City of Modesto

Wastewater Master Plan

Draft Environmental Impact Report

Prepared for:

City of Modesto
PO Box 642
Modesto, CA 95353

Prepared by:

Horizon Water and Environment, LLC
266 Grand Avenue, Suite 210
Oakland, California 94610

June 2019

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Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
A	
A	attainment
AB	Assembly Bill
ACE	Altamont Commuter Express
ADWF	average dry weather flows
AF	acre-foot
af/yr	acre-feet per year
ALUCP	airport land use compatibility plan
ATCM	airborne toxic control measure
B	
B	beneficial
Basin Plan	Water Quality Control Plan
BAU	business as usual
bgs	below ground surface
BMP	best management practice
BNR	biological nutrient removal
BOD	biological oxygen demand
BP	business park
BPS	best performance standard
C	
C	commercial
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Cal EMA	California Emergency Management Agency
Ca/lEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Governor's Office of Emergency Services
Cal/OSHA	California Occupational Safety and Health Administration
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAP	climate action plan
CARB	California Air Resources Board
CASGEM	California Statewide Groundwater Elevation Monitoring
CBC	California Building Standards Code
CCIC	Central California Information Center
CCR	California Code of Regulations
CCTS	Central California Taxonomic System
CCTV	closed-circuit television
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEC	California Energy Commission

CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGS	California Geological Survey
CH_4	methane
CIP	capital improvement project
CIPP	cured-in-place-pipe
City	City of Modesto
CMP	*Congestion Management Process for the Stanislaus County Region*
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
Court	U.S. Supreme Court
CPD	Comprehensive Planning District
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CUPA	Certified Unified Program Agency
CVFPB	Central Valley Flood Protection Board
CWA	Clean Water Act
cy	cubic yard

D

DAF	dissolved air flotation
dB	decibel
dBA	A-weighted decibel
DBCP	1,2-dibromo-3-chloropropane
DEIR	draft environmental impact report
DMC	Delta-Mendota Canal
DOF	California Department of Finance
DPM	diesel particulate matter
DPWD	Del Puerto Water District
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources

E

EIR	environmental impact report
EO	Executive Order
ESA	Endangered Species Act
ESA	environmental site assessment
ESU	evolutionarily significant unit

F

FD	federally delisted
FE	federally endangered

FEMA	Federal Emergency Management Agency
FFR	fixed film reactor
F&G Code	California Fish and Game Code
FIRM	Flood Insurance Rate Map
FMMP	Farmland Mapping and Monitoring Program
FR	Federal Register
FT	federally threatened
FTA	Federal Transit Administration

G

g	unit of measure for ground shaking, expressing the acceleration of movement relative to the acceleration of gravity
GAMAQI	*Guidance for Assessing and Mitigating Air Quality Impacts*
General Permit	General Permit for Storm Water Discharges Associated with Construction Activity
General Plan	Proposed (or Alternative) Urban Area General Plan
GHG	greenhouse gas
GIS	geographic information systems
GSA	groundwater sustainability agency
GSP	groundwater sustainability plan
Guidance	*Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*
GWP	global warming potential

H

H_2O	atmospheric water
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HAZCOM	hazardous materials communication
HCM	*Highway Capacity Manual*
HCP	habitat conservation plan
HDD	horizontal directional drilling
HDPE	high-density polyethylene
HFCs	hydrofluorocarbons
HMWMP	hazardous materials and waste management plan
hp	horsepower
HSC	Health and Safety Code
HVAC	heating, ventilation, and air conditioning
Hz	Hertz

I

I	industrial
in	inch
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change

J

Jennings Plant	Jennings Road Secondary and Tertiary Treatment Plant

K

km	kilometer
L	
LAFCO	Local Agency Formation Commission
L_{dn}	day-night sound level
L_{eq}	equivalent steady-state sound level
lf	linear feet
LID	low-impact development
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LS	less than significant
LSM	less than significant with mitigation
M	
MAP	model accreditation plan
MAX	Modesto Area Express
MBR	membrane bioreactor
MBTA	Migratory Bird Treaty Act
MEI	maximally exposed individual
mgd	million gallons per day
mg/L	milligrams per liter
MID	Modesto Irrigation District
MLD	most likely descendent
MMI	Modified Mercalli Intensity Scale
MMRP	mitigation monitoring and reporting plan
MMT	million metric tons
MRWTP	Modesto Regional Water Treatment Plant
MS4	municipal separate storm sewer system
msl	mean sea level
MT CO_2e	million tons of carbon dioxide equivalents
MU	mixed use
N	
N	nonattainment
N	nitrogen
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEHRP	National Earthquake Hazards Reduction Program
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NI	no impact
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOP	notice of preparation

NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSF	National Science Foundation
NSPS	Standards of Performance for New Stationary Sources
NVRRWP	North Valley Regional Recycled Water Program

O

O_2	oxygen
O_3	ozone
O&M	operations and maintenance
OBD	on-board diagnostic
OEHHA	California Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OS	open space
OSHA	U.S. Department of Labor, Occupational Safety and Health Administration

P

Pb	lead
PD	planned development
PFCs	perfluorocarbons
PG&E	Pacific Gas and Electric Company
$PM_{2.5}$	particulate matter of aerodynamic radius of 2.5 micrometers or less
PM_{10}	particulate matter of aerodynamic radius of 10 micrometers or less
ppm	parts per million
PPV	peak particle velocity
Proposed Program	2016 Wastewater Master Plan
PST	Pacific Standard Time
PUA	planned urbanizing area
Pub. Res. Code	Public Resources Code
PVC	polyvinyl chloride
PWWF	peak wet weather flow

R

R	residential
R-1	low-density residential
RC	regional commercial
RCRA	Resource Conservation and Recovery Act of 1976
RMP	risk management plan
ROG	reactive organic gases
ROWD	report of waste discharge
RPD	Redevelopment Planning District
RPS	renewable portfolio standard
R&R	rehabilitation and replacement
RST	Stanislaus Regional Sustainability Toolbox
RTP	regional transportation plan
RWQCB	Regional Water Quality Control Board

S	
SAR	second assessment report
SB	Senate Bill
SBAPCD	Santa Barbara Air Pollution Control District
SC (Endangered)	state candidate for listing as endangered
SCAQMD	South Coast Air Quality Management District
SCP	*Salida Community Plan*
SCS	sustainable communities strategy
SE	state endangered
SF_6	sulfur hexafluoride
SGMA	Sustainable Groundwater Management Act
SHMA	Seismic Hazards Mapping Act of 1990
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SLCP	Short-Lived Climate Pollutant
SMBRP	Site Mitigation and Brownfields Reuse Program
SO_2	sulfur dioxide
SOI	sphere of influence
S-P	specific plan
SPFC	State Plan of Flood Control
SR	State Route
SRWA	Stanislaus Regional Water Authority
SSC	state species of special concern
SSO	sanitary sewer overflow
ST	state threatened
StanCOG	Stanislaus Council of Governments
StaRT	Stanislaus Regional Transit
STRGBA	Stanislaus and Tuolumne Rivers Groundwater Basin Association
SU	significant and unavoidable
Sutter Plant	Sutter Avenue Primary Treatment Plant
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
SWSP	Surface Water Supply Project
T	
TAC	toxic air contaminant
TCP	traditional cultural property
TCR	tribal cultural resource
TDS	total dissolved solids
TID	Turlock Irrigation District
TMDL	total maximum daily load
TMP	traffic management plan
TRRP	Tuolumne River Regional Park
TSO	time schedule order
U	
U	unclassified
UPRR	Union Pacific Railroad
U.S.	United States

	USACE	U.S. Army Corps of Engineers
	USC	U.S. Code
	USEPA	U.S. Environmental Protection Agency
	USFWS	U.S. Fish and Wildlife Service
	USGS	U.S. Geological Survey
	UST	Underground Storage Tank
	UV	ultraviolet
	UWMP	urban water management plan
	V	
	VdB	vibration velocity in decibels
	VELB	Valley elderberry long-horned beetle
	VERA	voluntary emission reduction agreement
	VOC	volatile organic compound
	VR	village residential
	W	
	WAS	waste activated sludge
	WDR	waste discharge requirement
	WMP	water management plan
	WQCF	Water Quality Control Facility
	WSA	water supply assessment
	WWMP	2016 Wastewater Master Plan

EXECUTIVE SUMMARY

INTRODUCTION

The City of Modesto (City), as lead agency, has prepared this Draft Environmental Impact Report (DEIR) to provide the public, responsible agencies, and trustee agencies with information about the environmental effects of the proposed Wastewater Master Plan (WWMP or Proposed Program). This DEIR was prepared in compliance with the California Environmental Quality Act of 1970 (CEQA), as amended, and the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15000 et seq.).

BACKGROUND AND OVERVIEW

The Proposed Program updates and revises the City's 2007 Wastewater Master Plan. The City periodically reevaluates its wastewater system through development of a wastewater system capital improvement program (CIP), which addresses existing deficiencies and replacement needs. The Proposed Program is intended to accommodate the wastewater collection service needs of the population and land uses described in the City's Urban Area General Plan (General Plan) and community plans of service areas outlying the City's urban area or sphere of influence, and accounts for SOI boundary adjustments, zoning revisions, updated growth projections, and sewer demand information through 2057. The Proposed Program would also accommodate wastewater treatment needs for those same customers through 2035.

PROGRAM LOCATION

The Proposed Program is located in the City of Modesto, California (**Figure ES-1**). The City's wastewater service area includes all incorporated areas of Modesto, a portion of north Ceres, the unincorporated community of Empire, the Beard Industrial Park District, and unincorporated "islands" in Stanislaus County that are served by agreement. The City's primary treatment facilities (Sutter Plant) are located in the southern portion of Modesto just north of the Tuolumne River. Other secondary and tertiary treatment facilities (Jennings Plant) are located on City-annexed property located about 6.5 miles southwest of the City proper, and the Primary Effluent Outfall and Cannery Segregation Line Outfall, which are pipelines, are located in unincorporated Stanislaus County.

PROGRAM BACKGROUND

Existing Wastewater System

The City operates and maintains the wastewater collection system servicing the urban area of Modesto. The City's wastewater collection system is divided into two separate systems: the domestic system and the segregated cannery process water system. The City's wastewater system consists of approximately 40 sewer lift stations and more than 600 miles of pipelines ranging from 6 to 66 inches in diameter. Of the 600 miles of pipeline, 69 miles are trunk lines (pipelines greater than 15 inches in diameter), and 15 miles of trunk lines connect cannery food processors directly to land disposal (application) areas. Most of the City's wastewater

system flows by gravity, but in some areas, lift stations (also referred to as pump stations) are necessary to convey wastewater generated within the service area to the Sutter Avenue Primary Treatment Plant (Sutter Plant) and the Jennings Road Secondary and Tertiary Treatment Plant (Jennings Plant).

Once wastewater makes its way to the Sutter Plant, the wastewater undergoes primary treatment, which includes several steps. The primary effluent is pumped through the Primary Effluent Outfall (and sometimes through the Cannery Segregation Line) to the secondary treatment facilities at the Jennings Plant. During the secondary treatment phase, microorganisms metabolize biological matter. Once secondary treatment is complete, effluent either is applied to approximately 2,500 acres of agricultural ranch land owned by the City or is discharged to the San Joaquin River or stored in the City's ponds. Any water that is discharged to the San Joaquin River (typically between October and May) is first disinfected with chlorine and then dechlorinated with sulfur dioxide.

The City's National Pollutant Discharge Effluent System (NPDES) surface water discharge permit (Order R5-2017-0064, NPDES No. CA0079103), recently issued in June 2017, allows up to 14.9 million gallons per day (mgd) of tertiary-treated wastewater discharges to the San Joaquin River year-round. The City is not permitted to discharge secondary treated wastewater to the San Joaquin River. Algae typically grows in the storage reservoirs in October and November, which generates high suspended solids concentrations that typically exceed discharge limitations. The City, however, has addressed this issue by installing dissolved air flotation units to remove algae, which gets discharged to the southwest corner of the recirculation channel. Installation of the DAF units has allowed the City to extend the discharge season into October and November. The City constructed the first two phases of tertiary treatment facilities at the Jennings Plant. The City is also participating in the North Valley Regional Recycled Water Program (NVRRWP), which is currently being constructed and will provide recycled water to the Delta-Mendota Canal. Once the NVRRWP project is completed, up to 14.9 mgd of tertiary treated water at the Jennings Facility would be conveyed by pipeline to the Delta-Mendota Canal.

More information about the various components of the City's existing wastewater treatment system is provided in Chapter 1 of this DEIR.

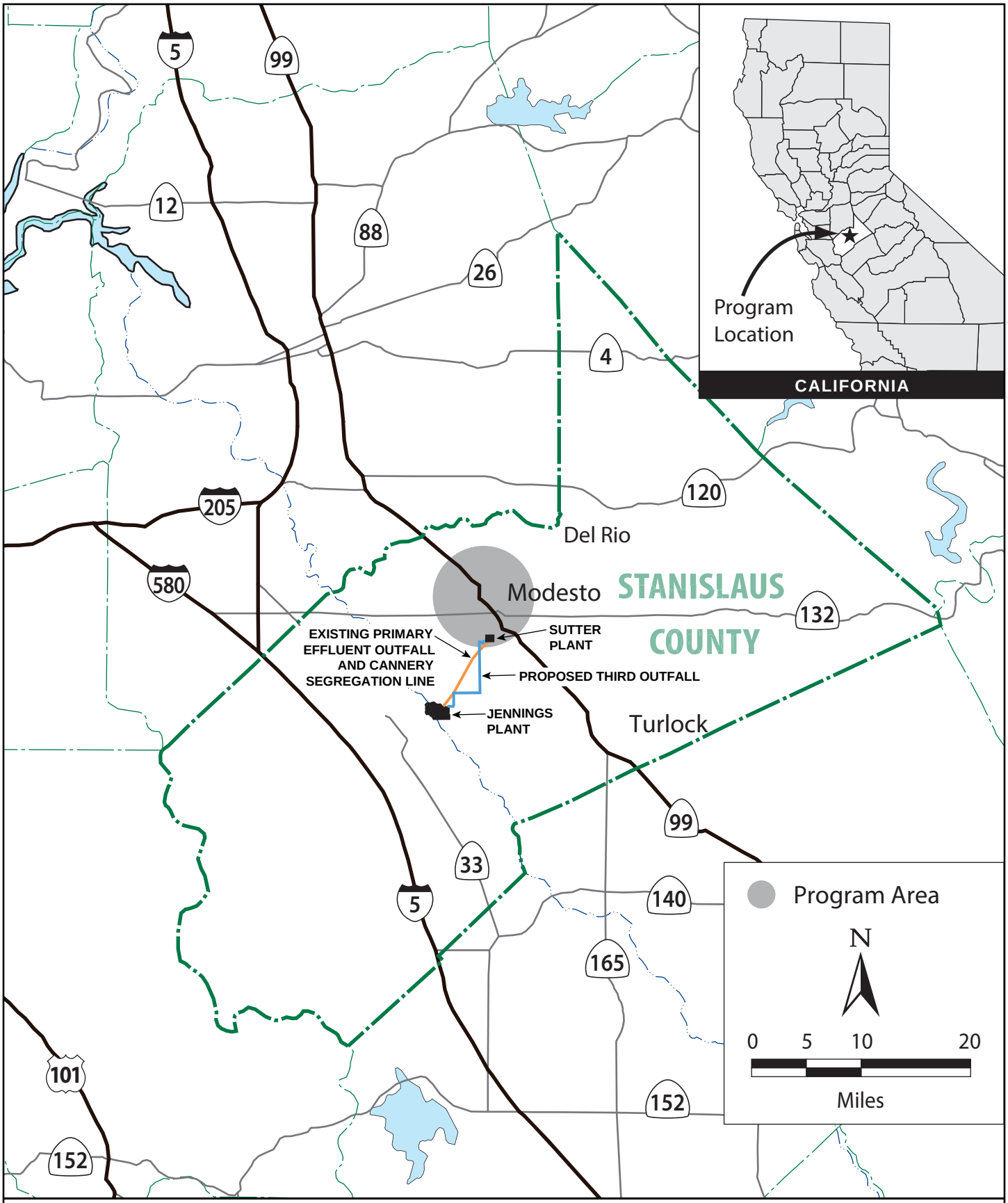


Figure ES-1.
Project Location

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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PROGRAM PURPOSE AND OBJECTIVES

The overall purpose of the Proposed Program is to meet existing and future wastewater treatment demands for the City and its customers in unincorporated areas of Stanislaus County, through 2035. The Program is also intended to meet existing and future wastewater collection service needs for the City and its customers in outlying service areas through 2057. The objectives of the Proposed Program as a whole are as follows:

- To implement the City's economic goals and General Plan by planning for, and providing, sewer infrastructure in a timely and cost-effective manner to serve new and existing development.
- To repair and replace aging wastewater infrastructure.
- To ensure adequate wastewater infrastructure and services are available to serve new growth within the General Plan and City's sphere of influence, and planned wastewater demands.
- To plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

For collection system components, the objectives of the Proposed Program are:

- To extend service to new customers.
- To increase sewer capacity to convey peak wet weather flows for a 10-year storm event and, where required, to serve future customers.
- To reduce wet weather flow volumes by removing cross connections with stormwater sewers.
- To replace, repair, or rehabilitate existing trunk sewers, and to reduce infiltration and inflow of stormwater into the sanitary sewers.
- To improve sewer collection reliability by providing new and redundant infrastructure improvements, including sewer trunk lines and lift stations, in known deficient areas at critical areas within the existing system.

For treatment plant components, the objectives are:

- To reduce flooding impacts at the Sutter Plant site and increase treatment process operational flexibility and efficiencies.
- To increase the capacity of the outfalls connecting the primary and secondary treatment plants, and to provide increased reliability for the existing outfall.
- To increase treatment systems efficiency, reliability, and functionality for both domestic and cannery process stream flows.
- To increase or modify treatment systems to remain in compliance with existing Central Valley Regional Water Quality Control Board's NPDES requirements and plan for potential future permitting regulations.

PROGRAM DESCRIPTION

The Proposed Program involves numerous improvements to the City's collection system and upgrades to the Sutter and Jennings plants. These include collection system and treatment plant CIPs located throughout the City's service area and unincorporated Stanislaus County. One project, the River Trunk Realignment Project, is evaluated at a project level of detail. All other components are evaluated at a program level of detail. Program-level components are projects that the City would likely construct in the future, but design of these components has not been advanced to a level at which a detailed evaluation can be completed. As such, a more general, program-level analysis of these components is included in this DEIR.

RIVER TRUNK REALIGNMENT PROJECT

The existing River Trunk is approximately 5 miles long and generally parallels the right bank (north side) of the Tuolumne River. It begins near the intersection of Beard Avenue and Nathan Avenue and terminates at Sutter Plant, conveying nearly 50 percent of the City's domestic wastewater to the Sutter Plant. This trunk line is subject to severe corrosion and isolated sections of the line have failed or are close to failure. This project entails realigning the majority of the River Trunk line such that it would be further inland from the Tuolumne River (see Figure 2-1 in Chapter 2, *Program Description*). This project includes construction of two pump stations: the River Trunk Pump Station which would be located at the corner of B Street and Beard Street, and the Shackelford Pump Station which would be located west of Zeff Road and immediately east of the Tuolumne River. This project also involves installation of a 48-inch siphon at the Dry Creek crossing using trenchless methods, River Trunk force main, gravity pipelines along Tuolumne River Boulevard, Colorado Avenue, Neece Drive, and Pelton Avenue. From the Shackelford Pump Station, wastewater would be conveyed through existing siphons that cross Tuolumne River to the Dryden Golf Course. A new force main would be installed beneath the golf course, traverse westerly, and terminate at the Dryden Golf Course parking lot where it would tie in with the gravity system described above.

COLLECTION SYSTEM COMPONENTS

The City would install several types of collection system components including the following:

- **New and Upgraded Sewers.** The City would construct a number of new and upgraded sewer lines throughout Modesto. These components are needed either to correct an existing or future capacity deficiency during peak wet weather flows or to accommodate anticipated and planned growth.

- **Sewer Rehabilitation.** Based on continued monitoring and inspection, the City has identified several sewer lines in need of rehabilitation. Deteriorating sewer lines may require rehabilitation to avoid failure and to improve functionality. Rehabilitation may include installing a liner or flexible coating on the interior of the pipeline. Sewer rehabilitation could also include slip lining or cured-in-place-pipe methods.

- **Lift Stations.** The Proposed Program includes constructing seven new lift stations and upgrading four existing lift stations. Upgrades of existing lift stations may include the replacement of undersized pumps, installation of new or larger emergency electrical generators, and elimination of overflows. If necessary, the lift station structure may need to be enlarged to accommodate proposed upgrades.

- **Stormwater/Sanitary Sewer Cross-Connect Disconnections.** Another component of the Proposed Program focuses on decreasing peak flows in the sanitary system by disconnecting up to 60 interconnections between the storm sewers and sanitary sewers. After storm events, these cross-connections typically show substantially increased peak flows. Improvements may include installing new storm drainage pipes, detention basins and various underground storage and percolation methods.

