1 for this trunk (as shown in the 2016 Admin Draft). A trunk would be extended from the southern Campus Community boundary to along the proposed Campus Parkway road alignment and back into the City's SUDP/SOI where it would connect with the new east-west trunk parallel to the trunk in E Mission Avenue. This alternative is depicted in Figure 8.



City of Merced
Sewer Master Plan

Figure 6-8
North Merced Servicing Options – Alternative 1

Figure 7 2016 Alternative 1 – Western Trunk Alignment

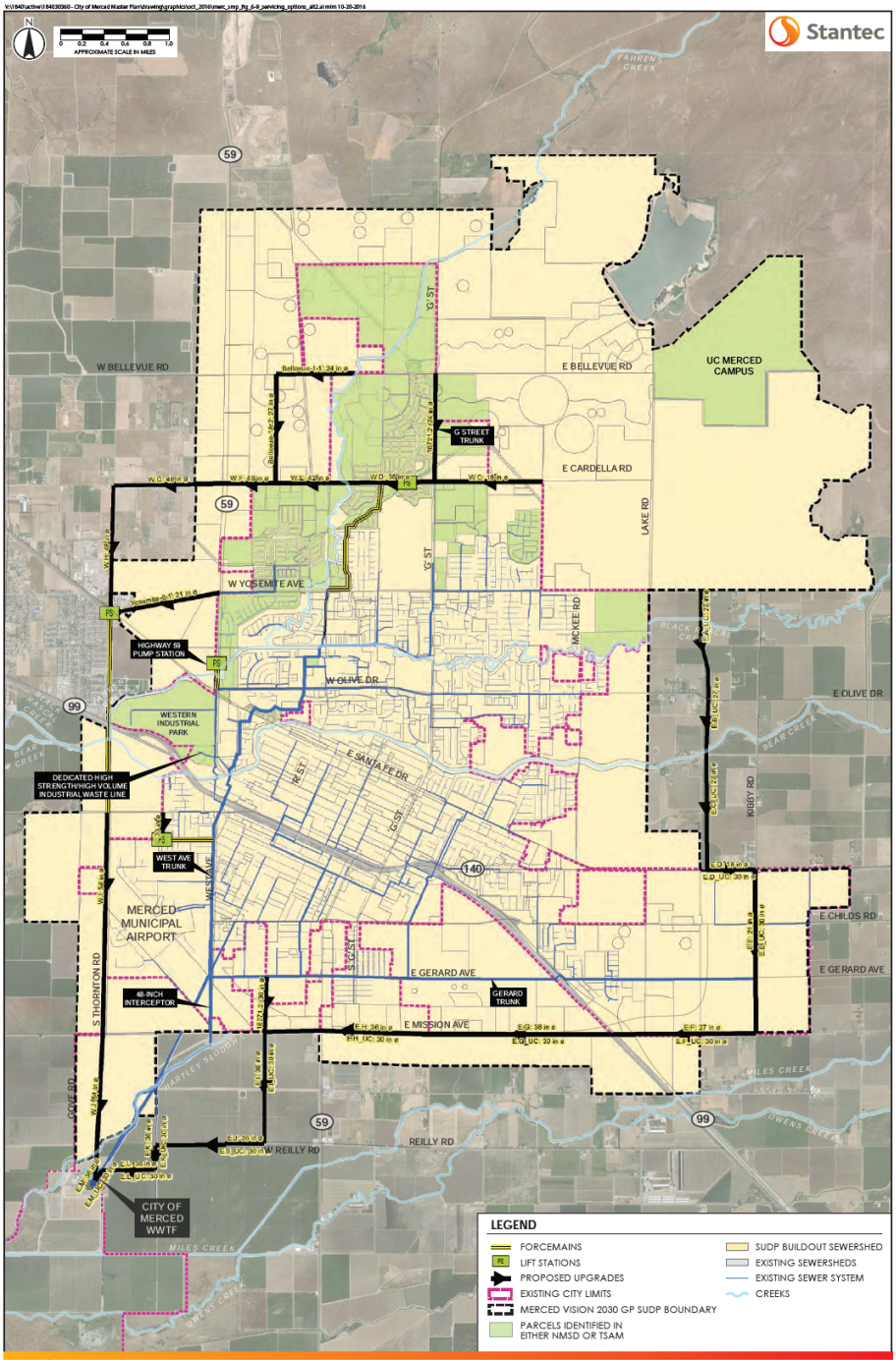


Figure 8 2016 Alternative 2 – Combination Western/Eastern Trunk Alignment, Campus Community Included, After the Fact

2016 Satellite Treatment Facility

The 2016 Admin Draft evaluated the feasibility of using satellite treatment facilities in North Merced in lieu of conveyance and treatment to the City's WWTRF. The location, size, and costs associated with satellite treatment are detailed in Section 5.5 of the 2016 Admin Draft.