- **Small Pipeline Rehabilitation and Replacement Projects.** Aside from the City-wide storm drain disconnection improvements, the City proposes other improvements to the overall collection system. The new City-wide program would focus on small pipeline rehabilitation and replacement projects as identified by relatively recent closed-circuit television (CCTV) footage. These projects would be conducted outside of the WWMP scope of work, and focus on the City's 6-inch and 8-inch-diameter sewer mains. This effort also includes some larger pipelines; however, the specific locations of the pipelines that require rehabilitation and repair have not yet been identified or prioritized yet. However, based on CCTV data collected, there was enough evidence to create a program to address these smaller mains on an annual basis. It is anticipated that most of these pipeline rehabilitation and replacement projects are in the older parts of the City including portions of downtown Modesto.

TREATMENT PLANT COMPONENTS

Sutter Plant Components

The following primary treatment facilities are near or exceeding their useful life and are vulnerable to flooding as they are located within the 100-year floodplain: the primary clarifiers, anaerobic digesters, and sludge drying beds. Under the Proposed Program, these facilities would be decommissioned after the new primary treatment and solids handling components at the Jennings Plant are complete. Similar to existing condition, the Sutter Plant would continue to provide influent pumping, screening, and grit removal. The following components are planned at the Sutter Plant:

- Influent Pump Station Improvements
- Primary Effluent Pump Station Replacement
- Demolition of identified Sutter Treatment Facilities
- Flood Protection Improvements

Outfall Pipelines

Under the Proposed Program, the City would conduct three major outfall improvement projects to accommodate increased capacity and improve reliability of the existing outfall pipelines.

- New Tuolumne River Crossings (at the Cannery Segregation Line Outfall and Primary Effluent Outfall)
- New Primary Effluent Outfall Pipeline
- Slip Lining of a Portion of the Cannery Segregation Line Outfall

Jennings Plant Components

CIPs proposed at the Jennings Plant include various modifications to the secondary and tertiary treatment facilities and construction of new primary treatment and solids processing facilities including digesters and drying beds. Such improvements would increase the impermeable surface area of the Jennings Plant by approximately 27 acres. The following CIPs are proposed at the Jennings Plant:

- Biological Nutrient Removal /Tertiary Phase 3 Expansion
- Secondary Treatment Modifications
- Cannery Segregation Treatment Facilities Upgrade
- Interim Waste Activated Sludge Handling Facilities
- Primary Treatment and Solids Handling Facilities Relocation

CONSTRUCTION METHODS

Construction of proposed improvements to the City's collection system and treatment facilities would involve several types of activities: site preparation; demolition and removal of some existing facilities; earthwork (grading and excavation); pipeline installation; and facility construction. Pipeline construction would primarily occur using open trench methods. However, in areas where pipelines would cross waterways including Dry Creek and Tuolumne River, trenchless installation methods would be employed.

CONSTRUCTION SCHEDULE

Construction of the overall WWMP would occur over an approximately 25-year period, beginning in 2018 and completed in 2030 to 2035. As described in Chapter 2, *Program Description,* program-level components would be constructed in phased manned in which critical components are planned in the near-term. Construction of the River Trunk Realignment Project is anticipated to begin in 2018 and be completed within an 18-month period.

PERMITS AND APPROVALS

In addition to use by the City, the EIR for the Proposed Program will be used by various regulatory agencies issuing permits, as well as other approvals and consultations for the Proposed Program. Specifically, information about the Proposed Program and the environmental analysis will be used by several agencies as part of their decision-making processes. Agencies that may use the EIR as part of their decision-making process for the Proposed Program include the following:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- State Water Resources Control Board
- Central Valley Regional Water Quality Control Board
- California Department of Fish and Wildlife
- California Department of Transportation
- California State Lands Commission
- Central Valley Flood Protection Board

- Stanislaus County
- San Joaquin Valley Air Pollution Control District
- Modesto Irrigation District
- Turlock Irrigation District

PUBLIC INVOLVEMENT PROCESS

SCOPING COMMENT PERIOD

A Notice of Preparation (NOP) for the Proposed Program was prepared pursuant to the State CEQA Guidelines (Section 15082) and circulated to the Office of Planning and Research's State CEQA Clearinghouse on June 10, 2016. The scoping period continued for 30 days and concluded on July 10, 2016.

The Notice of Preparation presented general background information on the Proposed Program, the scoping process, and environmental issues to be addressed in the EIR. Approximately 50 copies of the Notice of Preparation were mailed to a broad range of stakeholders, including state, federal, and local regulatory agencies and jurisdictions and nonprofit organizations.

The City accepted written comments during the 30-day scoping period, June 10 to July 10, 2016. A scoping meeting was held on June 22, 2016, which one person attended. During the scoping period, one comment letter was received. This comment and oral comments received at the scoping meeting were considered in the environmental impact evaluation.

DRAFT EIR PUBLIC COMMENT PERIOD

The City has prepared this DEIR, as informed by public and agency input received during the scoping period, to disclose significant environmental impacts associated with the Proposed Program. Where any such impacts are significant, feasible mitigation measures and potentially feasible alternatives that substantially lessen or avoid such effects are identified and discussed. The public review period provides the public an opportunity to provide input to the lead agency on the DEIR.

The DEIR will undergo public review for the period specified in the Notice of Availability of the DEIR. During this period, the City will hold a public meeting. The date, time, and exact location of the public meeting will be included in the Notice of Availability of this DEIR.

SUBMITTAL OF WRITTEN COMMENTS

The City is circulating this DEIR for public review and comment for the period specified in the Notice of Availability. As discussed above, the City will host a public meeting during this period. The purpose of public circulation is to provide agencies and interested individuals with opportunities to comment on or express concerns regarding the contents of this DEIR. Specific dates, times and locations for the meeting will be provided in the Notice of Availability.

Written comments concerning this DEIR can be submitted at the public meeting described above or at any time during the DEIR public review period. All comments must be received

by 5:00 p.m. on the final date of public review as identified in the Notice of Availability, and directed to the name and address listed below:

Jim Alves, Acting Senior Civil Engineer
City of Modesto Utilities Department
P.O. Box 642 (1010 Tenth Street)
Modesto, CA 95353
jalves@modestogov.com

Submittal of written comments via e-mail (Microsoft Word or Adobe PDF format) is preferred. Written comments received in response to this DEIR during the public review period will be addressed in a Response to Comments section of the Final EIR.

AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

State CEQA Guidelines Section 15123(b) requires that an Executive Summary identify "areas of controversy known to a lead agency including issues raised by agencies and the public." There are no major areas of known controversy related to the Proposed Program or this EIR. To date, while not considered controversial, the following questions or concerns have been raised regarding the Proposed Program during the scoping period:

- Future plans for managing stormwater/flooding once the storm drain/sewer cross-connections have been removed in Modesto.
- Questions about how the WWMP evaluated leaking pipes.
- Future disposition of the Sutter Plant after treatment facilities have been decommissioned.
- Potential flooding impacts at the Jennings Plant.
- Disposition of discharges from the Cannery Segregation Outfall to the City's ranch lands.
- Need for a new third outfall pipeline and redundancy.
- WWMP area boundary and its relation to the Proposed and "Alternative" General Plan Update Land Use Map boundaries.

SIGNIFICANT IMPACTS

This section presents the significant impacts that were identified in the DEIR. This is not a comprehensive discussion of impacts of the Proposed Program; the reader is directed to **Table ES-1**, Summary of Impacts and Mitigation Measures, at the end of this chapter for additional information. Environmental resource topics with the potential for one or more significant environmental impacts and which are evaluated in detail in this DEIR include the following:

- Aesthetics and Visual Resources
- Agricultural Resources

- Air Quality
- Biological Resources
- Cultural and Paleontological and Tribal Cultural Resources
- Geology, Soils, and Seismicity
- Greenhouse Gas Emissions and Energy Use
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Population and Housing
- Transportation and Traffic
- Utilities and Service Systems
- Cumulative Impacts

Chapters 4 through 18 of this DEIR address each of these environmental resource topics and the impacts of the Proposed Program in more detail.

ALTERNATIVES CONSIDERED

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the Proposed Program that could feasibly attain most of the objectives of the Proposed Program while avoiding or substantially lessening one or more of the Proposed Program's significant effects. The range of alternatives considered must include those that offer substantial environmental advantages over the Proposed Program and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

The following alternatives have been evaluated for their potential feasibility and their ability to achieve most of the Proposed Program objectives while avoiding, reducing, or minimizing significant impacts identified for the Proposed Program:

- Alternative 1: No Program Alternative
- Alternative 2: Deferred Implementation Alternative
- Alternative 3: Primary Treatment and Solids Handling Facilities to the North of the Jennings Plant Alternative
- Alternative 4: River Trunk Realignment Project Design Alternative 4A
- Alternative 5: River Trunk Realignment Project Design Alternative 1

In addition, several alternatives were considered, but ultimately eliminated from further analysis for one or more of the following reasons: (1) they would not sufficiently meet the Proposed Program objectives; (2) they were determined to be infeasible; or (3) they would not avoid or substantially reduce one or more significant impacts of the Proposed Program. Refer to Section 20.6, "Alternatives Considered and Eliminated," in Chapter 20, *Alternatives,* for a description of these alternatives.

ALTERNATIVE 1: NO PROGRAM ALTERNATIVE

Under this alternative, no new wastewater infrastructure would be constructed or upgraded. Operation of the City's collection system and treatment facilities would continue similar to existing conditions. Under this alternative, the existing collection system and treatment

facilities would continue to operate. Existing sewer mains, trunk lines, and lift station that are currently under capacity would continue functioning but capacity issues may worsen over time.

While this alternative would not meet any of the Program objectives, it would avoid all of the impacts associated with construction and operation of the Program. No new facility construction or ground disturbing activities would occur. Impacts anticipated to be reduced include: construction-related and operation-related air pollutant and GHG emissions, traffic delays and congestion, noise and vibration effects, conversion of farmland to non-agricultural uses, and impacts on biological resources. However, by not addressing existing wastewater collection and treatment system deficiencies, significant environmental impacts could occur over time. For example, the potential for sanitary sewer overflows and subsequent water quality impacts would increase. The Sutter Plant facilities would also continue to be subject to damage during a 100-year flood event, which could have adverse effects on the Sutter Plant's operations.

ALTERNATIVE 2: DEFERRED IMPLEMENTATION ALTERNATIVE

Under the Deferred Implementation Alternative, the schedule of all program-level WWMP components would be delayed by 5 years, compared to the schedule for implementation of the Proposed Program. Under this alternative, new wastewater collection and treatment infrastructure would be constructed or upgraded as indicated for the Proposed Program, but some CIPs would be implemented at a later date. Because necessary improvements may not occur in a timely fashion, some development relying upon the new infrastructure would need to be postponed. This alternative would delay the City's ability to meet Program objectives and thus would not fully meet objectives aimed to provide sewer infrastructure in a timely and cost-effective manner to serve new growth within the General Plan and City's SOI. While this alternative would not necessarily avoid significant impacts of the Proposed Program, extending the overall schedule would reduce the severity of construction impacts for the 5-year period. Construction-related impacts such as traffic congestion and delays, air pollutant emissions, and noise and vibration would be reduced when compared to the Proposed Program.

ALTERNATIVE 3: PRIMARY TREATMENT AND SOLIDS HANDLING FACILITIES TO THE NORTH OF JENNINGS PLANT ALTERNATIVE

This alternative was evaluated in the City's Wastewater Treatment Master Plan (Carollo Engineers 2016) and entails purchasing of approximately 50 acres of land to the north of the Jennings Plant. Instead of constructing the new primary treatment facilities east of the proposed Biological Nutrient Removal/tertiary treatment facilities, as proposed under the Proposed Program, these facilities would be constructed on purchased land to the north of the Jennings Plant along the alignment of the two existing outfall pipelines. Compared to the Proposed Program, this alternative would involve less complex yard piping since the new primary treatment and solids handling facilities would be sited adjacent to the existing outfall pipelines and could more directly tie into the secondary treatment facilities.

This alternative would result in similar impacts as the Proposed Program but construction-related air quality impacts, GHG emissions, and hazards and hazardous material impacts would be slightly reduced since less pipeline construction would occur.

ALTERNATIVE 4: RIVER TRUNK REALIGNMENT PROJECT DESIGN ALTERNATIVE 4A

Alternative 4A from the Preliminary Design Report (Carollo Engineers 2015), referred to as Alternative 4 in this EIR, was carried forward for analysis because it would achieve most of the Program objectives and would reduce one or more significant environmental impacts. Alternative 4 would generally follow the same alignment as the proposed River Trunk Realignment Project, and would not involve construction of the Shackelford Pump Station. Rather, the existing pipeline that would otherwise tie into the Shackelford Pump Station under the Proposed Program, would tie into existing sewer lines that cross the Tuolumne River. This alternative would include rehabilitation of the Sutter Trunk within Sutter Avenue, and also would involve constructing the River Trunk Pump Station at a slightly different location than under the Proposed Program, between Highway 99 and 7th Street.

This alternative would result in less construction impacts than the Proposed Program since it would not involve construction of the Shackelford Pump Station. As such, construction-related impacts pertaining to noise, air quality, GHG emissions, hydrology and water quality, biological resources, geology and soils, and hazards and hazardous materials would be less than the Proposed Program.

ALTERNATIVE 5: RIVER TRUNK REALIGNMENT PROJECT DESIGN ALTERNATIVE 1

The alternative would replace the Beard Brook Siphon with an 1,800-linear-foot, triple barrel inverted siphon. Capacity deficiencies in the River Trunk would be mitigated by constructing a peak-flow diversion structure that diverts flows to the Cannery Segregation Line (CSL) during wet weather events, such that capacity in the CSL can be used to convey peak domestic wastewater flows. A second diversion structure would be constructed upstream of the Sutter Plant to divert the flows back to the River Trunk for primary treatment. Additionally, the alternative would mitigate capacity deficiencies in the Sutter Trunk by replacing the existing sewer with a new 24-inch diameter gravity sewer. The existing River Trunk also would be rehabilitated to correct its deteriorating condition.

This alternative would generally result in less construction impacts (e.g., air quality, GHG emissions, noise, biological resources, cultural resources, and other topics) than the Proposed Program as it would entail less pipeline construction. However, this alternative would not correct existing issues associated with operations and maintenance access and vulnerability issues of the River Trunk and CSL due to their location along the Tuolumne River.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Of the alternatives, the No Program Alternative would be environmentally superior because it would generally reduce or avoid most impacts of the Proposed Program. Consistent with the CEQA Guidelines, the following paragraphs describe the environmentally superior alternative amongst the other alternatives.

Both Alternative 4 (River Trunk Realignment Project Design Alternative 4A) and Alternative 5 (River Trunk Realignment Project Design Alternative 1) would result in less environmental impacts than the proposed River Trunk Realignment Project. Between these two alternatives, Alternative 5 would be environmentally superior because it would result in substantially less environmental impacts than Alternative 4. Alternative 5 would involve less new pipeline construction and would not involve new pump station construction. As a result, construction-

related disturbance on sensitive receptors (including noise and vibration, air pollutant and GHG emissions, and traffic impacts) would be less. Construction footprint impacts would also be less under Alternative 5 (e.g., biological and cultural resources impacts) in comparison to Alternative 4.

In comparing Alternative 3 (Primary Treatment and Solids Handling Facilities to the North of the Jennings Plant) to Alternative 2 (Deferred Implementation Alternative), Alternative 2 would be environmentally superior because, on the whole, this alternative would reduce construction impacts at a given time since some CIPs would be delayed, though they would eventually occur. Under Alternative 3, the construction timeframe for collection system components would be the same as the Proposed Program and would therefore would result in greater construction impacts collectively compared to Alternative 2.

On the whole, when comparing the EIR alternatives against the Proposed Program, the Proposed Program best meets the goals and objectives of the Program.

SUMMARY OF IMPACTS AND LEVELS OF SIGNIFICANCE

The impacts of the Proposed Program, proposed mitigation, and significance conclusions before and after mitigation are discussed in detail in Chapters 4 through 18 of this DEIR. **Table ES-1** summarizes the impacts, mitigation measures, and levels of significance identified in this document.

Table ES-1. Summary of Impacts and Mitigation Measures

Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Aesthetics and Visual Resources				
Impact AES-1: Adverse Effects on Scenic Vistas	LS	LS	LS	None required
Impact AES-2: Damage to Scenic Resources	LS	LS	LS	None required
Impact AES-3: Degradation of Visual Character or Quality of Site and Surroundings During Construction	LSM	CS, SP, OP: LSM JP: LS	LSM	**Mitigation Measure AES-1**: Locate Staging Areas Away from Public Areas and Install Screening (CS, SP, OP, River Trunk Project)
Impact AES-4: Degradation of Visual Character or Quality of Site and Surroundings During Program Operation	LS	CS, OP, SP, JP: LS	LS	None required
Impact AES-5: Permanent Source of Substantial Light or Glare	LS	CS, OP, SP, JP: LS	LS	None required
Agricultural Resources				
Impact AG-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-agricultural Use	SU	CS, JP: SU OP: LS SP: NI	NI	None
Impact AG-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract	LS	CS, JP, OP: LS SP: NI	NI	None required

* Key to Significance Levels: B = beneficial; NI = no impact; LS = less than significant; LSM = less than significant with mitigation; SU = significant and unavoidable

** Key to program-level components: CS = Collection System; JP = Jennings Plant; LSC = Lift Station Components; OC = Other Components; OP = Outfall Pipelines; SPR = New/Upgraded Sewer Pipelines and Pipeline Rehabilitation; SP = Sutter Plant

Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact AG-3: Involve Other Changes in the Existing Environment Which, Due to Their Location or Nature, Could Result in Conversion of Farmland to Non-agricultural Use	LS	LS	LS	None required
Air Quality				
Impact AQ-1: Conflict with or Obstruct Implementation of an Applicable Air Quality Plan	SU	SU	SU	None available
Impact AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	LSM	LSM	LS	**Mitigation Measure AQ-1**: Implement SJVAPCD Regulation VIII Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-2:** Implement Enhanced Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-3:** Implement Control Measures for Operation Emissions of PM10 and for Ozone Precursors (ROG and NO_x) (Program-level Components)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact AQ-3: 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	SU	SU	SU	**Mitigation Measure AQ-1**: Implement SJVAPCD Regulation VIII Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-2:** Implement Enhanced Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-3:** Implement Control Measures for Operation Emissions of PM10 and for Ozone Precursors (ROG and NO_x) (Program-level Components)
Impact AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations	LSM	LSM	LSM	**Mitigation Measure AQ-1**: Implement SJVAPCD Regulation VIII Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-2:** Implement Enhanced Control Measures for Construction Emissions of PM_{10} (Program-level Components) **Mitigation Measure AQ-3:** Implement Control Measures for Operation Emissions of PM10 and for Ozone Precursors (ROG and NO_x) (Program-level Components)
Impact AQ-5: Create Objectionable Odors Affecting a Substantial Number of People	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Biological Resources				
Impact BIO-1: Impacts on Special-Status Plants	LSM	SP, JP: LS OP, CS: LSM	LSM	**Mitigation Measure BIO-1:** Perform Focused Surveys for Special-status Plant Species (OP, CS, River Trunk Project) **Mitigation Measure BIO-2:** Avoid, Minimize, and Compensate for Impacts on Special-status Plant Species (OP, CS, River Trunk Project)
Impact BIO-2: Impacts on Vernal Pool Branchiopods and Western Spadefoot	LSM	LSM	NI	**Mitigation Measure BIO-3:** Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat (Program-level Components) **Mitigation Measure BIO-4:** Minimize and Compensate for Impacts on Branchiopods, Western Spadefoot, and Their Habitat (Program-level Components)
Impact BIO-3: Impacts on Valley Elderberry Longhorn Beetle	LSM	LSM	LSM	**Mitigation Measure BIO-5:** Avoid Impacts on VELB Habitat (Program-level Components, River Trunk Project) **Mitigation Measure BIO-6:** Implement VELB Compensatory Mitigation, if Necessary (Program-level Components, River Trunk Project) **Mitigation Measure BIO-7:** Transplant Elderberry Shrubs if Avoidance Is Not Feasible (Program-level Components, River Trunk Project)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact BIO-4: Impacts on Special-status Fishes	LSM	SP, JP: LS OP, CS A-1 and A-2: LSM OC: NI	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods (OP, CS, River Trunk Project)
Impact BIO-5: Impacts on Western Pond Turtle	LSM	OP, CS, SP, JP: LSM	LSM	**Mitigation Measure BIO-8**: Conduct Preconstruction Surveys for and Minimize Impacts on Western Pond Turtle (Program-level Components, River Trunk Project)
Impact BIO-6: Impacts on Burrowing Owl	LSM	LSM	LS	**Mitigation Measure BIO-9**: Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas If Necessary (Program-level Components)
Impact BIO-7: Impacts on Golden Eagle and Bald Eagle	LS	LS	LS	None required
Impact BIO-8: Impacts on Raptors, Including Special-status Species	LSM	LSM	LSM	**Mitigation Measure BIO-10**: Avoid and Minimize Impacts on Raptors, Including Special-status Species (Program-level Components, River Trunk Project) **Mitigation Measure BIO-11:** Compensate for Loss of Raptor Foraging Habitat (Program-level Components, River Trunk Project)
Impact BIO-9: Impacts on Special-status Passerine Species and Birds Protected under the MBTA	LSM	LSM	LSM	**Mitigation Measure BIO-12:** Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas If Necessary (Program-level Components, River Trunk Project)
Impact BIO-10: Impacts on Special-status Mammals	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact BIO-11: Impacts on Riparian Habitat and Other Sensitive Natural Communities	LSM	OP, CS: LSM SP, JP: LS	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods (OP, CS, River Trunk Project) **Mitigation Measure BIO-3:** Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat (OP, CS, River Trunk Project) **Mitigation Measure BIO-4:** Minimize and Compensate for Impacts on Branchiopods, Western Spadefoot, and Their Habitat (OP, CS, River Trunk Project)
Impact BIO-12: Impacts on Federally Protected Wetlands	LSM	SP, JP: LS OP, CS: LSM	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods (OP, CS Components A-1 and A-2, River Trunk Project) **Mitigation Measure BIO-13**: Avoid and Minimize Impacts on Federally Protected Wetlands (OP, CS, River Trunk Project) **Mitigation Measure BIO-14**: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State (OP, CS, River Trunk Project)
Impact BIO-13: Impacts on Wildlife Movement, Established Wildlife Corridors, or the Use of Native Wildlife Nursery Sites	LSM	LSM	LSM	**Mitigation Measure BIO-8**: Avoid and Minimize Impacts on Western Pond Turtle (OP, CS, JP, SP, River Trunk Project)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
				Mitigation Measures BIO-9: Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas If Necessary (OP, SP, JP, CS, River Trunk Project) **Mitigation Measure BIO-10:** Avoid, Minimize, or Compensate for Impacts on Raptors, including Special-status Species (SP, JP, CS except A-1 and A-2) **Mitigation Measure BIO-11:** Compensate for Loss of Raptor Foraging Habitat (OP, CS, SP, JP, River Trunk Project) **Mitigation Measure BIO-12:** Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas If Necessary (OP, SP, JP, CS, River Trunk Project) **Mitigation Measure BIO-15**: Install Temporary Trench Plates over Open Trenches (OP, SP, JP, CS, River Trunk Project)
Impact BIO-14: Conflict with Local Ordinances or Policies Protecting Biological Resources	LSM	LSM	LSM	**Mitigation Measure BIO-1**: Perform Project-specific Site Assessment for Biological Resources (Program-level Components, River Trunk Project) **Mitigation Measure BIO-2**: Perform Surveys for Special-status Plant Species (OP, CS, River Trunk Project) **Mitigation Measure BIO-3:** Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat (Program-level Components, River Trunk Project)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
				Mitigation Measure BIO-4: Minimize Impacts on Special-status Plant Species (Program-level Components, River Trunk Project) **Mitigation Measure BIO-5:** Avoid Impacts on VELB Habitat (Program-level Components, River Trunk Project) **Mitigation Measure BIO-6:** Implement VELB Compensatory Mitigation, if Necessary (Program-level Components, River Trunk Project) **Mitigation Measure BIO-7:** Transplant Elderberry Shrubs if Avoidance Is Not Feasible (Program-level Components, River Trunk Project) **Mitigation Measure BIO-8**: Avoid and Minimize Impacts on Western Pond Turtle (OP, CS, SP, JP, River Trunk Project) **Mitigation Measures BIO-9**: Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas If Necessary (Program-level Components)) **Mitigation Measure BIO-10:** Avoid, Minimize, or Compensate for Impacts on Raptors, including Special-status Species (Program-level Components, River Trunk Project) **Mitigation Measure BIO-11:** Compensate for Loss of Raptor Foraging Habitat (Program-level Components, River Trunk Project)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
				Mitigation Measure BIO-12: Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas If Necessary (Program-level Components, River Trunk Project) **Mitigation Measure BIO-13**: Avoid and Minimize Impacts on Federally Protected Wetlands (SP, JP, CS, River Trunk Project) **Mitigation Measure BIO-14**: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State (OP, CS, River Trunk Project) **Mitigation Measure BIO-15**: Install Temporary Trench Plates over Open Trenches (Program-level Components, , River Trunk Project)
Cultural Paleontological, and Tribal Cultural Resources				
Impact CR-1: Impacts on Known Historic, Archaeological, or Tribal Resources	LS	LS	NI	None required
Impact CR-2: Impacts on Previously Undiscovered Archaeological Resources	LSM	LSM	LSM	**Mitigation Measure CR-1**: Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work (Program-level Components, River Trunk Project)
Impact CR-3: Disturb Any Human Remains, Including those Interred Outside of Dedicated Cemeteries	LSM	LSM	LSM	**Mitigation Measure CR-1**: Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work (Program-level Components, River Trunk Project)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact CR-4: Impacts on Paleontological Resources	LS	LS	LS	None required
Impact CR-5: Potential for Substantial Adverse Impact on Tribal Cultural Resources	LSM	LSM	LSM	**Mitigation Measure CR-1**: Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work (Program-level Components, River Trunk Project)
Geology, Soils, and Seismicity				
Impact GEO-1: Cause Damage to Facilities and Exposure of People to Hazards from Strong Seismic Events, Including Ground Shaking or Landslides	LS	LS	LS	None required
Impact GEO-2: Result in Risk to Property and Life from Expansive Soils	LS	LS	LS	None required
Impact GEO-3: Result in Substantial Soil Erosion or Loss of Topsoil	LS	LS	LS	None required
Impact GEO-4: Result in Subsidence, Liquefaction, or Collapse Due to Seismic Activity or an Unstable Geologic Unit or Soil	LS	LS	LS	None required
Greenhouse Gas Emissions and Energy Resources				
Impact GHG-1: Potential to Generate a Substantial Amount of GHG Emissions	SU	SU	LS	None
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs	SU	SU	LS	None

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact GHG-3: Cause Wasteful, Inefficient, and Unnecessary Consumption of Energy During Construction, Operation, and/or Maintenance	LS	LS	LS	None required
Impact GHG-4: Cause a Substantial Increase in Energy Demand and the Need for Additional Energy Resources	LS	LS	LS	None required
Hazards and Hazardous Materials				
Impact HAZ-1: Create a Substantial Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Construction	LS	LS	LS	None required
Impact HAZ-2: Create a Substantial Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Operation	LS	LS	LS	None required
Impact HAZ-3: 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 during Construction	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact HAZ-4: 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 during Operation	LS	LS	LS	None required
Impact HAZ-5: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School	LS	LS	LS	None required
Impact HAZ-6: Location 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, Create a Significant Hazard to the Public or the Environment	LS	LS	NI	None required
Impact HAZ-7: Location in an Airport Land Use Plan or within 2 Miles of a Public Airport or in the Vicinity of a Private Airstrip, Resulting in a Safety Hazard for People Residing or Working in the Program Area	LS	LS	LS	None required
Impact HAZ-8: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact HAZ-9: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires, Including Where Wildlands Are Adjacent to Urbanized Areas or Where Residences Are Intermixed with Wildlands	NI	NI	NI	None required
Hydrology and Water Quality				
Impact HYD/WQ-1: Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Degrade Water Quality during Construction	LSM	LSM	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods (Program-level Components, River Trunk Project)
Impact HYD/WQ-2: Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Degrade Water Quality during Operation	LS	LS	B	None required
Impact HYD/WQ-3: Substantially Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That There Would be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level	LS	LS	LS	None required
Impact HYD/WQ-4: Substantially Alter the Existing Drainage Pattern of the Site or Area Such as to Result in Substantial Erosion, Siltation, or Flooding On- or Off-Site	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact HYD/WQ-5: 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	LS	LS	LS	None required
Impact HYD/WQ-6: Place Within a 100-year Flood Hazard Area Structures Which Would Impede or Redirect Flood Flows	LSM	SPR, OP: NI OC: NI LSC: LSM SP, JP: LS	LS	**Mitigation Measure HYD/WQ-2**: Conduct Flood Flow Study for Benson Lift Station (Component LS #3)
Impact HYD/WQ-7: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam	LS	LS	LS	None required
Land Use and Planning				
Impact LU-1: Divide an Established Community	LS	LS	LS	None required
Impact LU-2: Conflict with Land Use Plans, Policies, or Regulations Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Noise and Vibration				
Impact NOI-1: Expose Persons to Noise Levels in Excess of Standards Established in a Local General Plan or Noise Ordinance or in the Applicable Standards of Other Agencies	LSM	LSM	LSM	**Mitigation Measure NOI-1:** Employ Noise-Reducing Construction and Maintenance Practices (Program-level Components, River Trunk Project) **Mitigation Measure NOI-2**: Limit Nighttime Construction Noise (Program-level Components, River Trunk Project) **Mitigation Measure NOI-3:** Prepare Project-level Noise Analysis for Operation of Proposed Sutter Plant Components (SP) **Mitigation Measure NOI-4**: Employ Noise-Reducing Methods During Operations (SP)
Impact NOI-2: Expose Persons to Excessive Groundborne Vibration or Groundborne Noise Levels	LSM	LSM	LSM	**Mitigation Measure NOI-5**: Implement Vibration Reduction Measures (River Trunk Project, Program-level Components)
Impact NOI-3: Substantial permanent Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program	LSM	SPR, OC, OP: NI JP: LS LSC, SP: LSM	LS	**Mitigation Measure NOI-3**: Prepare Project-level Noise Analysis for Operation of Proposed Sutter Plant Components (SP) **Mitigation Measure NOI-4**: Employ Noise-Reducing Methods During Operations (SP, LSC)

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact NOI-4: Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program	SU	LSM	SU	**Mitigation Measure NOI-1:** Employ Noise-Reducing Construction and Maintenance Practices (Program-level Components, River Trunk Project) **Mitigation Measure NOI-2:** Limit Nighttime Construction Noise (Program-level Components, River Trunk Project)
Impact NOI-5: Expose People Residing or Working in the Program Area to Excessive Noise Levels Associated with a Public Airport	LS	LS	LS	None required
Population and Housing				
Impact PH-1: Induce Substantial Population Growth, Both Directly and Indirectly, during Construction	LS	LS	LS	None required
Impact PH-2: Displace Substantial Numbers of People or Existing Housing, Necessitating the Construction of Replacement Housing Elsewhere	NI	NI	NI	None required
Impact PH-3: Long-term Inducement of Substantial Population Growth, Both Directly and Indirectly	LSM	LSM	LSM	Mitigation Measures AES-1, AQ-1 through AQ-3, BIO-1 through BIO-15, CR-1 through CR-3, HYD/WQ-1, and NOI-1 through NOI-5.
Transportation and Traffic				
Impact TR-1: Conflict with Applicable Circulation Plans, Ordinances, or Policies Establishing Measures of Effectiveness for the Performance of the Circulation System	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Impact TR-2: Conflict with an Applicable Congestion Management Program	LS	LS	LS	None required
Impact TR-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses	LS	LS	LS	None required
Impact TR-4: Result in Inadequate Emergency Access	LS	LS	LS	None required
Impact TR-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Features	LS	LS	LS	None required
Utilities and Service Systems				
Impact UTL-1: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects	LS	LS	LS	None required
Impact UTL-2: Require New or Expanded Water Supply Entitlements	NI	NI	NI	None required
Impact UTL-3: Require Additional Permitted Landfill Capacity to Accommodate the Project's Solid Waste Disposal Needs	LS	LS	LS	None required
Impact UTL-4: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste	LS	LS	LS	None required

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Impact	Level of Significance after Mitigation*			Mitigation Measure(s)
	Overall Program	Program-level Components**	River Trunk Realignment Project (Project-level Components)	
Cumulative Impacts				
Impact CUM-1: Cumulative Impacts on Aesthetics	LSM			Mitigation Measure AES-1
Impact CUM-2: Cumulative Impacts on Agriculture	SU			None available
Impact CUM-3: Cumulative Impacts on Biological Resources	LSM			Mitigation Measures BIO-1 through BIO-15 Mitigation Measure HYD/WQ-1
Impact CUM-4: Cumulative Impacts on Cultural, Paleontological Resources, and Tribal Cultural Resources	LSM			Mitigation Measures CR-1 through CR-3
Impact CUM-5: Cumulative Impacts on Hydrology and Water Quality	LSM			Mitigation Measure HYD/WQ-1
Impact CUM-6: Cumulative Impacts related to Noise and Vibration	SU			Mitigation Measures NOI-1 through NOI-5
Impact CUM-7: Cumulative Impacts related to Transportation and Traffic	LS			None required
Impact CUM-8: Cumulative Impacts on Utilities and Service Systems	B			None required

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Chapter 1
INTRODUCTION

The City of Modesto (City) has prepared this Draft Environmental Impact Report (DEIR) as lead agency to provide the public, responsible agencies, and trustee agencies with information about the environmental effects of implementation of the proposed 2016 Wastewater Collection System Master Plan and the 2016 Wastewater Treatment Master Plan, which are collectively referred to as the proposed 2016 Wastewater Master Plan (Proposed Program or WWMP). The Proposed Program updates and replaces the City's 2007 Wastewater Master Plan. The Wastewater Master Plan is intended to accommodate the wastewater collection service needs of the population and land uses of the City along with the City's other sanitary sewer customers in unincorporated areas (e.g., north Ceres, community of Empire, and other isolated areas within the City's Sphere of Influence) of through 2057, and to accommodate wastewater treatment needs for those same customers through 2035.

The following sections provide an overview of the California Environmental Quality Act (CEQA) requirements, organization of the DEIR, and process in which comments may be submitted on this DEIR. The last section describes the City's existing wastewater system.

1.1 Overview of CEQA Requirements

CEQA's basic purposes are to (State CEQA Guidelines Section 15002[a]):

1. Inform governmental decision-makers and the public about the potential, significant environmental effects of the Program's proposed activities.
2. Identify the ways that environmental damage can be avoided or significantly reduced.
3. Prevent significant, avoidable damage to the environment by requiring implementation of feasible mitigation measures or Program/project alternatives that would substantially lessen any significant effects that the Program (or a particular project) would have on the environment.
4. Disclose to the public the reasons why a governmental agency approved the Program in the manner the agency chose if significant environmental effects are involved.

With certain strictly limited exceptions, CEQA requires all state and local government agencies to consider the environmental consequences of projects over which they have discretionary authority before approving or carrying out projects. CEQA establishes both procedural and substantive requirements that agencies must satisfy to meet CEQA's objectives. For example, the agency with principal responsibility for approving or carrying out a project (the lead agency) must first assess whether a proposed project would result in significant environmental impacts. If there is substantial evidence that the project would result in significant environmental impacts, CEQA requires that the agency prepare an environmental impact report (EIR), analyzing both the proposed project and a reasonable range of potentially feasible alternatives.

As described in the State CEQA Guidelines (California Code of Regulations [CCR] Title 14, Section 15121-a]), an EIR is an informational document that assesses potential environmental effects of a proposed project, and identifies mitigation measures and alternatives to the project that could reduce or avoid significant environmental impacts. Other key CEQA requirements include developing a plan for monitoring the implementation of identified mitigation measures and carrying out specific public notice and distribution steps to facilitate public involvement in the environmental review process. As an informational document used in the planning and decision-making process, an EIR's purpose is not to recommend either approval or denial of a project. Note that an EIR does not expand or otherwise provide independent authority of the lead agency to impose mitigation measures or avoid project-related significant environmental impacts beyond the authority already within the lead agency's jurisdiction.

1.1.1 Intent and Scope of this Document

In proposing to conduct the various activities identified in Chapter 2 of this DEIR, the City is proposing to carry out and approve a discretionary project subject to CEQA (State CEQA Guidelines Section 15378). This DEIR was prepared to disclose further details of the Proposed Program, as well as the significant effects of the proposed capital improvement projects (CIPs) on the environment. The DEIR analysis considers most Program components at a program level of detail, and one individual component at a project-specific level of detail. The City will use the analyses presented in this DEIR, the public response to the DEIR, and the whole of the administrative record, to evaluate the Proposed Program's environmental impacts and to further modify, approve, or deny approval of the Proposed Program. Responsible agencies under CEQA, such as the Central Valley Regional Water Quality Control Board (Central Valley RWQCB), California Department of Fish and Wildlife (CDFW), Central Valley Flood Protection Board (CVFPB), and other agencies listed in Section 2.6, may use the EIR to support their decisions to issue permits or make other types of approvals for the Proposed Program.

This DEIR evaluates the majority of the Proposed Program at a program level of detail, as defined in State CEQA Guidelines Section 15168(a):

> A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:
>
> (1) Geographically,
>
> (2) As logical parts in the chain of contemplated actions,
>
> (3) In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or
>
> (4) As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

As described in State CEQA Guidelines Section 15168(c), for program-level components, subsequent activities implemented under the Proposed Program may require additional

environmental review if those activities would have effects that were not examined in this program EIR.

One portion of the Proposed Program, the River Trunk Realignment Project, has been evaluated at a project level of detail, as this project is ripe for implementation, and sufficient information exists to allow for a project-level evaluation without the need for further CEQA compliance beyond this EIR.

1.2 CEQA Process

1.2.1 Notice of Preparation

A Notice of Preparation (NOP) for the Proposed Program was prepared pursuant to the State CEQA Guidelines (Section 15082) and circulated to the Office of Planning and Research's State CEQA Clearinghouse on June 10, 2016. The scoping period continued for 30 days and concluded on July 10, 2016. The NOP presented general background information on the Proposed Program, the scoping process, and the environmental issues to be addressed in the EIR. Approximately 50 copies of the NOP were mailed to a broad range of stakeholders including state, federal, and local regulatory agencies and jurisdictions, non-profit organizations, and school districts. The NOP is included in this DEIR in Appendix A, *Scoping Summary*.

1.2.2 Scoping Comments and Meetings

The City accepted written comments during the 30-day scoping period, June 10 to July 10, 2016. A scoping meeting was held on June 22, 2016, at which one person attended the meeting. During the scoping period, one comment letter was received. This comment along with oral comments received at the scoping meeting were considered in the environmental impact evaluation. Copies of comment letters received during the scoping period are included in Appendix A, *Scoping Summary*.

1.2.3 Draft EIR

The City has prepared this DEIR, as informed by public and agency input received during the scoping period, to disclose significant environmental impacts associated with the Proposed Program. Where any such impacts are significant, feasible mitigation measures and potentially feasible alternatives that substantially lessen or avoid such effects are identified and discussed. The public review period provides the public an opportunity to provide input to the lead agency on the DEIR.

1.2.4 Public Review and Meetings

The DEIR will undergo public review for the period specified in the Notice of Availability of the DEIR. During this period, the City will hold a public meeting. The date, time, and exact location of the public meeting will be included in the Notice of Availability of this DEIR.

1.2.5 Final EIR

Written and oral comments received in response to the DEIR will be addressed in a Response to Comments document which, together with the DEIR and any related changes to the substantive discussion in the DEIR, will constitute the Final EIR. The Final EIR, in turn, will inform the City's exercise of its discretion as a lead agency under CEQA in deciding whether or how to approve the Proposed Program.

1.3 Organization of this DEIR

This DEIR contains the following components:

Executive Summary. A summary of the Program, a description of the issues of concern, Project alternatives, and a summary of environmental impacts and mitigation measures are provided in this chapter.

Chapter 1, *Introduction*. This chapter describes the purpose and organization of the EIR and its preparation, review, and certification process.

Chapter 2, *Program Description*. This chapter summarizes the Program, including a description of the Program purpose and objectives, a brief description of the Program area and study area, and proposed actions that would be taken under the Project.

Chapter 3, *Introduction to the Environmental Analysis*. This chapter is an introduction to the impact analysis conducted in this DEIR. This chapter also identifies resource topic areas determined not to be affected by the Program and therefore have been dismissed from further analysis in this Draft EIR.

Chapters 4-18 describe the environmental resources and environmental impacts of the Program. Each of these chapters describes the existing local and regional setting and background information for the resource topic area under consideration to aid the reader in understanding the conditions that could be affected by the Proposed Program. In addition, each of these chapters includes a discussion of the criteria used in determining the significance levels of the Program's environmental impacts. Each of these chapters also provides mitigation measures to reduce, where feasible, the adverse effects of significant impacts.

Chapter 19, *Other Statutory Considerations*, addresses the Proposed Program's contribution to cumulative impacts, outlines the Proposed Program's growth-inducing impacts, and identifies significant and irreversible environmental changes resulting from the Proposed Program.

Chapter 20, *Alternatives Analysis*. This chapter describes the process by which alternatives to the Proposed Program were developed and screened, evaluates their likely environmental impacts, and identifies the environmentally superior alternative.

Chapter 21, *Report Preparation*, lists the individuals involved in preparing this DEIR.

Chapter 22, *References*, provides a bibliography of printed references, websites, and personal communications used in preparing this DEIR.

Appendix A, *Scoping Summary*. This appendix contains the NOP issued by the City, materials from the scoping process, a summary of comments received during the scoping period, and copies of all comments submitted.

Appendix B contains supporting documentation for the air quality and global climate change impacts evaluation.

Appendix C contains the supporting documentation for the biological resource impacts evaluation.

Appendix D contains the supporting documentation for the cultural resource impacts evaluation.

Appendix E contains the supporting documentation for the noise and vibrations impacts evaluations.

Appendix F contains the supporting documentation for the evaluation of tribal cultural resources.

1.4 Submittal of Comments

The City is circulating this DEIR for public review and comment for the period specified in the Notice of Availability. As discussed above, the City will host a public meeting during this period. The purpose of public circulation is to provide agencies and interested individuals with opportunities to comment on or express concerns regarding the contents of this DEIR. Specific dates, times and locations for the meeting will be provided in the Notice of Availability, which will be posted on the City's website (www.modestogov.com), and in a newspaper notice.