In summary, the 2016 Admin Draft identified a satellite facility to be sited at a location farthest from the existing WWTRF, or near the area southwest of Lake Yosemite, on the intersection of a main sewer trunk near Cardella Road between the UC Merced campus and the western corner of the SUDP/SOI close to potential service areas and reclamation areas. To be cost effective, satellite facilities would need to be located where the wastewater is both generated and reclaimed. Since the UC Merced Campus has considered the use of reclaimed water, effluent piping would need to discharge into the campus as discussed in the 2002 North Merced Master Plan. The 2016 Admin Draft concluded locating the satellite facility within the SUDP/SOI would require some adjustment to land uses identified in the City's 2030 Vision General Plan because most of the area has specific plans for development or is designated as residential or commercial land use. Consistency with the General Plan is an important consideration and alterations to the Plan may be difficult to accomplish. The satellite facility and conveyance capacity were assumed to require the same build-out service as the equivalent at the City's WWTRF for North Merced build-out of the SUDP/SOI.

Alternatives Considered in the December 2017 WCSMP

In the December 2017, the administrative draft Sewer Master Plans were revised into the current WCSMP. In the 2017 WCSMP, as described in Section 1.0 and Section 2.0 of the Draft EIR, the Western Trunk Concept/Alignment (Alternative 1) was presented as Alternative Plan A, or the preferred option/proposed WCSMP Program, and a satellite treatment option refined from the evaluation in the 2016 Admin Draft was presented as Alternative Plan B.

WCSMP Plan A Alternative– Proposed WCSMP Program/Projects

WCSMP Plan A Alternative was presented within the 2017 WCSMP as the preferred option and is an iteration of the 2014 Western Trunk Servicing Concept and the 2015/2016 Alternative 1 Western Trunk Alignment. Further discussion of Alternative Plan A (Proposed WCSMP) is presented in the other sections of the Draft EIR and described in detail in the EIR Project Description (in Section 2.0).

WCSMP Plan B Alternative – North Merced Satellite Treatment Facility

The WCSMP Plan B Alternative, from the 2017 WCSMP, would consist of the collection system taking most of the municipal wastewater generated by build-out of the SUDP/SOI in North Merced to a new North Merced Wastewater Treatment and Reclamation Facility (NMWWTRF) located on industrially zoned land west of the intersection of West Yosemite Avenue and SR 59. The NMWWTRF site would be planned for initial and 2030 General Plan build-out capacities of approximately 4 to 5 million gallons per day (Mgal/d), and 14 to 15 Mgal/d, respectively. The existing WWTRF would serve the remainder of the City's SUDP/SOI and its growth and would have approximate planned capacity increases for the 2030 General Plan build-out conditions of 16 Mgal/d and 20 Mgal/d, respectively. Both the new NMWWTRF and existing WWTRF would be built and expanded in stages, as needed to accommodate new growth. The NMWWTRF would also need new effluent disposal and reuse facilities master planned and permitted to serve initial and expected 2030 General Plan build-out conditions. This is because there are not existing effluent facilities or related effluent discharge permits for the NMWWTRF site, at this time, whereas they do exist at the WWTRF site. New and upgraded pipelines would be placed within the City flowing from east to west towards the NMWWTRF and north to south to the existing WWTRF, where applicable, to utilize gravity sewers where possible and minimize pumping and lift station requirements where feasible. This alternative is depicted in Figure 9.