This CEQA document is also available for review at the aforementioned City website. Hard copies can be reviewed at the City's Utilities Department offices in Modesto, California. To arrange to view documents during regular business hours (8:00 a.m. to 4:30 p.m., Monday through Friday), call (209) 577-5395. This DEIR also can be reviewed electronically at the Stanislaus County library (1500 I Street, Modesto, California), which is serving as a document repository.

Written comments concerning this DEIR can be submitted at the public meeting described above or at any time during the DEIR public review period. All comments must be received by 5:00 p.m. on the final date of public review as identified in the Notice of Availability, and directed to the name and address listed below:

Jim Alves, Associate Civil Engineer
City of Modesto Utilities Department
1010 Tenth Street, Suite 4600
Modesto, CA 95354
P.O. Box 642, Modesto, CA 95353
jalves@modestogov.com

Submittal of written comments via e-mail (Microsoft Word or Adobe PDF format) is preferred. Written comments received in response to this DEIR during the public review period will be addressed in a Response to Comments section of the Final EIR.

1.5 Proposed Program Location and Setting

The Proposed Program is located in the City of Modesto, California. The City's wastewater service area includes all incorporated areas of Modesto, a portion of north Ceres, the unincorporated community of Empire, and unincorporated "islands" in Stanislaus County that are served by agreement (see **Figures 1-1** and **1-2**). Note that although not shown in Figure 1-2, the City also provides wastewater service to an approximately 128-acre property southeast of the East Whitmore Avenue and Crows Landing Road intersection and the County's Public Safety Center located on a 95-acre parcel southeast of the East Hackett Road and Crows Landing Road intersection. The City's wastewater treatment facilities are located on City-annexed property located about seven miles southwest of the City proper, and the Primary Effluent Outfall and Cannery Segregation Line Outfall, which are pipelines, are located in unincorporated Stanislaus County.

1.6 Existing Wastewater System

The City operates and maintains the wastewater collection system servicing the urban area of Modesto. The City's wastewater collection system is divided into two separate systems: the domestic system and the segregated cannery process water system. The City's wastewater system consists of approximately 40 sewer lift stations, more than 600 miles of sanitary lines ranging from 6 to 66 inches, 69 miles of trunk lines (pipelines greater than 15 inches in diameter), and an additional separate 15 miles of trunk lines connecting cannery food processors directly to land disposal (application) areas. Most of the City's wastewater system flows by gravity, but in some areas, lift stations (also referred to as pump stations) are necessary to convey wastewater generated within the service area to the Sutter Avenue Primary Treatment Plant (Sutter Plant) and the Jennings Road Secondary and Tertiary Treatment Plant (Jennings Plant). Key facilities at the Sutter and Jennings Plants are shown in **Figures 1-3** and **1-4**.

Once wastewater makes its way to the Sutter Plant, the wastewater undergoes primary treatment which includes several steps. The first step involves removing large objects and debris such as rags, paper, and plastics, through use of bar screens. After the screening process, the grit (sand and other inorganic particles) settles out and is removed. Once grit and debris are dried, the material is hauled to the Fink Road Landfill (4000 Fink Road in Crows Landing) for disposal. Next, the wastewater enters primary settling tanks where solids are settled out and the floating material (including grease, floatable trash, and other material) is skimmed off. The settled solids removed from the wastewater (referred to as biosolids) are then conveyed to the Sutter Plant's anaerobic digesters. Anaerobic digestion involves a

sequence in which microorganisms break down the biosolids in the absence of oxygen. Digester-produced gas is the primary fuel source for the digester boiler; however, if there is not enough of this source available, the boiler can utilize natural gas.

Digester-produced gas that exceeds the need of the boiler is flared. Once broken down, the digested solids are dewatered in drying beds and, once dry, are hauled to the Jennings Plant for application on City-owned land to irrigate fodder crops.

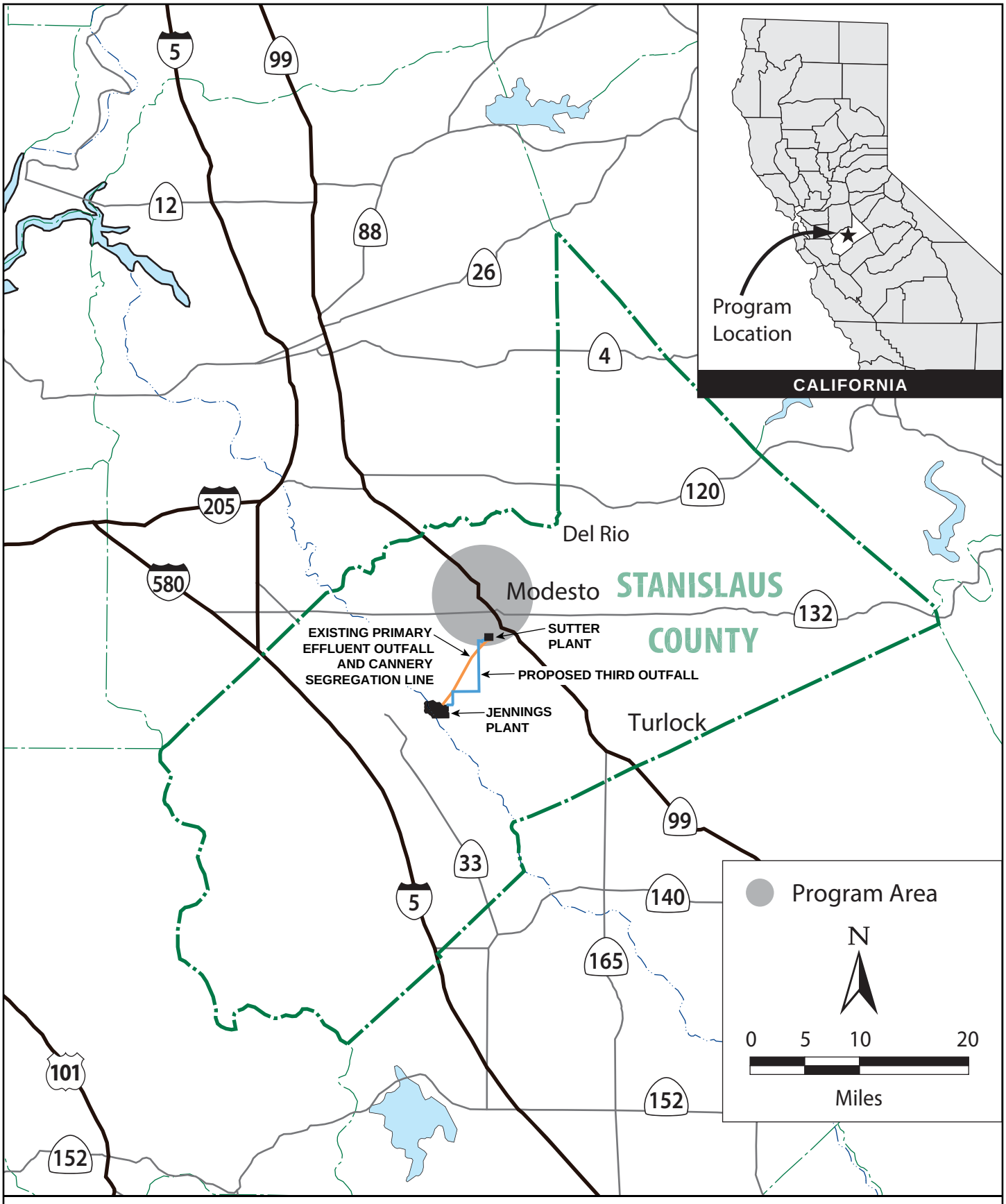
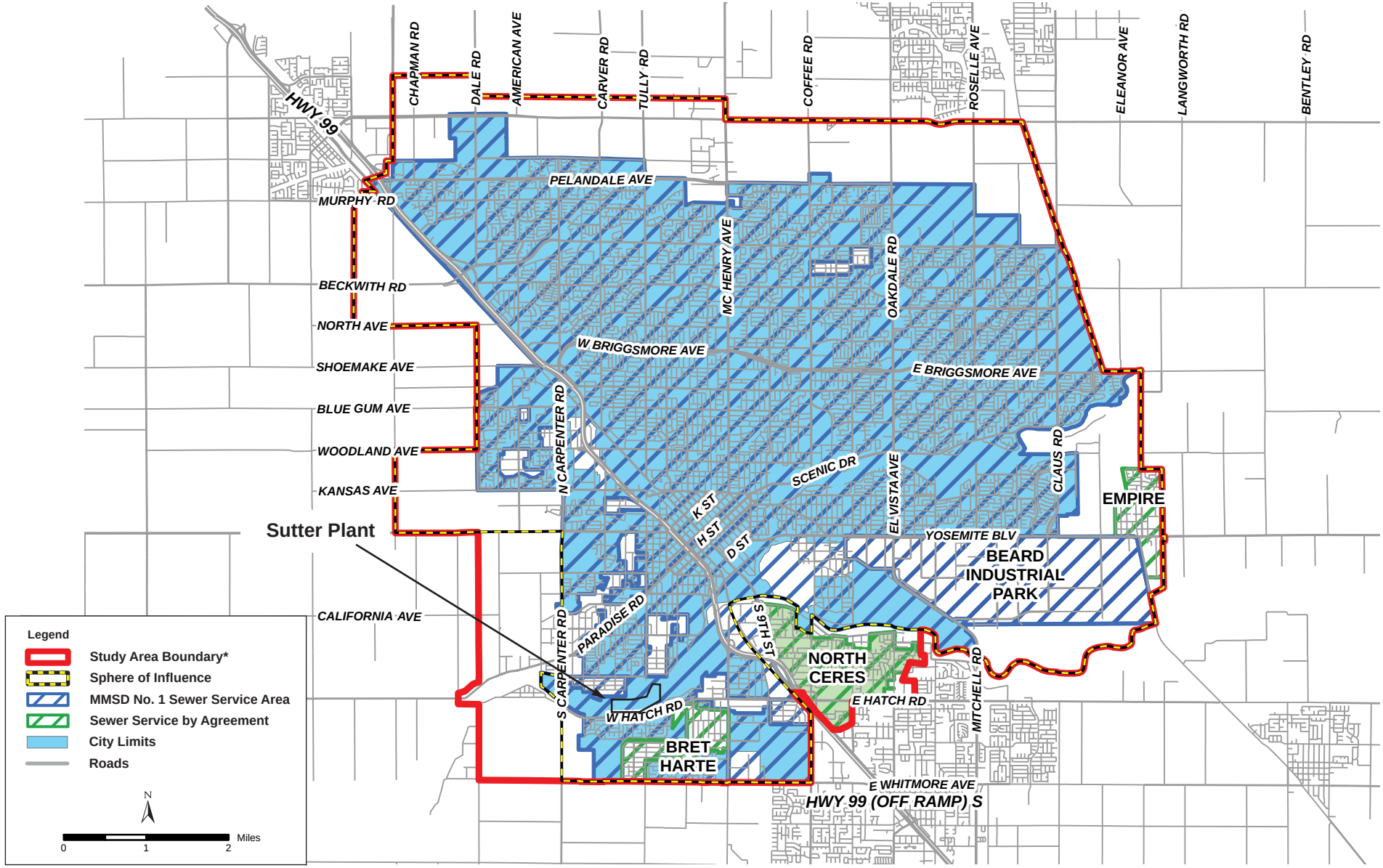


Figure 1-1.
Project Location

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR



Source: City of Modesto 2016

Figure 1-2. Wastewater Master Plan Sewer Service Study Area

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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Source: Carollo 2016a

Figure 1-3.
Existing Sutter Plant Site Plan

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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Source: Carollo 2016a

Prepared by:
Horizon WATER and ENVIRONMENT

Figure 1-4.
Existing Jennings Plant Site Plan

City of Modesto
Wastewater Master Plan EIR

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The primary effluent is then pumped through the Primary Effluent Outfall (and sometimes through the Cannery Segregation Line) to the secondary treatment facilities at the Jennings Plant. During this treatment phase, microorganisms metabolize biological matter. The secondary treatment facilities at the Jennings Plant include three fixed film reactors (140 diameter each), three facultative ponds (approximately 334 acres), approximately 600 acres of wastewater storage ponds, 100-acre aerated recirculating channel and a chlorination and dechlorination facility. Incoming primary effluent first is treated in the fixed film reactors where microorganisms break down the biological matter, then enters the recirculating channel, and then enters the three facultative ponds.

Once secondary treatment is complete, effluent either is applied to approximately 2,500 acres of agricultural ranch land owned by the City or undergoes tertiary treatment.

The City's National Pollutant Discharge Effluent System (NPDES) surface water discharge permit (Order R5-2017-0064, NPDES No. CA0079103), recently issued in June 2017, allows up to 14.9 million gallons per day (mgd) of tertiary treated wastewater discharges to the San Joaquin River year-round. The City is not permitted to discharge secondary treated wastewater to the San Joaquin River. Algae typically grows in the storage reservoirs in October and November, which generates high suspended solids concentrations that typically exceed discharge limitations. The City, however, has addressed this issue by installing dissolved air flotation (DAF) units to remove algae, which gets discharged to the southwest corner of the recirculation channel. Installation of the DAF units has allowed the City to extend the discharge season into October and November. As described further in Section 1.6.2 below, the City has constructed the first two phases of tertiary treatment facilities at the Jennings Plant. As described further in Chapter 19, *Other Statutory Considerations,* the City is also participating in the North Valley Regional Recycled Water Program (NVRRWP), which is currently being constructed and will provide recycled water to the Delta-Mendota Canal. Once the NVRRWP project is completed, up to 14.9 mgd of tertiary treated water at the Jennings Facility would be conveyed by pipeline to the Delta-Mendota Canal.

The following subsections provide more detail about the City's collection and wastewater treatment facilities.

1.6.1 Collection System

The City's lift stations are all underground but have some aboveground components including one or more control panels and a small radio antenna (up to 25 feet tall). The control panels are typically comprised of metal boxes approximately five feet high, three feet wide, and one foot thick. For underground lift stations, the above-ground portion includes a small on-store structure that is several feet long, several feet wide, and several feet high. Some lift stations also have ancillary facilities on-site such as back-up generators, storage structure, restroom facility, and/or a wash station facility. The locations of the City's lift stations, major trunk lines, and collection system pipelines are shown in **Figure 1-5**. As shown in Figure 1-5, five major trunk lines convey flows to the Sutter Plant: the West Trunk, Emerald Trunk, Sutter Trunk, River Trunk, and South Trunk. The trunk sewers range in diameter from 10 inches to 66 inches. The Cannery Segregation Line parallels the River Trunk line and conveys cannery process water from the Beard Industrial Park area to the Sutter Plant.

1.6.2 Wastewater Treatment Plants

Sutter Avenue Primary Treatment Plant

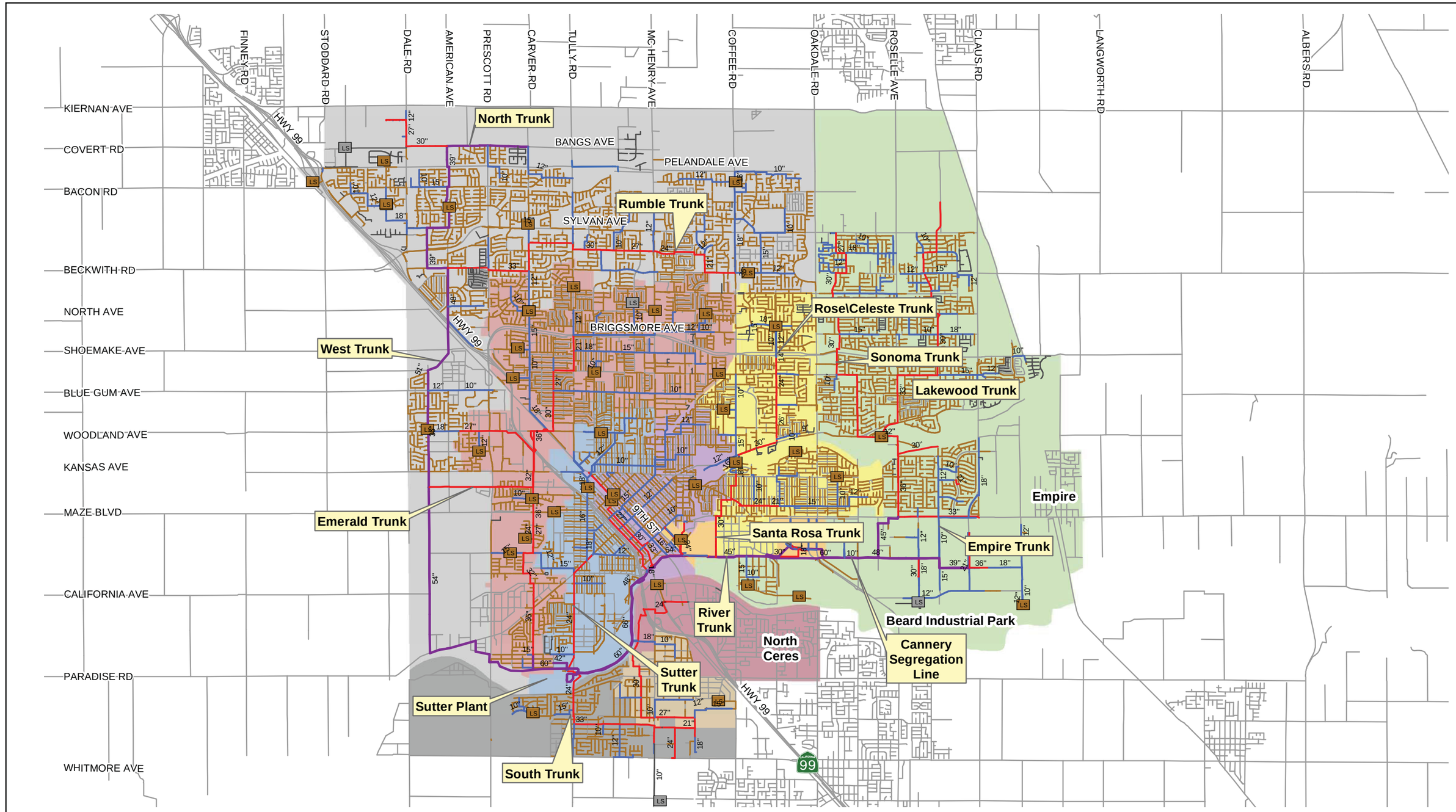
Figure 1-3 shows the current site plan of the Sutter Plant. Wastewater is transmitted to the Sutter Plant via several trunk sewer lines. Initial wastewater treatment begins at the headworks, which includes influent pumping, screening, grit removal, and primary clarification. Excess trash, debris, rags, sand, and other inorganic particles are hauled to a landfill for disposal, while removed biosolids are processed in anaerobic digesters then dried in sludge drying beds. In 2015 and 2016, the Sutter Plant removed approximately 3,000 to 4,000 tons of biosolids annually, or about half of the organic load from received wastewater. After the biosolids dry for approximately one year at the Sutter Plant's drying beds, they get delivered to the City-owned ranch lands to the south of the Jennings Plant. Primary treated wastewater (effluent) is then conveyed to the Jennings Plant for further treatment and/or disposal.

Existing Primary Effluent Outfall

Effluent from the Sutter Plant is routed underneath the Tuolumne River through the 54-inch lined Primary Effluent Outfall and 60-inch Cannery Segregation Line Outfall pipelines. From the Sutter Plant, the effluent is pumped through a river undercrossing to a point where it flows by gravity for a total length of approximately 6.5 miles south to the Jennings Plant. At the Jennings Plant, domestic effluent undergoes secondary and tertiary treatment. Both effluent outfall pipelines run predominately in a northeast to southwest direction between the two treatment plants. During the canning season (July through September or early October), canning segregated flows received at the Sutter Plant are pumped and sent directly to the Jennings Plant and get applied to ranch land.

Jennings Road Secondary Treatment Plant

Figure 1-4 shows the current site plan of the Jennings Plant. Situated on the eastern side of the San Joaquin River and approximately 5 miles northeast of Patterson, the Secondary Plant further treats incoming effluent that derives from the Sutter Plant. Wastewater enters the Jennings Plant from the Primary Effluent Outfall (and occasionally the Cannery Segregation Line Outfall) where it undergoes a multi-step biological treatment process involving three fixed film reactor towers, 300 acres of oxidation ponds, and 100 acres of recirculation ponds. Processed effluent is then transferred to 1,200 acres of storage ponds. The stored effluent is used to irrigate approximately 2,500 acres of fodder crops on City-owned ranch land, which also receives an annual application of dried and digested biosolids from the Sutter Plant. Between 2009 and 2014, the average application rate to the City-owned ranch lands was approximately 5.5 feet per year (Pers. Comm. Eve 2017). Excess effluent not used for irrigation is stored, disinfected in a chlorination/dechlorination facility, and seasonally discharged (October through May) to the San Joaquin River (City of Modesto 2016a).



Source: Carollo 2016b

Legend

Sewer Main
- 8" or Smaller
- 9" to 18"
- 20" to 36"
- Larger than 36"

- Lift Station
- Private Sewer Main
- Private Lift Station
- Roads

Sewer Tributary Areas
- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

N

1 0.5 0 1

Miles

Prepared by:

Horizon WATER and ENVIRONMENT

Figure 1-5.
Existing Wastewater Collection System

City of Modesto
Wastewater Master Plan EIR

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The City completed construction of the Phase 2 Tertiary Treatment facility at the Jennings Road site in 2015, which is now treating a blend of primary effluent from the Sutter Plant and recirculation water[1] from the Jennings Plant. Each plant has secondary biological reactors for biological oxygen demand (BOD) removal and nitrification/denitrification, membrane filtration, and ultraviolet (UV) disinfection. At full operation, the Phase 1 facility has production capacity of 2.3 mgd and is designed for year-round discharge.

The Phase 2 facility has production capacity of 12.6 mgd. This facility utilizes membrane bioreactor (MBR) filtration and ultraviolet disinfection facilities to produce higher quality effluent. This facility was constructed in an effort to maintain NPDES discharge permit compliance and improve operations as growth continues in the Modesto area.

1.6.3 Stormwater/Sanitary Systems Connections

The City's storm drainage system includes catch basins that convey rainwater to rockwells or to a storm drainage system that consists of storm drain piping and basins. Rockwells are fairly deep holes drilled into the soil and allow water to seep into the ground and above the water table.

In several areas of the City where there are no rockwells or rockwells are ineffective, the stormwater and sanitary systems are directly connected (also referred to as combined systems). These connections, known as inflow, allow excess stormwater to flow directly to the Sutter Plant. In addition to the intended connections, stormwater inadvertently enters sanitary lines through cracks in pipelines and loose pipe fittings, known as infiltration. The infiltration and inflow of stormwater (via groundwater) reduces the collection capacity of the sanitary system for wastewater flow during storm events. Though the City's sanitary sewer collection system is anticipated to receive some infiltration, the system has not been designed to handle substantial inflows from direct connections.

1.6.4 History of Previous Wastewater Master Plans

The City prepared a Wastewater Master Plan in 1995, followed by a Master EIR in 1997, that evaluated the environmental impacts of that plan. One major component of the 1995 plan included the segregation of wet industry wastes. Subsequently, in 2007, the City updated the Wastewater Master Plan and prepared a Master EIR. The Proposed Program updates and replaces the 2007 Wastewater Master Plan. For the purposes of this document, an EIR has been prepared for the Proposed Program. As described in Chapter 3, *Introduction to the Environmental Analysis*, this DEIR includes a number of components evaluated at a program level and one near-term component that is evaluated at a project level of detail.

1.6.5 Planning Challenges

This section describes challenges the City faces in planning a sufficient wastewater infrastructure to meet its needs. Specific anticipated wastewater treatment demands and

[1] Recirculation is the process of recirculating water as a way of reducing the load of organic waste in the water and increasing the amount of oxygen in the water. The water is piped back to the beginning of the treatment process and added to the raw wastewater.

planned growth are described in Section 2.4, *Projected Wastewater Flows*, of Chapter 2, *Program Description*.

The City of Modesto conducts a periodic review of the City's growth trends to identify potential areas of new growth, infill development, and urban infrastructure serving the area. Previous reviews recognized existing and planned sanitary sewer infrastructure as a potential constraint to the urban growth of the City. Some of these deficiencies were addressed in the City's 2007 Wastewater Master Plan and Capital Improvement Program. The City has made a number of improvements since the 2007 Wastewater Master Plan but still faces the challenges associated with aging infrastructure, providing reliability of critical facilities and, for future growth, providing increased capacity and extending infrastructure when it is needed.

Existing and Projected Collection System Capacity Deficiencies

According to the most recent review (2015) for City growth trends, the existing collection system lacks sufficient capacity to meet current and projected demands mostly in the lower reaches of the conveyance system. Pipes that lack adequate capacity sometimes generate backwater effects and cause wastewater surcharges or could result in overflows. Depending on the location within the service area, required sanitary sewer system improvements include upgrading or replacing sewer mains, trunk lines, and lift stations necessary to convey wastewater to treatment facilities. For example, according to a preliminary design report focused on the River Trunk Alignment, Beard Brook Siphon and Cannery Segregation line (Carollo Engineers 2015), segments of the River Trunk line recently failed on the Gallo property and have created a sinkhole; other sections of this trunk line are severely corroded. The Beard Brook Siphon, which conveys effluent for the River Trunk line across Dry Creek, also has insufficient hydraulic capacity during wet weather flow conditions due to clogging of grease and debris.

Storm Drain Connections to Collection System

As previously described, in some areas of Modesto where rockwells or storm drains were not available, connections between the storm drain system and sanitary system were installed, primarily as mitigation to stormwater flooding in certain neighborhoods. These connections often capture some of the excess stormwater, which is conveyed to the Sutter Plant. Such connections have caused capacity issues both in the collection system and Sutter Plant and, during large rain events, have not effectively reduced flooding in neighborhoods where cross connections are located.

Inadequate Flood Protection and Aging Facilities at the Sutter Plant

The primary treatment facilities at the Sutter Plant (primary clarifiers, anaerobic digesters, and drying beds) are aging and require upgrading. The primary clarifiers were originally designed to treat cannery process water as well as domestic wastewater but since cannery flows are now treated at the Jennings Plant, the clarifiers are oversized. As a result, the clarifiers have caused odor concerns and other operational issues (Carollo Engineers 2015). In addition, critical primary treatment facilities at the Sutter Plant are situated within the 100-year floodplain. Based on the Sutter Treatment Facility Feasibility Study (Carollo Engineers 2015), the City has determined that reducing flooding effects on the existing primary treatment facilities would be largely infeasible as opposed to relocating these facilities.

Increase Hydraulic Capacity, Reliability and Redundancy at the Sutter and Jennings Plants

Some existing treatment facilities lack the hydraulic capacity and/or effectiveness to meet projected service demands under all hydrologic conditions. During the last 10 years, the City's wastewater demands at the Sutter plant have decreased by about 25 percent for various long- and short-term reasons. While previous issues involved a lack of immediate treatment capacity for projected future growth demands, current issues now primarily involve the reliability and redundancy of treatment infrastructure to meet existing and future demands. Capacity and reliability for future industrial demand is of particular importance. Improvements to facility headworks (initial treatment stage) capacity are necessary as well as other conveyance structures at the Sutter Plant. Existing facilities may also require maintenance upgrades of treatment processes to effectively handle existing and future volume of wastewater and increase systems reliability.

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Chapter 2
PROGRAM DESCRIPTION

2.1 Overview

This chapter describes the City's 2016 proposed Wastewater Master Plan (WWMP; Proposed Program) and discusses its purpose and objectives, location, proposed actions, and necessary permits and approvals. Background reports used to prepare this chapter include the following:

- City's *Wastewater Collection System Master Plan,* prepared by Carollo Engineers in association with West Yost & Associates and HDR. Final Draft (April 2016a)
- City's *Wastewater Treatment Master Plan*, prepared by Carollo Engineers in association with West Yost & Associates and HDR. Final Draft (December 2016b)
- City's *River Trunk Realignment Project Basis of Design Report*, prepared by Carollo Engineers (July 2016c)
- City's *River Trunk Realignment, Beard Brook Siphon and Cannery Segregation Line Improvement Project Preliminary Design Report*, prepared by Carollo Engineers (September 2015)

2.2 Purpose and Objectives

The City periodically reevaluates its wastewater system through development of a wastewater system Capital Improvement Program, which addresses existing deficiencies and replacement needs. The last WWMP was completed in 2007. The proposed WWMP revises the prior document to account for new General Plan and sphere of influence (SOI) boundary adjustments, zoning revisions, updated growth projections, updated sewer demand information, regulatory requirements, CIPs completed to date, and identifies new CIPs. The overall purpose of the Proposed Program is to meet existing and future wastewater treatment demands for the City and its customers in unincorporated areas of Stanislaus County, through 2035. The Program is also intended to meet existing and future wastewater collection service needs for the City and its customers in outlying service areas through 2057.

The objectives of the Proposed Program as a whole are as follows:

- To implement the City's economic goals and General Plan by planning for, and providing, sewer infrastructure in a timely and cost-effective manner to serve new and existing development.
- To repair and replace aging wastewater infrastructure.

- To ensure adequate wastewater infrastructure and services are available to serve new growth within the General Plan and City's SOI, and planned wastewater demands.
- To plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

For collection system components, the objectives of the Proposed Program are:

- To extend service to new customers.
- To increase sewer capacity to convey peak wet weather flows for a 10-year storm event, and where required, to serve future customers.
- To reduce wet weather flow volumes by removing cross connections with stormwater sewers.
- To replace, repair, or rehabilitate existing trunk sewers, and to reduce infiltration and inflow of stormwater into the sanitary sewers.
- To improve sewer collection reliability by providing new and redundant infrastructure improvements, including sewer trunk lines and lift stations, in known deficient areas at critical areas within the existing system.

For treatment plant components, the objectives are:

- To reduce flooding impacts at the Sutter Plant site and increase treatment process operational flexibility and efficiencies.
- To increase the capacity of the outfalls connecting the primary and secondary treatment plants, and to provide increased reliability for the existing outfall.
- To increase treatment systems efficiency, reliability, and functionality for both domestic and cannery process stream flows.
- To increase or modify treatment systems to remain in compliance with existing Central Valley RWQCB's NPDES requirements and plan for potential future permitting regulations.

2.3 Location and Setting

The City is in Stanislaus County, California, in the central San Joaquin Valley. The City is centrally located within California, approximately 70 miles southeast of Sacramento, 85 miles east of San Francisco, 90 miles northwest of Fresno, and 35 miles west of the foothills of the Sierra Nevada range. See Figure 1-1 for the Proposed Program location. The Tuolumne River flows westerly through the southern portion of the City. Dry Creek, a tributary to the Tuolumne River, runs through the central portion of the City before draining into the Tuolumne River near South 9th Street and River Road.

The proposed wastewater collection system and Sutter Avenue Primary Treatment Plant (also referred to as "Sutter Plant") components would occur within the City and its wastewater service area. The City's wastewater service area (**Figure 2-1**) includes all incorporated areas of Modesto, a portion of north Ceres, the unincorporated community of Empire, the Beard Industrial Park District, and unincorporated "islands" in the County within

Modesto that are served by agreement. The Sutter Plant is in the southwestern portion of Modesto adjacent to the north bank of the Tuolumne River. The Jennings Road Secondary and Tertiary Treatment Plant (also referred to as "Jennings Plant") is located on City-owned land, approximately 6.5 miles southwest of Modesto on the eastern side of the San Joaquin River.

For the purposes of this DEIR, the term "study area" refers to the City's wastewater service area, the City's sphere of influence, the proposed third outfall pipeline, the Jennings Plant, and the approximately 2,500 acres of City-owned agricultural lands to the south of the Jennings Plant. The term "Program area" refers to areas where proposed components would occur including the City proper and unincorporated Stanislaus County.

2.4 Projected Wastewater Flows

Table 2-1 summarizes the current and projected population (through 2035) in the City's sewer service area and estimated populations through the Collection System Master Plan's build-out year (2057). These projections take into consideration recent average annual growth rates for Modesto and unincorporated areas of the County within its sewer service area, and growth estimates for future developed areas in the City's sewer service area. For example, between 1990 and 2000, the City's population increased at an average annual growth rate of 1.4 percent but between 2000 and 2010, the City's annual average growth rate slowed down to 0.6 percent (Carollo Engineers 2016a). Estimated population values between 2015 and 2057 are based on an annual population growth of 1.3 percent per year which are derived from the California Department of Finance's population estimates.

Table 2-1. Projected Population for City's Sewer Service Area

Year	Estimated Sewer Service Population
2015	209,200
2020	223,100
2025	238,000
2030	253,900
2035	270,900
2040	288,972
2045	308,250
2050	328,814
2055	350,750
2057	359,929

Source: California Department of Finance estimates, as cited in Carollo Engineers 2016a. Extrapolation to buildout year of 2057 is based on an assumed 1.3 percent population increase between 2035 to 2057 (Eve, pers. comm. 2017a). As noted above, the Wastewater Treatment Master Plan used a planning horizon year through 2035; while the Collection System Master Plan used a build-out scenario through the year 2057.

Table 2-2 identifies existing and projected wastewater flows for the City's sewer service area. The projected flows take into consideration both the projected sewer service population values presented in Table 2-1 as well as anticipated industrial and commercial growth areas, which are based on the 2009 Urban Growth Policy Review Report and the City's General Plan. As part of the projected wastewater flow monitoring effort, wastewater generation coefficients were established based on the average wastewater flow generated by existing and land use types. These coefficients were then used to estimate average dry weather flows (ADWF) throughout build-out of the City's sewer service areas. With respect to estimating existing and projected peak wet weather flows (PWWF), the City ran a 10-year, 24-hour design storm through the hydraulic model which was calibrated for both dry weather and wet weather conditions. The PWWF also took into account wet weather infiltration and inflow that occurs during and after rainfall events and used a peak infiltration and inflow rate of 1,000 gallons per day per acre (gpd/ac) (Carollo Engineers 2016a).

As shown in Table 2-2, the current collection system does not have adequate capacity to serve future development anticipated through the build-out timeline. The projected build-out flows were estimated based on the City's preliminary land development plans prepared in 2015. In the next 35 years, flows are expected to increase by 60 percent.

Table 2-2. Existing and Projected Wastewater Flows for the Sutter Plant (MGD)

Wastewater Flows (mgd)	Existing (based on 2014 flows)	Projected Flows through 2035	Projected Build-Out Flows (2057)
Average Dry Weather Flow[a]	21.4	25.6	34.4
Peak Wet Weather Flow[b]	68.6	85.0[c]	77.1[d]

[a] Average Dry Weather Flow (ADWF) is the average flow over any five weekday period between the months of June and October. For the Master Plan, ADWF was calculated based on historical flow data at the Sutter Plant and dry weather flow data from the City's flow monitoring program.

[b] Peak Wet Weather Flow (PWWF) is the highest observed flow that occurs following a storm event and is used as the basis for establishing the Sutter Plant's hydraulic capacity and sizing upgrades.

[c] Projected PWWF for 2035 assumes that storm drain cross sections are still in place and have not been fully removed.

[d] Projected PWWF for 2057 assumes that storm drain cross connections have been removed.

Sources: Carollo Engineers 2016a, 2016b; Eve, pers. comm. 2017b.



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Figure 2-1
River Trunk Realignment Project

City of Modesto Wastewater Master Plan EIR

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2.5 Proposed Program Characteristics

The Proposed Program involves numerous improvements to the City's collection system and upgrades to the Sutter and Jennings plants. These include collection system and treatment plant CIPs located throughout the City's service area and unincorporated Stanislaus County. **Table 2-3** indicates proposed WWMP components evaluated throughout this DEIR. With the exception of one project, the River Trunk Realignment Project, all other components are evaluated at a program level of detail. In general, program-level components are projects that the City would likely construct in the future, but the design of these components has not been advanced to a level at which a detailed evaluation can be completed. As such, a more general, program level analysis of these components is included in this DEIR.

Section 2.4.1 provides an overview of the River Trunk Realignment Project. Sections 2.4.2 and 2.4.3 describe other collection system and treatment plant components, respectively, which are evaluated at a program level of detail.

Table 2-3. Summary of Proposed Components

Project ID No.	Project Name
River Trunk Realignment Project (project level)	
1	Dry Creek Crossing and Pipeline to River Trunk Pump Station
2	Gravity Pipelines
3	Shackelford Pump Station and Force Main
Collection System Components (program level)	
New and Upgraded Sewer Pipelines	
W-1	West Trunk
W-3	West Trunk
W-4	West Trunk
W-6	West Trunk
W-7	West Trunk
D-1 thru D-5	Dale Trunk
R-1	Rumble Trunk
R-2	Rumble Trunk
S-1	Sutter Trunk
DT-1	J Street Trunk
DT-2	Kimble Street
SR-4	Santa Rosa Trunk
EM-4	Empire Trunk
EM-3	Empire Trunk
SO-1 thru SO-3	Sonoma Trunk

Project ID No.	Project Name
SO-4	Sonoma Trunk
L-1 thru L-6	Lakewood Trunk
U-1 thru U-4	Ustick Trunk
N-1 and N-2	North Trunk
N-3 thru N-5	North Trunk
N-6	North Trunk
N-7 thru N-9	North Trunk
Sewer Rehabilitation Components	
A-3	Carver Trunk
C-1	West Trunk
B-2	Woodland Trunk
D-2	Emerald Trunk
A-2	Sutter Trunk
S-4b/C-2	Sutter Trunk and South Trunk
C-3	Downtown Tributary
D-1	Downtown Tributary
A-1	Rose Celeste/Santa Rosa
B-1	Crows Landing Trunk
RT-9	River Trunk
RT-10	River Trunk
RT-11	River Trunk & Cannery Segregation Line
RT-12	Cannery Segregation Line Diversion Structures
SR-6	Santa Rosa Tributary Trunk
Lift Station Components	
LS #29 - Rose & Celeste	Rose-Celeste
LS #3 - Benson	Benson
LS #64	Dakota
LS #63	Kansas
LS #60	Chapman
LS #67	Litt Road
LS # 59	Pelandale Road
LS #61	Wood Sorrel
LS #62	Whitmore/Carpenter

Project ID No.	Project Name
LS #65	Kiernan Avenue
LS #30	Rumble
LS #39	Woodland
Treatment Plant Components (program level)	
Sutter Plant Modifications	
SP-1	Influent Pump Station Components
SP-3	Primary Effluent Pump Station Replacement
SP-4	Demolition of Sutter Treatment Facilities
SP-5	Flood Protection Components
Outfall Pipelines	
OP-1.1	New Tuolumne River Crossings
OP-1.2	New Primary Effluent Outfall
OP-3	Slip-lining a Portion of the Cannery Segregation Line
Jennings Plant Components	
JP-1.1	Phase 3 of Tertiary Treatment Facility
JP-2.1	Fixed Film Reactors Rehabilitation
JP-2.2	Dredging
JP-2.3	Dissolved Air Flotation Piping
JP-3.1	Aerators in Recirculation Channel
JP-3.2	Nutrient Feed System
JP-3.3	Effluent Channel Berm and Effluent Pipeline
JP-3.4	Dredging
JP-3.5	Pond Aerators
JP-4.1	Aerobic Digester
JP-4.2	Solids Processing Building (waste activated sludge [WAS] thickening and biosolids dewatering facilities)
JP-4.3	Sludge Cake Drying Beds
JP-5.1	Primary Treatment Facilities
JP-5.2	Yard Piping and Structures
JP-5.3	Anaerobic Digesters
JP-5.4	Solids Processing Building (WAS thickening and biosolids dewatering facilities)
JP-5.5	Sludge Cake Drying Beds

2.5.1 River Trunk Realignment Project

As part of the River Trunk Realignment Project, the majority of the River Trunk line would be realigned further inland from the Tuolumne River. Originally constructed in 1940, the existing River Trunk is approximately five miles long and generally parallels the right bank (north side) of the Tuolumne River. It begins near the intersection of Beard Avenue and Nathan Avenue and terminates at Sutter Plant, conveying nearly 50 percent of the City's domestic wastewater to the Sutter Plant. The entire alignment is subject to heavy corrosion and isolated sections of the pipeline have recently failed or are close to failure. A segment of the River Trunk line at the Gallo property failed and created a sinkhole. In addition, the Beard Brook Siphon, a portion of the River Trunk line that conveys wastewater from eastern Modesto, below Dry Creek, and to the western end of the River Trunk line, routinely experiences grease blockages. Such blockages increase the risk of the facility overflowing and increase odor issues.

By realigning the River Trunk line, this project would improve the accessibility, capacity, and reliability of the River Trunk system, and extend the useful life of the existing infrastructure.

Figure 2-1 shows the proposed components of the River Trunk Realignment project. This project includes the following components:

- Dry Creek Crossing and Pipeline to River Trunk Pump Station
- River Trunk Pump Station
- River Trunk Force Main
- Gravity Pipelines along Tuolumne Boulevard, Colorado Avenue, Neece Drive, and Pelton Avenue
- Shackelford Pump Station and force main

Elements of the River Trunk Realignment Project are described in more detail below.

Dry Creek Crossing and Pipeline to River Trunk Pump Station

As shown in Figure 2-1, a new 48-inch siphon would be installed to replace the existing Dry Creek crossing. This pipeline would begin at the parking lot located at the Gallo property, cross beneath Dry Creek, traverse vacant land between the creek and 9th Street, and terminate at the proposed River Trunk Pump Station. Trenchless pipeline construction methods would be employed, whereby insertion pits would be established at the Gallo property, to the west of Dry Creek, on either side of 9th Street, and at the River Trunk Pump Station site. The pipeline would flow by gravity and allow the existing siphon to be used for cannery segregation flows if necessary. Pile drivers would be used during the horizontal drilling process.

River Trunk Pump Station

The River Trunk Pump Station would be constructed at the corner of B Street and Beard Street. As shown in **Figure 2-2** the facility would be oriented in the center of the site and a circular driveway would be established around the pump station. Access to the site would occur via B Street. The access road would be paved, and crushed rock would be placed on

other areas of the site. Perimeter fencing would be installed and a security gate would allow staff vehicles to enter and exit the site. Stormwater runoff would be directed to the manhole located upstream of the wet well. Landscaping consisting of low-lying shrubs and small trees may be planted in the non-paved areas of the pump station site.