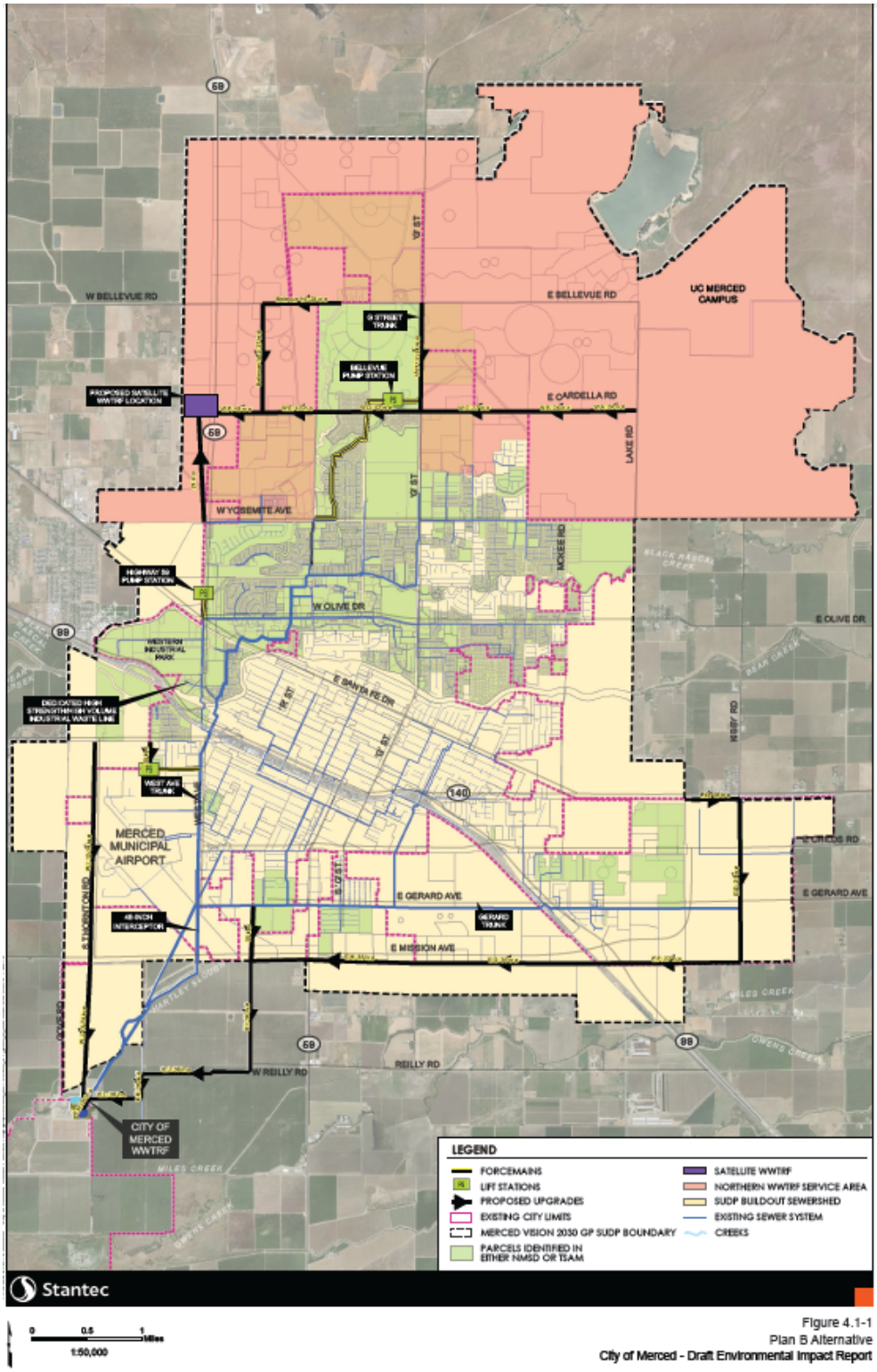


Figure 9 Plan B Alternative

Notice of Preparation Scoping and Public Input

During the planning and development of the Sewer Master Plan and subsequently the proposed WCSMP, stakeholder involvement and input was critical to the City's WCSMP alternative development process. In addition to the alternatives raised through iterations of the administrate drafts of the WCSMP, the following alternatives were identified by the public and/or stakeholders in the WCSMP planning process. These alternatives were presented in many varying ways since 2013 among which include: during communications with City staff, during City Council meetings, during stakeholder meetings, and during the CEQA Notice of Preparation scoping process for the EIR as described in Section 1.0 of the Draft EIR.

Development-Based Decentralized Treatment Facilities Alternative

The concept of multiple WWTRFs in the North Merced area was raised by stakeholders as a potential means to reduce the initial size, cost, and time delays associated with conveying City sewage to the existing WWTRF. This would be a decentralized system with multiple WWTRF's (decentralized facilities) that would be built as needed within the City as growth occurs. These new WWTRFs would be built in new development areas and would treat the wastewater associated with each new development, as they occur. This alternative would require the placement of pipelines, utilizing gravity fed systems to the maximum extent feasible, to channel flows to the new decentralized Facilities as well as to the existing WWTRF throughout the City's SUDP/SOI. This alternative would require the individual treatment and permitted disposal of effluent at each new site as well as operations and maintenance associated with each new facility added. Each facility would require a treatment train sufficient to treat the wastewater generated within a particular development area and would be required to meet waste discharge permitting requirements and maintain an individual NPDES permit, or provide reclamation lands on which to reuse treated effluent, as well appropriate discharge permits issued by the Regional Water Board.

Campus Parkway/Lake Road Trunk Alternative

The Campus Parkway/Lake Road Trunk Alternative (Campus Parkway Alternative) is a variation on the Eastern Trunk Servicing Concept that would require an additional trunk sewer to be placed outside of the City's SUDP/SOI from the UC Merced Campus to Campus Parkway where it would connect with the existing sewer collection system. This alternative would involve two phases in order to reach adequate build-out capacity needed and analyzed in the 2030 General Plan.