Due to close proximity to the planned Tuolumne River Regional Park, which will consist of over 500 acres of parkland along 7 miles of the Tuolumne River, a biofilter would be installed at the pump station to control odor. For additional information about the Tuolumne River Regional Park, refer to Chapter 19, *Other Statutory Considerations.* The biofilter would include duplex blowers and connection for a portable biofilter unit such that the odor control facilities remain operational when the biofilter media from the permanent biofilter is replaced.

Based on preliminary design of the River Trunk Pump Station, the facility would have five 208 horsepower (hp) centrifugal submersible pumps (4 on duty and 1 standby pump) that would be located underground in fully enclosed structures that would mute any generated sounds. The interior diameter of the facility would be approximately 60 feet and have a depth of 75 feet. As shown in **Figure 2-3**, the pump station would include a wet well, and two intermediate floors at elevations of 50 feet (Level 1) and 70 feet (Level 2). Within the wet well, the influent pipe would be installed at an invert elevation of approximately 23 feet and an isolation gate would be installed to control flow into the wet well during self-cleaning. The pump motors would be controlled by variable frequency drives which provide pump speed modulation that matches the diurnal flow pattern within the collection system. The backup generator would be sound-buffered and would be operated infrequently, primarily in the event of power outages or for periodic maintenance. Operator access would be provided through a 3-foot wide access hatch and ladder located on Level 1. In addition, a vent shaft would be installed to vent the wet well, and odor control ducts would connect to the vent to help remove and treat odors.

Level 1 of the pump station would contain five 60-inch-diameter access hatches located directly above each pump to allow pump removal. The pump hatches would be installed in a trench to improve operations and maintenance staff access around the access hatches and discharge piping. Two monorail systems and exhaust and supply air ducting would also be installed.

Level 2 of the pump station would house heating, ventilation, and air conditioning (HVAC) equipment, three ducted centrifugal exhaust fans, HVAC air ducts that supply air and exhaust air within the pump station, and a 6-foot hatch to assist in the pump removal process.

Figure 2-4 shows the top level of the pump station. Aboveground components would include a monorail system that allows the submersible pumps from Level 1 to be lifted to grade, and the pumps could be delivered to a truck bed and/or trailer. Three make-up air units would be sized and installed on the top level to supply air to the pump station in accordance with National Fire Protection Association standards. The five pump discharge pipes would connect with the 36-inch force main located at the top of the site. Although not shown in Figure 2-4, lighting would also be installed to illuminate the wet well and generator locations. The exterior of the pump station building would be comprised of earth tones with a matte finish.

An overflow structure would also be located approximately 60 feet upstream of the influent pipeline connecting to the River Trunk Pump Station. In the event of a loss of service, this structure would allow flows to backup and overflow to the existing River Trunk pipelines.

The River Trunk pump station may require on-site exterior lighting. New lighting at these facilities would be consistent with outdoor lighting currently used at the two wastewater treatment plants. New lighting at these facilities would be directed inward to avoid glare or spillover effects and may be motion-activated where beneficial and effective. Exterior coating of new pump stations would appear similar to similar structures seen throughout Modesto, and that earth tones with non-reflective finishes would be used to coat aboveground components at lift stations and pump station sites.

River Trunk Force Main

Two force mains would be constructed to convey flows from the River Trunk Pump Station to a discharge structure in Tuolumne Boulevard. One force main would be 30 inches in diameter and the second would be 42 inches in diameter. The approximate alignment of these force mains is depicted in Figure 2-1. From the pump station, the force mains would continue south and then traverse underneath the Southern Pacific Railroad and 7th Street, and continue west and along Tuolumne Boulevard where it would tie into a discharge structure. For both force mains, trenchless pipeline construction methods would be used at the railroad crossing and 7th Street crossing.

Gravity Pipelines along Tuolumne Boulevard, Colorado Avenue, Neece Drive, and Pelton Avenue

The new River Trunk gravity pipeline would extend from the pipeline junction structure at Tuolumne Boulevard and Neece Drive, beneath Tuolumne Boulevard (from Neece Drive to Paradise Road), and continue south beneath Colorado Avenue (from Tuolumne Boulevard to Dryden Golf Course and the Sutter Plant). This pipeline would be 42 inches along Tuolumne Boulevard. Along Colorado Avenue, the pipeline would vary in size between 48 inches, 54 inches, and 60 inches down to the Sutter Plant.

In addition, a new 15-inch-diameter gravity flow pipeline would be installed beneath Tuolumne Boulevard from Paradise Road to Colorado Avenue. This pipeline would serve as a peak wet weather diversion for the existing Sutter Trunk such that during peak wet weather events, flows that top the passive weir would be diverted down Tuolumne Boulevard to the River Trunk line.

New gravity pipelines would also be installed near the northwestern side of the Dryden Golf Course. These would extend from Neece Drive to the Dryden Golf Course parking lot, continue south beneath Roselawn Avenue, and west on Pelton Avenue to Colorado Avenue.

Shackelford Pump Station and Force Main

As shown in Figure 2-1 the Shackelford Pump Station would be located west of Zeff Road and immediately east of the Tuolumne River. **Figure 2-5** shows the site plan for the Shackelford Pump Station. From Zeff Road, the access road to the pump station would be paved and crushed rock would be used to cover other areas of the site. Perimeter fencing would be installed to secure the site and a gate would be installed to allow vehicles to enter/exit the site. The pump station would consist of a rectangular wet well (approximately 24 feet deep), and operate with two on-duty pumps and one standby pump (each 37.7 hp). The pumps would be located underground in fully enclosed structures that would mute any generated

sounds, and the backup generator would sound-buffered and would be operated infrequently, primarily in the event of a power outage or for periodic maintenance. Aboveground components at the Shackelford Pump Station include the electrical building (approximately 15.5 feet tall) and generator (approximately 8 feet tall). The surrounding fence and/or gate and would be about 8 feet tall and the retaining wall would be about 6 feet tall. The exterior coating of these aboveground facilities would be coated with unobtrusive earth tones with matte finishes.

This pump station would deliver wastewater to the new River Trunk Pipeline by conveying wastewater flows through existing dual 18-inch siphons that were recently installed. These siphons would convey flow across the Tuolumne River. From the west end of the siphons, a new 20-inch-diameter high-density polyethylene (HDPE) force main would be installed beneath the Dryden Park Golf Course, traverse westerly, and terminate at the Dryden Park Golf Course parking lot. At this point, the force main would tie into the new gravity pipeline system described above.

The Shackelford pump station may require on-site exterior lighting. New lighting at these facilities would be consistent with outdoor lighting currently used at the two wastewater treatment plants. New lighting at these facilities would be directed inward to avoid glare or spillover effects, and may be motion-activated where beneficial and effective. Exterior coating of new pump stations would appear similar to similar structures seen throughout Modesto, and that earth tones with non-reflective finishes would be used to coat aboveground components at lift stations and pump station sites.

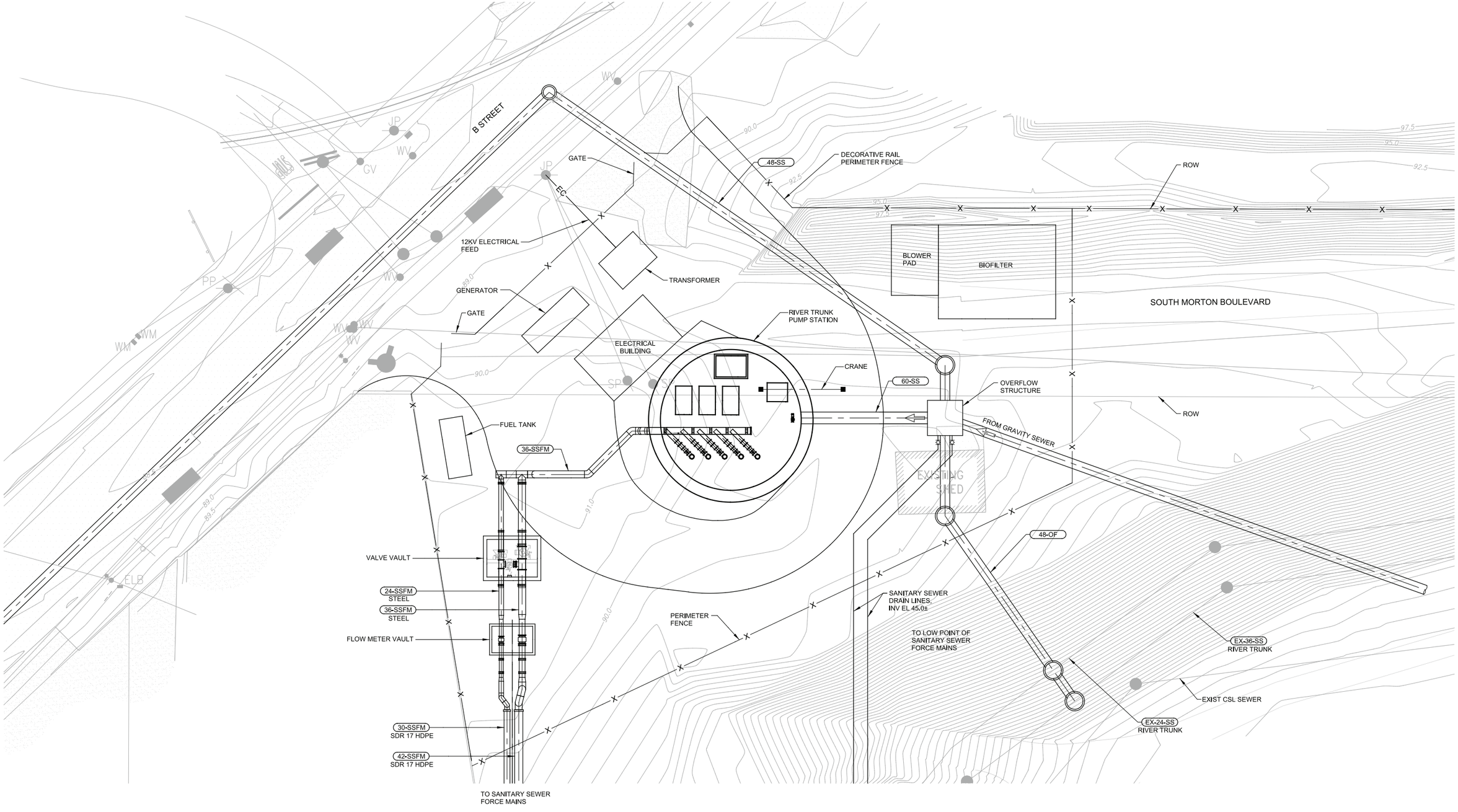
2.5.2 Collection System Components

New and Upgraded Sewers

In addition to the River Trunk Realignment Project, the City plans to install a number of new and upgraded sewer lines throughout the City's service area. Proposed locations of new and replacement sewer lines are shown in **Figure 2-6**. **Table 2-4** summarizes the major trunk and sub-trunk lines to be installed or replaced.

These components are needed either to correct an existing or future capacity deficiency during peak wet weather flows (PWWFs) or to accommodate future growth anticipated. Future growth areas in the City's service area are also referred to as Comprehensive Planning Districts [CPDs]).

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Source: Carollo 2016c

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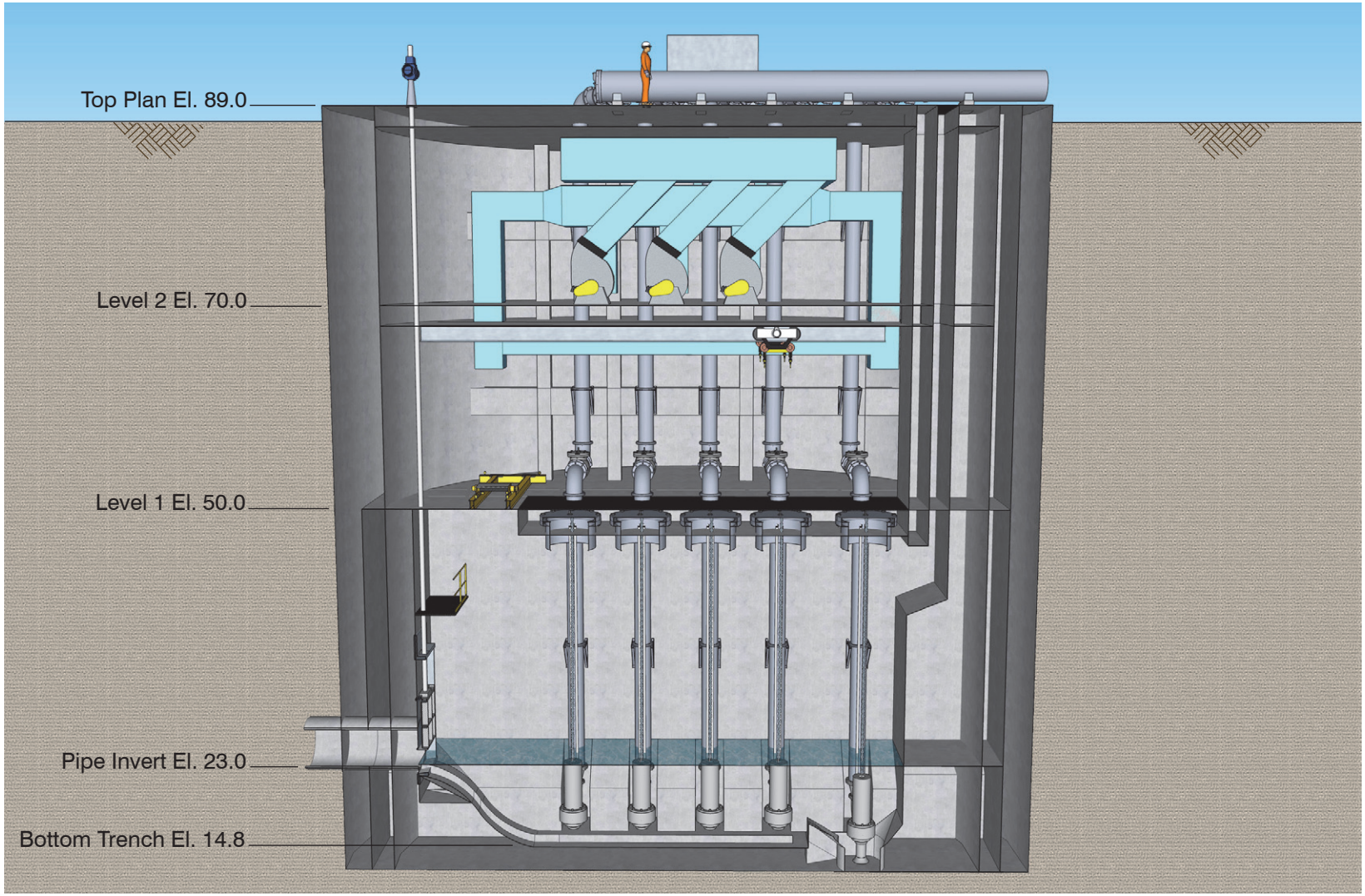
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Prepared by: Horizon WATER and ENVIRONMENT

Figure 2-2.
River Trunk Pump Station Site Plan

City of Modesto
Wastewater Master Plan EIR

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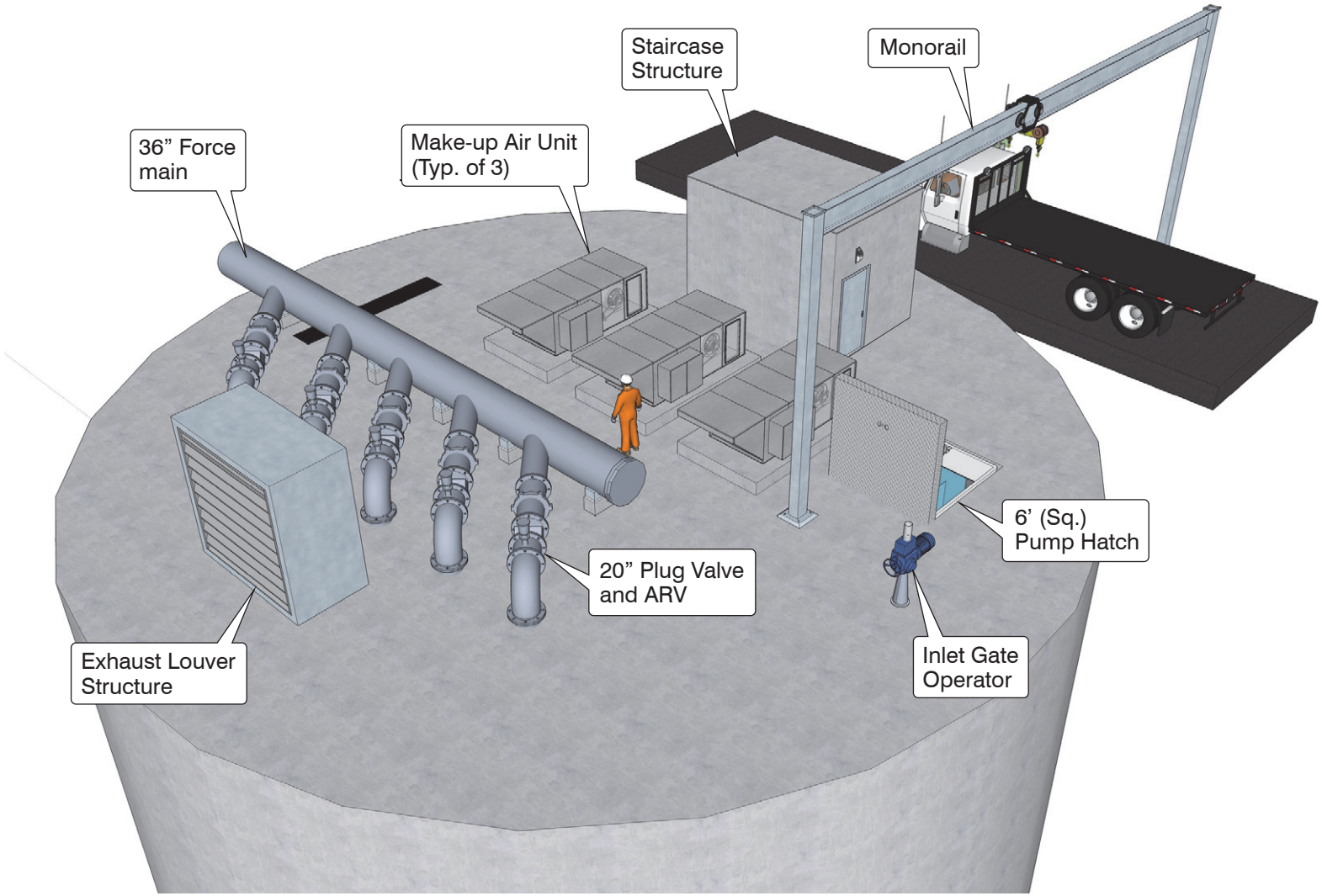
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Figure 2-3. River Trunk Pump Station Section

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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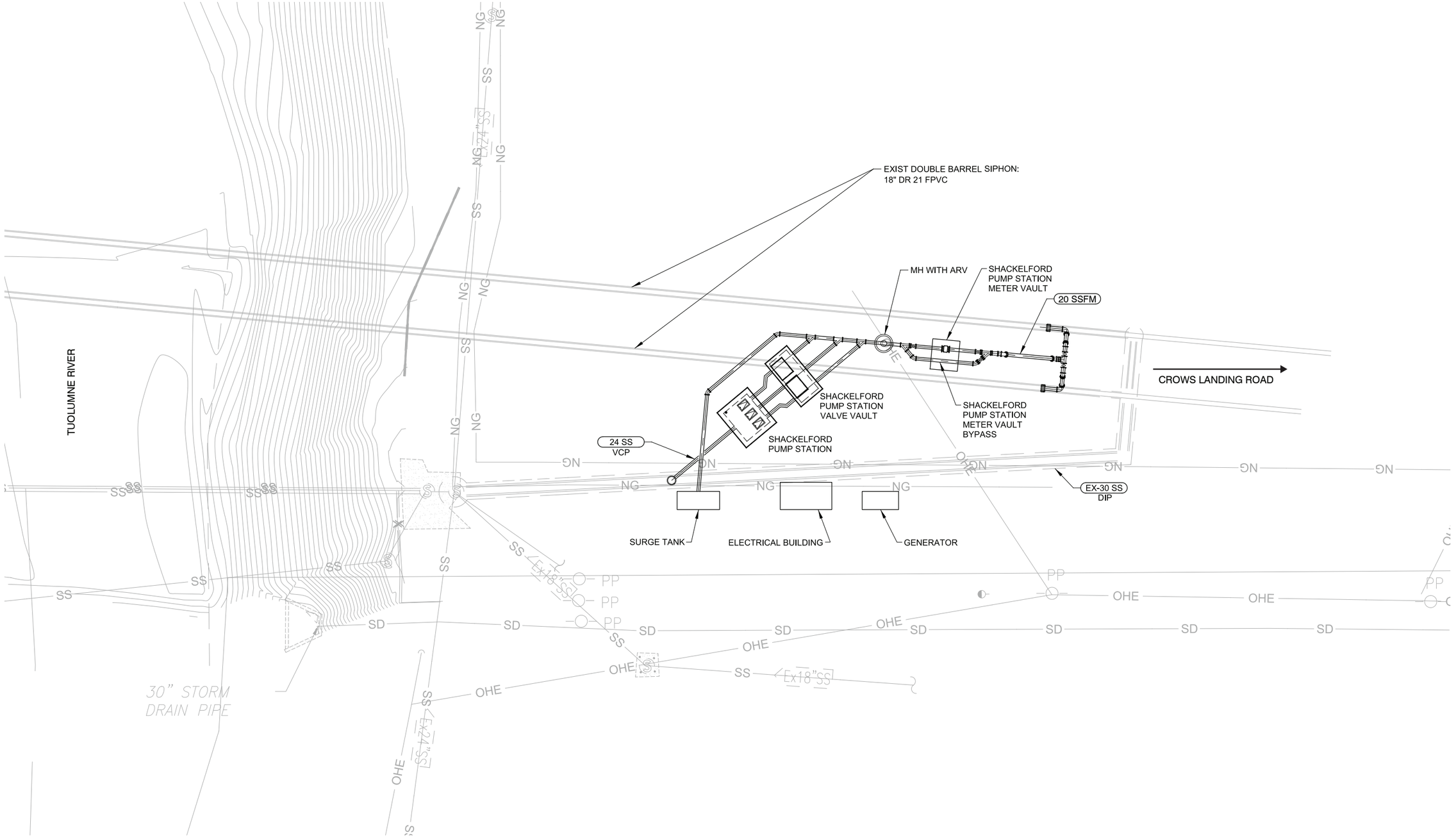
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Figure 2-4. River Trunk Pump Station – Top Plan Layout