Phase 1 of the Campus Parkway Alternative would involve conveyance of wastewater within the Campus Community area, and possibly additional portions of the service area to flow down through this system and eventually flow to the City's existing WWTRF near the southwest portion of the City's SUDP/SOI. Trunk sewers in the north would be reduced in size as flow from the northwestern portion of the service area would be conveyed via this expansion of the existing WWTRF. Expansion of the existing WWTRF would be required to 35 Mgal/d, similar to the WCSMP in order to meet the projected growth identified in the 2030 General Plan.

Phase 2 of this alternative would require additional wastewater infrastructure for the new development in the far north and northwestern portions of the City (partially outside of the City's SUDP/SOI). These additional alternative features would require the installation of pipelines with sufficient capacity to serve the new growth in the area, as well as associated appurtenances and possible pump and lift stations in order to achieve adequate flow to the existing WWTRF. This alternative is depicted in Figure 10.

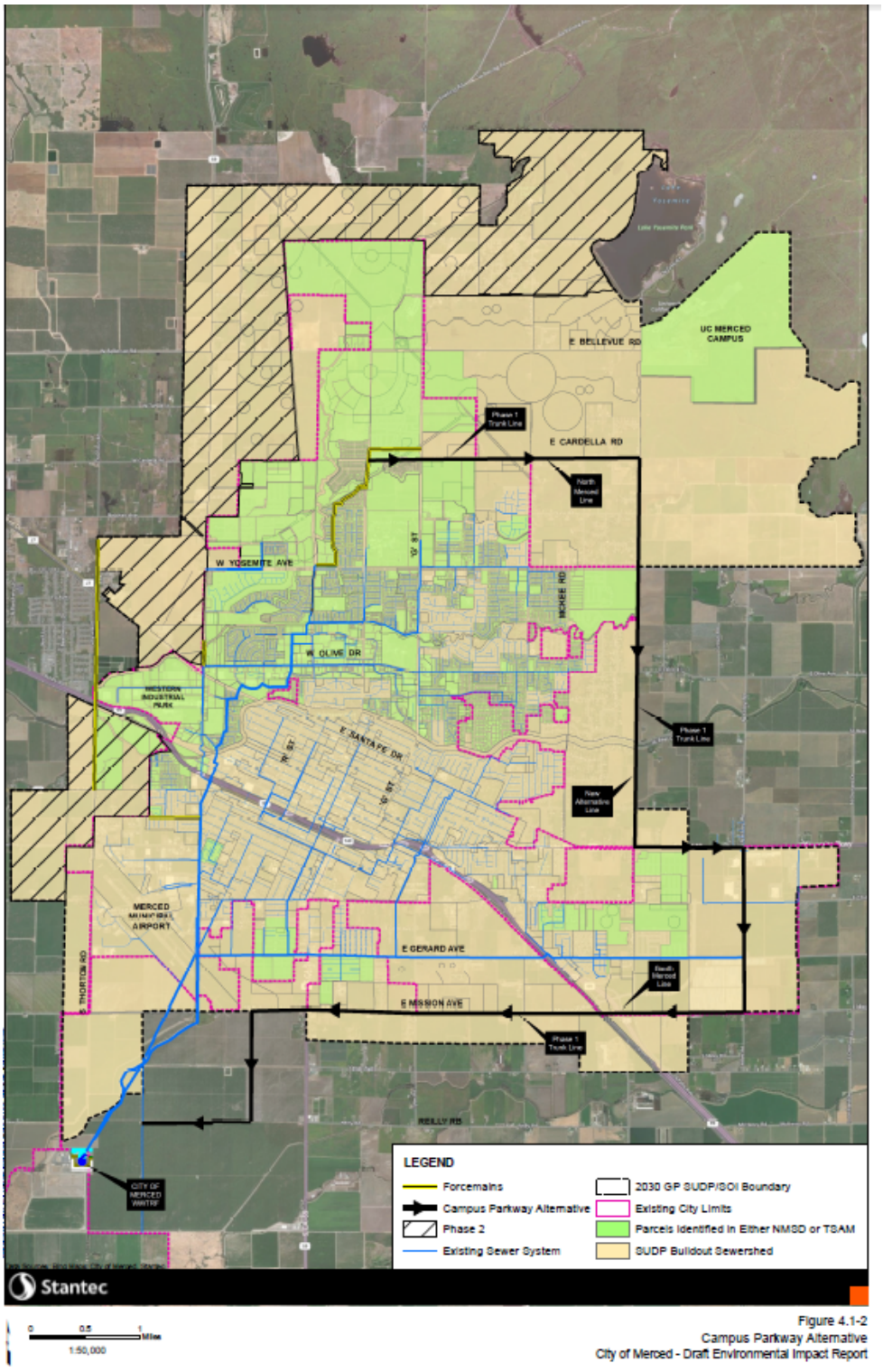


Figure 10 Campus Parkway Alternative Trunk Alignment/ Lake Road Alternative