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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Source: Carollo 2016c

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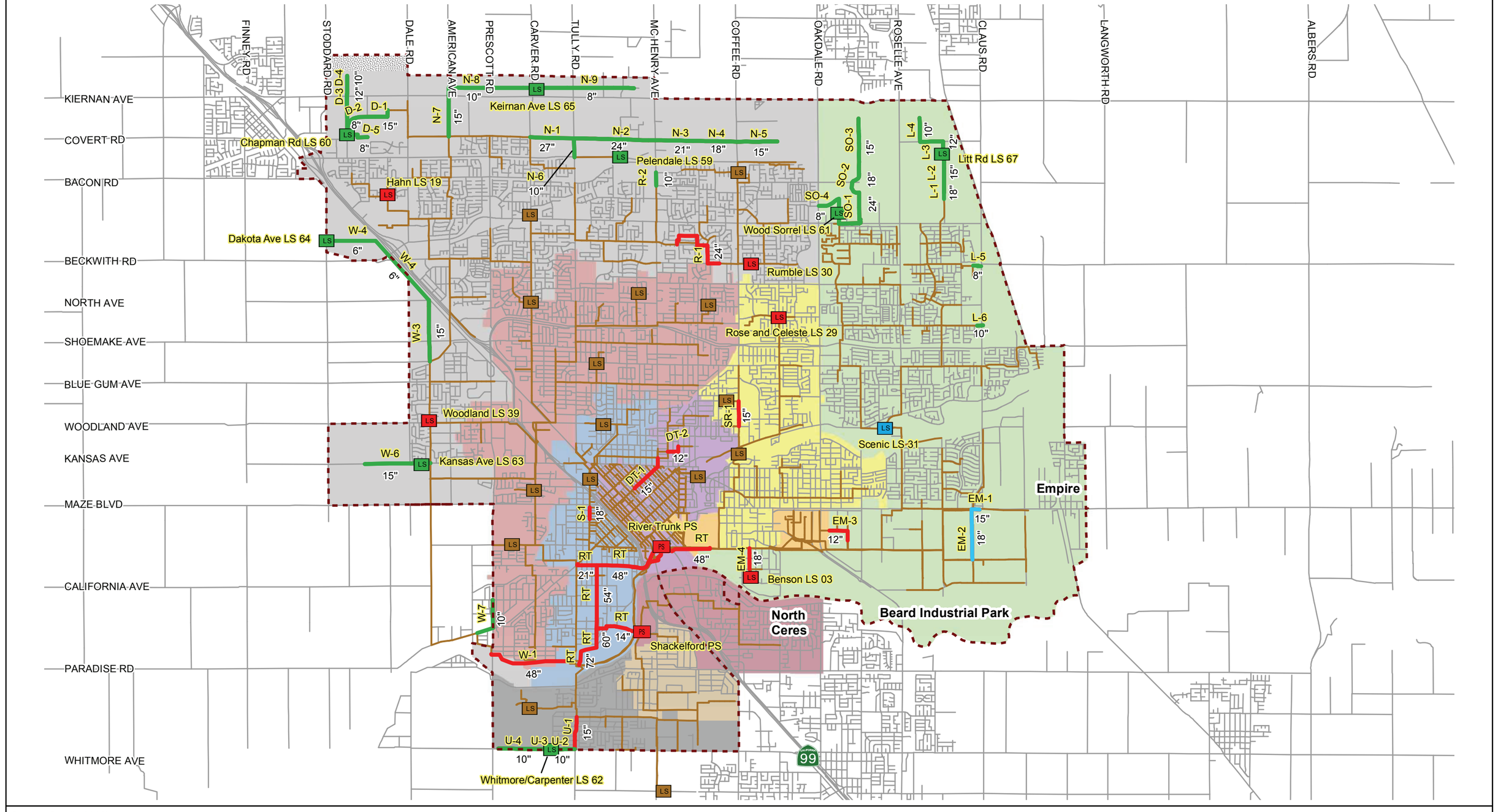
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Horizon
WATER and ENVIRONMENT

Figure 2-5.
Shackelford Pump Station Site Plan

City of Modesto
Wastewater Master Plan EIR

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Source: Carollo 2016b

Prepared by: Horizon Water and Environment

Legend

- Lift Station Upgrade in Progress
- Pipeline Upgrade in Progress
- New Service Lift Station Improvement
- New Service Pipeline Improvements
- Capacity Lift Station Improvements
- Capacity Pipeline Improvements
- Lift Station
- Sewer Main
- Sphere of Influence

Tributary Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

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4000 2000 0 4000

Feet

Figure 2-6.
Proposed Collection System Improvements

City of Modesto
Wastewater Master Plan EIR

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Table 2-4. Summary of New and Replacement Trunk Sewers

Project No.	Trunk Line	General Location	Description	Key Objective
Area 1				
W-1	West Trunk	Carpenter Rd.to Sutter Plant	New 5,200 linear feet (lf) of 48-inch (in) pipeline	Increase capacity to accommodate long-term growth in Area 1
W-3	West Trunk	Along North Ave. to McDonald Ave.	New 4,200 lf of 15-in main	New service to serve future CPDs
W-4	West Trunk	Along North Ave. to McDonald Ave.	New 8,300 lf of 6-in force main to connect LS 64 to Project No. W-3	New service to serve future CPDs
W-6	West Trunk	Kansas Ave.	New 4,300 lf of 15-in main	New service to serve future CPD area
W-7	West Trunk	Paradise Rd. & Carpenter Rd.	New 2,900 lf of 10-in pipeline	New service to serve existing developed County area in southwest area
D-1, D-3, D-4 and D-5	Dale Trunk	West of Healthcare Way	D-1: New 1,200 lf of 15-in diameter pipeline west of Kaiser Permanente D-3: 1,700 lf of 12-in diameter pipeline in Chapman (between Kiernan Ave. and MID Lateral 6 Canal D-4: 2,200 lf of 10-in diameter pipeline in Chapman Rd. from Kirnan Ave. to south Pirrone Rd. D-5: 1,500 lf of 8-in diameter pipeline (runs parallel to MID Lateral 6 Canal)	New service for future growth in Kiernan-Carver and Kiernan-Carver North CPDs
R-1	Rumble Trunk	Claremont Ave. & Maud Kemp Terrace	5,100 lf of 24-in diameter pipeline from Claremont Ave. to Don Caster Ln.	Increase capacity for existing and some new growth
R-2	Rumble Trunk	McHenry Ave	900 lf of 10-inc diameter pipeline to serve future development in the Pelandale/McHenry CPD	New service to serve future CPDs

Project No.	Trunk Line	General Location	Description	Key Objective
Area 3				
S-1	Sutter Trunk	Jefferson between Maze Blvd. and Oak St.	Replace 16-in with 18-in diameter pipeline	Increase capacity
Area 4				
DT-1	J Street Trunk	McHenry Ave. to 12th St.	Replace 2,400 lf of 12-in pipeline with 15-in pipeline	Increase capacity. The current trunk exceeds the maximum d/D criteria (pipe flow exceeds design standard for pipe capacity) under PWWF, which causes the existing pipeline to surcharge.
DT-2	Kimble Street	Kimble St. and Floto St.	Replace 1,000 lf of 10-in diameter pipeline with 12-in-diameter pipeline	Increase capacity; the current trunk exceeds the maximum d/D criteria under PWWF.
Area 5				
SR-4	Santa Rosa Trunk	Coffee Rd. between Fairmont Ave. and Lucern Ave.	Replace 1,600 lf of 10-in diameter pipeline with 15-in diameter pipeline.	Increase capacity
Area 6				
EM-4	Benson Ave. Trunk	Monterey Ave. to Oregon Dr.	Replace 1,400 lf of 15-in pipeline with 18-in pipeline	Increase capacity
EM-3	Hoover and Doherty	Hoover Ave. and Doherty Ave.	Replace 1,800 lf of 10-in pipeline with 12-in pipeline	Increase capacity

Project No.	Trunk Line	General Location	Description	Key Objective
SO-1 through SO-3	Sonoma Trunk	New alignment north of Sylvan Rd.to south of Kiernan Ave	SO-1: 3,300 lf of 24-in pipeline (from existing trunk west in Sylvan Ave. and north) SO-2: 2,600 lf of 18-in diameter pipeline to area north of Mabel Ave SO-3: 2,800 lf of 15-in diameter pipeline from SO-2 to area south of Claribel Rd.	New service for growth (Roselle-Claribel CPD)
SO-4	Sonoma Trunk	Sylvan Ave, Oakdale Rd. & Wood Sorrel Dr	New 3,100 lf of 8-in pipeline; will extend north from a 27-in diameter sewer in Wood Sorrel Dr.	New service for existing development and new growth
L-1 through L-6	Lakewood Trunk	North of Sylvan Rd.to south of Kiernan Ave.	L-1: 900 lf of 18-in diameter pipeline in Litt Rd. north of Sylvan Ave. L-2: 1,700 lf of 15-in diameter pipeline in Litt Rd. L-3: 800 lf of 12-in diameter pipeline from Plainview Rd. and hits Litt Rd. L-4: 3,00 lf of 10-in diameter pipeline from south of Claribel Rd.to Plainview Rd. L-5: 300 lf of 8-in diameter pipeline from intersection of Ruffed Goose Ln. and Crested Bobwhite St, to Claus Rd. L-6: 400 lf of 10-in diameter pipeline in Merle Ave.	New service for growth
Area 10				
U-1	Ustick Trunk	Ustick Ave. from Imperial to Whitmore	Replace 12-in diameter pipeline with 1,200 lf of 15-in diameter pipeline	Increase capacity
U-2 through U-4	Ustick Trunk	Whitmore Ave. from Ustick Ave. to west of Carpenter	U-2: New 1,000 lf of 10-in diameter pipeline U-3: New 400 lf of 4-in diameter force main U-4: 3,400 lf of 10-in diameter pipeline	New service for growth

Project No.	Trunk Line	General Location	Description	Key Objective
N-1 through N-5	North Trunk	Bangs Ave, east of Carver Rd	N-1: 2,800 lf of 27-in diameter pipeline in Bangs Ave. (between Tully Rd. and Carver Rd) N-2: 6,100 lf of 24-in diameter pipeline along Bangs Ave. from McHenry Ave. to Tully Rd. N-3: 1,600 lf of 21-in diameter pipeline from MID Lateral 6 Canal to McHenry Rd. N-4: 3,100 lf of 18- in diameter pipeline from Coffee Rd. to MID Lateral 6 Canal N-5: 2,400 lf of 15-in diameter pipeline from east of Oakdale Rd. to Coffee Rd.	New service for future growth & existing development (in Kiernan/Carver, Kiernan/McHenry, and Hetch Hetchy CPDs)
N-6	North Trunk	Tully Rd. at Bangs Ave	3,5000 lf of 10-in sewer main already installed; additional 800 lf of 10-in main to be installed	New service for growth & existing development
N-7 through N-9	North Trunk	American Ave. & Kiernan Ave.	N-7: 3,100 lf of 15-in pipeline in American Ave. (between Kiernan Ave. and Bangs Ave.) N-8: 5,600 lf of 10-in pipeline north of Kiernan Rd. from American Ave. to Carver Ave. N-9: 6,300 lf of 8-in pipeline parallel to Kiernan Ave. between Carver Rd. and Stratos Way	New service for growth within Kiernan/Carver North CPD

1 *Source: Carollo Engineers 2016a*

Sewer Rehabilitation

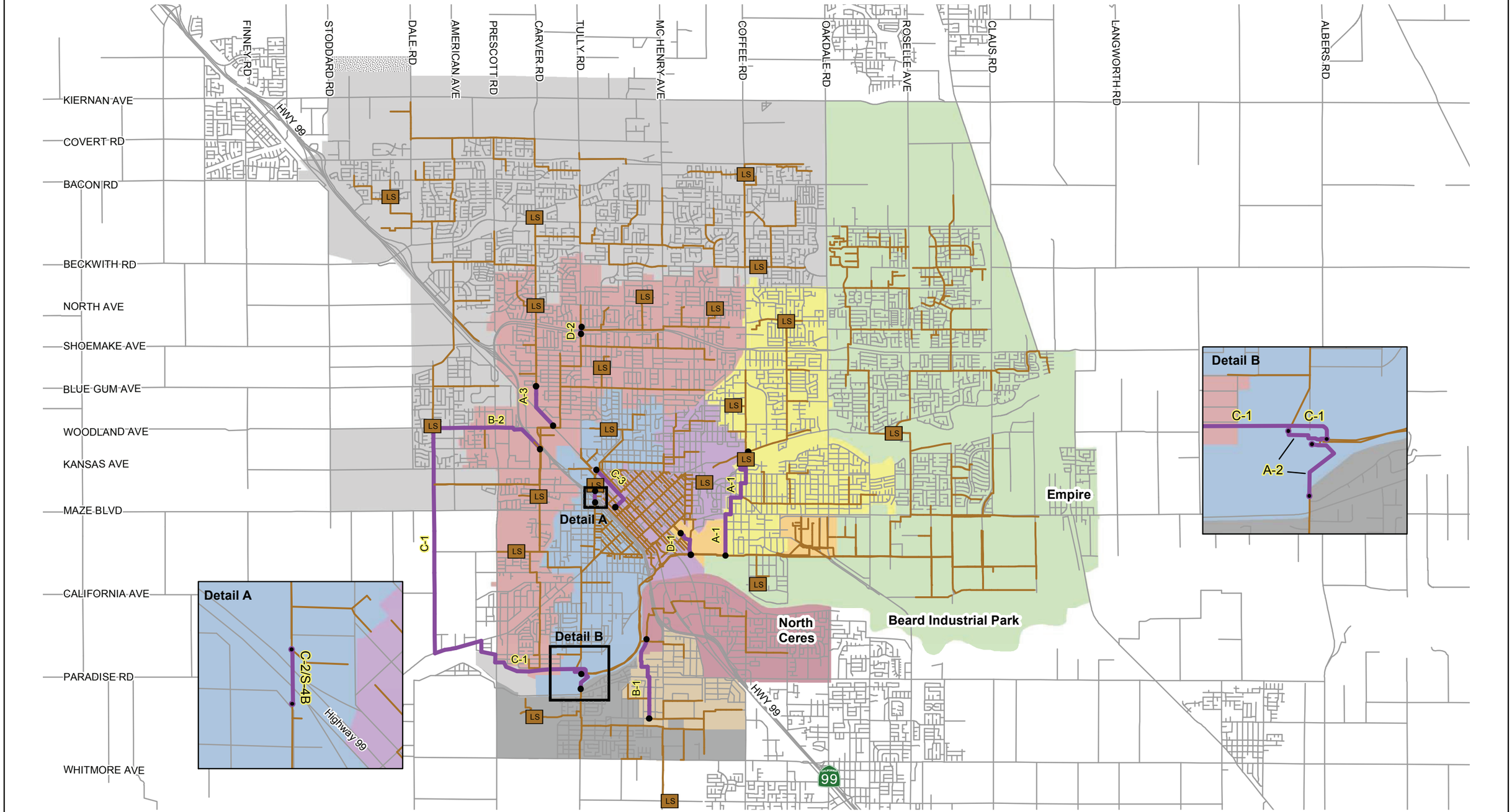
Based on continued monitoring and inspection, the City has identified several sewer lines in need of rehabilitation. Deteriorating sewer lines may require rehabilitation to avoid failure and to improve functionality. Rehabilitation may include installing a liner or flexible coating on the interior of the pipeline. Sewer rehabilitation could also include slip lining or cured-in-place-pipe (CIPP) methods. These construction methods are described in more detail in Section 2.4.3 below. Proposed locations of rehabilitated sewer lines are shown in **Figure 2-7** and **Figure 2-8**. **Table 2-5** summarizes the proposed sewer rehabilitation components.

Table 2-5. Summary of Proposed Sewer Rehabilitation Sites

Project No.	Sewer Line	General Location	Description	Key Objective
Area 1				
A-3	Carver Trunk	Roseburg/Haney Ave	Rehabilitate 3,000 lf of 18-in pipeline with cured-in-place pipe (CIPP) method recommended	Preserve existing pipe integrity and extend usable life
C-1	West Trunk	Woodland Ave. to Sutter Plant	Rehabilitate 7,500 lf of 54- and 60-in diameter pipeline with slip-lining recommended	Repair existing pipe surface to preserve integrity and extend usable life
Area 2				
B-2	Woodland Trunk	Mercy Ave. to Emerald Ave	Rehabilitate 7,500 lf of 18-, 27-, and 54-in diameter pipeline with CIPP and slip-lining methods recommended	Repair existing pipe surface to preserve integrity and extend usable life
D-2	Emerald Trunk	Briggsmore Ave. at Tully Rd	Rehabilitate 110 lf of 30-in diameter pipeline with CIPP method recommended	Preserve pipe usable life
Area 3 – Sutter Trunk				
A-2	Sutter Trunk	At the Sutter Plant	Rehabilitate 2,200 lf of 24- and 30-in diameter pipelines with CIPP method recommended	Repair existing pipe to preserve integrity and extend usable life
C-2/S-4b	Sutter Trunk	Jefferson St. under H-99	Rehabilitate 400 lf of 16-in diameter pipeline with CIPP method recommended	Increase pipe integrity at a critical crossing
Area 4				
C-3	Downtown Tributary	9th St. from Needham to 7th St.	Rehabilitate with CIPP method recommended	Repair existing pipe to preserve integrity and extend usable life
D-1	Downtown Tributary	12th St. from south of D St. Morton Blvd.	Rehabilitate 1,800 lf of 21/24/27-in diameter pipeline with CIPP method recommended	Repair existing pipe to preserve integrity and extend usable life

Project No.	Sewer Line	General Location	Description	Key Objective
Area 5				
A-1	Rose Celeste/ Santa Rosa	Scenic Dr.to Oregon Dr	Rehabilitate 8,800 lf of 16/18/24/30 diameter pipe and force main with CIPP method recommended	Repair existing pipe to preserve integrity and extend usable life
SR-6	Santa Rosa Trunk	Miller Ave. between Conejo Ave. and Phoenix Ave.	Rehabilitate 1,000 lf of 18-inch-diameter pipeline.	Repair existing pipe to preserve integrity and extend usable life
Area 9				
B-1	Crows Landing Trunk	W. Hatch Rd. at Spokane St. to Cascade Ave.	Rehabilitate 5,600 lf of 30-in diameter pipeline with CIPP method recommended	Repair existing pipe to preserve integrity and extend usable life
Area 3 – River Trunk				
RT-9	River Trunk	Sutter Ave.	Rehabilitate 1,300 lf of 24-in pipe – no recommended method yet determined	Preserve pipe usable life
RT-10	River Trunk	Open space (golf course)	Rehabilitate 15,000 lf of 48/60/66-in pipes - no recommended method yet determined	Preserve pipe usable life
RT-11	River Trunk & CSL	Open space along Tuolumne River bank	Riverbank armament	Increase reliability of both pipelines with improved stability and prevention of future river bank erosion
RT-12	CSL Diversion Structures	Open space along Tuolumne Blvd. near Calaveras Ave	New diversion structure	Provide mechanism to divert flow between River Trunk and CSL for flow reliability management and maintenance purposes.

1



Source: Carollo 2016b

Prepared by: Horizon Water and Environment

Legend

- Structural Rehabilitation
- LS Lift Station
- Sewer Main

Tributary Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

N

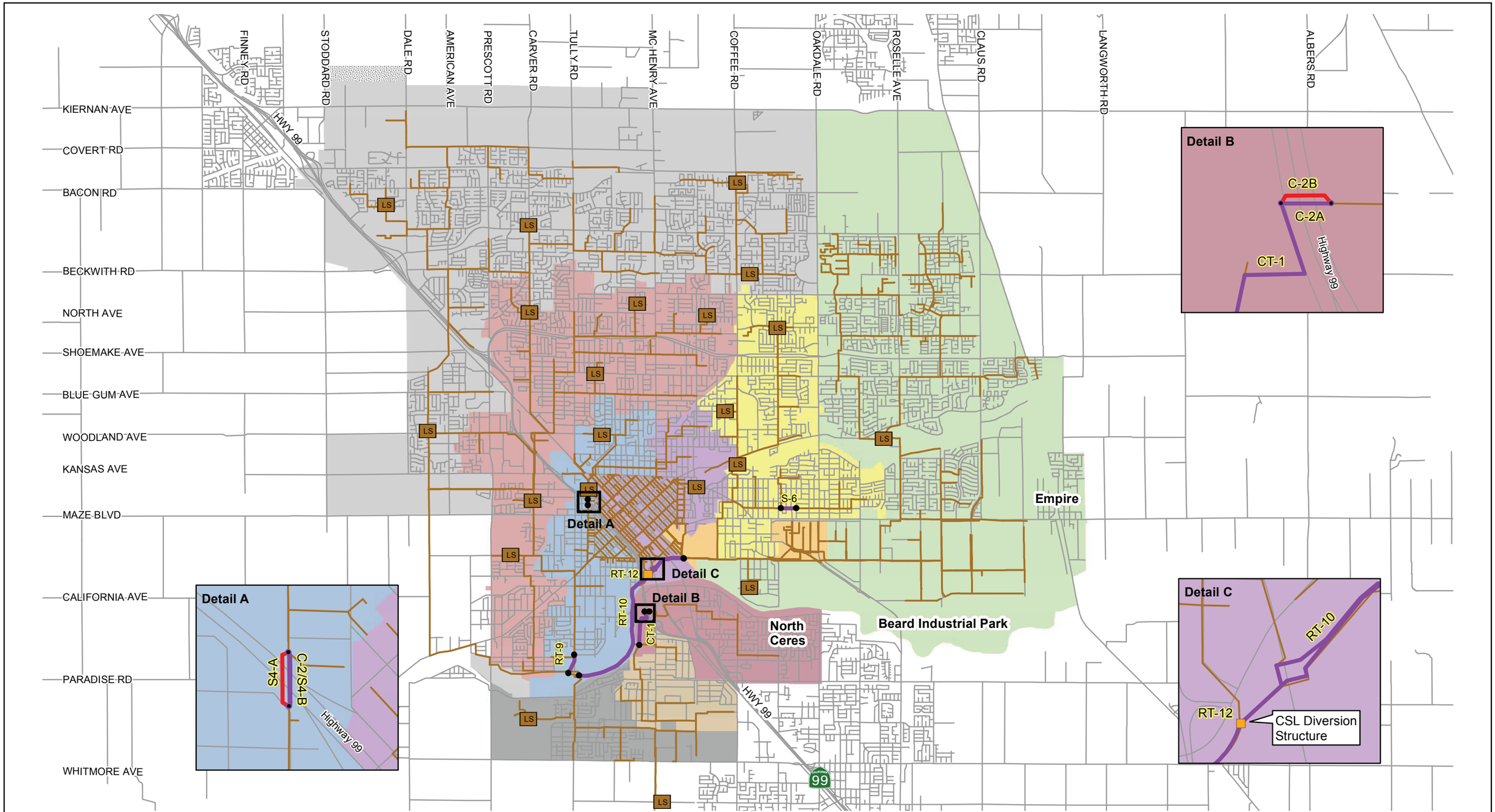
4000 2000 0 4000

Feet

Figure 2-7.
Proposed Sewer Rehabilitation Improvements

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Source: Carollo 2016b

Legend

- Structural Rehabilitation
- Reliability
- CSL Diversion Structure
- Lift Station
- Sewer Main

Tributary Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

N

4000 2000 0 4000

Feet

Prepared by: Horizon Water and Environment

Figure 2-8.
Proposed Sewer Rehabilitation and Reliability Improvements

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Lift Stations

The Proposed Program includes constructing 7 new lift stations and upgrading 4 existing lift stations. Upgrades of existing lift stations may include the replacement of undersized pumps, installation of new or larger emergency electrical generators, and elimination of overflows. If necessary, the lift station structure may need to be enlarged to accommodate proposed upgrades. Figure 2-6 shows the locations of the lift stations in need of upgrades and the new lift stations. As described in Chapter 1, the majority of the City's lift station elements are belowground; aboveground elements typically include one or more control panels, a small radio antenna (up to 25 feet tall), and some may have a storage structure and restroom facility. The impervious surface area of each lift station is generally less than 1 acre. A concrete masonry unit wall or security gates consisting of wrought iron or steel tube would also be constructed around the perimeter of each lift station site. Depending on site conditions, landscaping may also be installed in front of a lift station. **Table 2-6** summarizes the location, description, and key objective of each lift station component.

Table 2-6. Summary of Proposed Lift Station Capacity Expansions

Project No.	Lift Station	General Location	Description	Key Objective
LS #29 – Rose & Celeste	Rose-Celeste	Rose Ave. and Celeste Dr.	Replace existing pump station	Increase capacity
LS #3 - Benson	Benson	Hillside and Trenary	Replace existing pump station	Increase capacity
LS #64	Dakota	Dakota Rd. & Beckwith Ct. to serve future CPD	New pump station	Growth
LS #63	Kansas	Kansas Ave. & Altamont Ct.	New pump station	Growth
LS #60	Chapman	North of Chapman Dr.	Replace existing lift station at new location	Growth
LS #67	Litt Rd.	Along future Lakewood Trunk	New pump station	Growth
LS #59	Pelandale Rd.	Pelandale Ave. at Virginia Corridor	New pump station	Growth & existing development
LS #61	Wood Sorrel	Sylvan Ave. at Wood Sorrel Dr.	New pump station	Existing development and growth
LS #62	Whitmore/Carpenter	Along future Whitmore alignment between Ustick and Carpenter	New pump station	Growth
LS # 65	Kiernan Ave.	North of Kiernan Ave. around Carver Rd.	New pump station	Growth and some existing development
LS# 30	Rumble	Rumble Rd. near Bay Ln.	Replace existing pump station	Increase capacity
LS # 39	Woodland	Woodland Ave. & Poust Rd.	Improve	Increase capacity

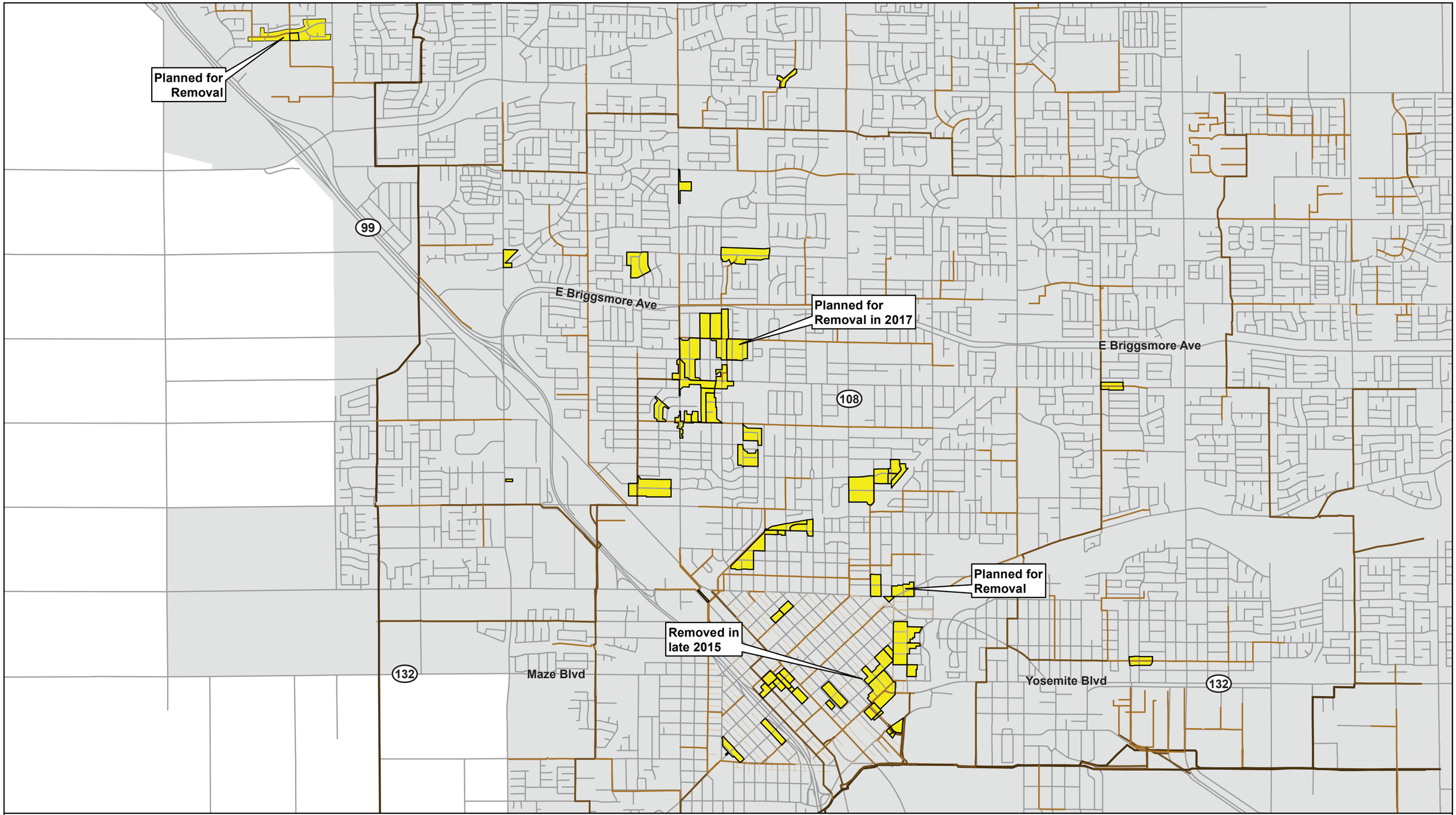
Stormwater/Sanitary Sewer Cross-Connect Disconnections

Another component of the Proposed Program focuses on decreasing peak flows in the sanitary system by disconnecting up to 60 interconnections between the storm sewers and sanitary sewers. **Figure 2-9** shows the general locations of the sanitary sewer disconnections. After storm events, these cross-connections typically increase substantially with peak flows. Improvements may include installing new storm drainage pipes, detention basins and various underground storage and percolation methods. Other improvements may include:

- Removal of piping connecting storm drainage and sanitary systems;
- Installation of storm drainage pipelines (typically 24 to 36 inches in diameter) to convey storm water runoff to existing drainage facilities;
- Installation of storm drainage pipeline (42 to 78 inches in diameter) to provide interim underground storage;
- Installation of underground horizontal drainage systems to provide interim underground storage; or
- Installation of more rockwells to provide short-term holding capacity and percolation.

Small Pipeline Rehabilitation and Replacement Projects

Aside from the City-wide storm drain disconnection improvements, the City proposes other improvements to the overall collection system. The new City-wide program would focus on small pipeline rehabilitation and replacement (R&R) projects as identified by relatively recent closed-circuit television (CCTV) footage. These projects would be conducted outside of the WWMP scope of work, and focus on the City's 6-inch and 8-inch sewer mains. This effort also includes some larger pipelines; however, the specific locations of the pipelines that require rehabilitation and repair have not yet been identified or prioritized yet. However, based on CCTV data collected, there was enough evidence to create a program to address these smaller mains on an annual basis. It is anticipated that most of these pipeline rehabilitation and replacement projects are in the older parts of the City including portions of downtown Modesto. Throughout this DEIR, this CIP is referred to as "R&R."



Source: Carollo 2016b

Prepared by: Horizon WATER and ENVIRONMENT

Legend

Sewer Main

- 8" or Less
- 9" to 18"
- 20" to 36"
- Larger than 36"
- Storm Drain Cross Connection Subcatchments
- Study Area Boundary

N

2,500 1,250 0 2,500

Feet

Figure 2-9.
Storm Drain Cross-Connections

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2.5.3 Treatment Plant Components

Several of the primary treatment facilities at the Sutter Plant are aging and require major upgrades to maintain long-term and reliable service. In addition, as previously described, the Sutter Plant is vulnerable to flooding due to its proximity to the Tuolumne River. As such, a major component of the Proposed Program involves decommissioning critical primary treatment and solids handling facilities at the Sutter Plant and constructing those facilities at the Jennings Plant. Specific details about proposed components at each treatment plant are provided below.

Sutter Plant Components

The following primary treatment facilities are near or exceeding their useful life and are vulnerable to flooding as they are located within the 100-year floodplain: the primary clarifiers, anaerobic digesters, and sludge drying beds. Under the Proposed Program, these facilities would be decommissioned after the new primary treatment and solids handling components at the Jennings Plant are complete. Similar to existing condition, the Sutter Plant would continue to provide influent pumping, screening, and grit removal. Some capacity upgrades to the Sutter Plant facilities are needed to accommodate future growth. The following components at the Sutter Plant are planned:

- **Influent Pump Station Improvements (SP-1)**: Under this CIP, the influent pump station would remain at the current location and a fifth pump would be installed to provide sufficient capacity anticipated by 2035. The pump would provide capacity of approximately 27 mgd, to allow for a firm capacity of 108 mgd and a total capacity of 135 mgd. The new pump would be installed within the existing facility footprint and is currently anticipated to be constructed in 2027.

- **Primary Effluent Pump Station Replacement (SP-3)**: The existing Primary Effluent Pump Station, which conveys primary effluent to the Primary Effluent Outfall, does not have adequate capacity to handle future PWWF. As such, the pump station would be replaced with a new effluent pump station that is designed to accommodate the projected PWWF and a dry PWWF of 48.6 mgd. The new pump station would be located at the southern end of the plant (refer to no. 37 on **Figure 2-10**). The facility would be designed to withstand a 100-year flood and is expected to include odor control provisions, though such provisions have not been determined at this time (Pers. Comm. Eve 2017b). This CIP is anticipated to be constructed between 2023 and 2024.

- **Demolition of Sutter Treatment Facilities (SP-4):** After the new primary treatment facilities at the Jennings Plant are constructed and fully operating, several primary treatment facilities at the Sutter Plant would be decommissioned and demolished in 2027-2028. As shown in Figure 2-10, the following facilities would be decommissioned and demolished:
  - Anaerobic Digester Nos. 1 through 5
  - Polymer Mixing Building
  - Primary clarifier Nos. 1 and 2
  - Aeration Basin/Holding Basin
  - Emergency Generator No. 2
  - Solid waste storage
  - Existing Primary Effluent Pump Station (including electrical support system)

- **Flood Protection Improvements (SP-5):** Many of the Sutter Plant facilities are located within the 100-year floodplain and are not floodproofed. Therefore, the City would conduct flood protection improvements for wastewater treatment facilities that are expected to remain at the Sutter Plant and are not currently designed to withstand a 100-year flood. The following facilities would be floodproofed:

    - Administration and laboratory building
    - Crane storage building
    - Septic receiving station
    - Electric Sub-stations 1 and 2
    - Emergency Generator No.1
    - Portions of the Headworks (Dryden box, grit chambers, and odor control blowers)
    - Odor Control biofilter
    - Vac Con Dump site
    - Pumping Plant No. 3

    In addition, the City may need to seal or raise manholes and other appurtenances onsite. These flood protection improvements would be conducted on a case-by-case basis and will be prioritized based on a more detailed evaluation.

Plant improvements may require on-site exterior lighting. New lighting at these facilities would be consistent with outdoor lighting currently used at the two wastewater treatment plants. New lighting at these facilities would be directed inward to avoid glare or spillover effects and may be motion-activated where beneficial and effective. Exterior coating of new pump stations at the Sutter Plant would appear similar to similar structures seen throughout Modesto, and that earth tones with non-reflective finishes would be used to coat aboveground components at lift stations and pump station sites.

Outfall Pipelines

Under the Proposed Program, the City would conduct three major outfall improvement projects to accommodate increased capacity and improve reliability of the existing outfall pipelines. These projects are described below.

New Tuolumne River Crossings (OP-1.1)

The existing river crossings for the Cannery Segregation Line Outfall and Primary Effluent Outfall are presumed to be in poor condition from corrosion and were constructed in such a way that the alignment configurations are not conducive to lining. Therefore, the pipelines are unable to be loaded under pressure necessary to convey increased flow. The existing pipe crossings under the Tuolumne River would be replaced with new pipe crossings that would allow the pipes to operate under pressure to increase the outfall's flow capacities. In addition, a new river crossing for the new primary effluent outfall (described below) would also be constructed under this CIP. This project is planned to be constructed in the next 5 years.

Facilities Retained
1. Collection Storage Yard
2. Collection and Electrical
3. Admin and Lab Building
4. Water Well 15A
5. Overflow Parking
6. Crane Storage Building
7. Septic Receiving Station
13. Electrical Sub-Station 1
14. Ferric Chloride Station
15. Maintenance (Staff Building)
16. Maintenance (Shop Building)
17. Emergency Generator #1
18. Electrical Sub-Station 2
19. Pumping Plant No. 3
20. Headworks
21. Air Handling Building
22. Odor Control Building
23. Sludge Thickener No. 1 (abandoned)
24. Sludge Thickener No. 2 (abandoned)
25. Gravity Belt Thickener Building
26. Polymer Mixing
30. Collection Storage Yard
31. Vac Con Dump Site
32. Water Well 15B
35. Outfall Control Building
39. Emergency Holding Basin
40. Sludge Drying Beds

Facilities To Be Demolished
8. Digester 1
9. Digester 2
10. Digester 3
11. Digester 4
12. Digester 5
27. Primary Clarifier 1
28. Primary Clarifier 2
29. Sludge Handling Building
33. Aeration Basin/Holding Basin
34. Emergency Generator #2
36 Solid Waste Storage
37. Outfall Pump Station
38. Outfall Control Valves

Third Outfall

Outfall Pump Station

Not Part of Site Decomissioning

Existing Domestic Outfall

HAMMOND ST

HAYS ST

JOHN ST

SUTTER AVE

CARTWRIGHT CT

CRATER AVE

W HATCH RD

N

0 250 500 1,000
Feet

Facilities to be Demolished
New Structure
New Pipeline
Retained Facilities
Existing Pipeline
Third Outfall

Figure 2-10
Facilities Proposed for Demolition at Sutter Plant

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Wastewater Master Plan EIR

Horizon WATER and ENVIRONMENT

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Constructing the pipeline crossings would entail trenchless methods including horizontal directional drilling (HDD), microtunneling, or pipe bursting. These methods are described in more detail in Section 2.4.4, below. **Figure 2-11** shows a preliminary site plan for the new Tuolumne River crossings including the approximate locations of the jacking pits, junction structures, and force main alignments. As shown in Figure 2-11, the northern jacking pit would be west of the Sutter Plant drying beds and just north of the Tuolumne River; the southern jacking pit and junction structure would be at the southwest corner of the Hatch Road and Monticello Lane intersection. It is anticipated that each force main would be 48 inches in diameter and would be approximately 550 feet long. Two of these force mains would connect with the existing Primary Effluent Outfall and the Cannery Segregation Line Outfall at the upstream and downstream ends of the crossings. Approximately 1,450 feet of force main would be installed at the upstream side and 1,200 of force main would be installed at the downstream end of the crossings. In addition, four pipeline junction structures would be installed: two at the upstream side of the crossing and two at the downstream end of the crossing. Approximately 2,300 feet of the existing outfall pipelines, including 500 feet of the existing river crossing, would be abandoned.

New Primary Effluent Outfall Pipeline (OP-1.2)

A new primary effluent outfall pipeline would be constructed to convey primary effluent flows from the Sutter Plant to the new primary treatment facilities at the Jennings Plant. Figure 2-11 and **Figure 2-12** show the preliminary alignment of the new primary effluent outfall. The new pipeline would be approximately 9 miles long and 54 inches in diameter. From the Tuolumne River crossing, the new outfall pipeline would continue south on Carpenter Road, west on Keyes Road, south on Jennings Road, and then continue west and terminate at the Jennings Plant.

This CIP is needed to accommodate increased capacity for domestic flows. The new outfall pipeline would accommodate the projected 2035 PWWF of 85 mgd. Currently, Pumping Plant No. 3, which conveys Cannery Segregation flows around the Sutter Plant and to the Cannery Segregation Line Outfall, is undergoing improvements to allow for year-round diversion. Once upgrades to Pumping Plant No. 3 are complete, the Cannery Segregation Line Outfall will no longer be able to convey domestic flows during peak flow events (which currently operates in this fashion). The third outfall pipeline would also provide redundancy for Cannery Segregation flows. For example, in the event that one of the two existing outfalls fails, the City would need to combine domestic and Cannery Segregation flows into one pipeline and require that all Cannery Segregation flows be treated at the Jennings Plant, which has a treatment capacity of 2 mgd. Incoming Cannery Segregation flows greater than 2 mgd would overwhelm the treatment process at the Jennings Plant and could result in a discharge violation.

Slip Lining of a Portion of the Cannery Segregation Line Outfall (OP-3)

In the long-term (2027 to 2028), the City anticipates that improvements to the existing Cannery Segregation Line Outfall would be needed. Although the condition of the Cannery Segregation Line's interior is unknown and is primarily used to convey cannery process water flows, the outfall was used to convey domestic flows before 1999 and is currently used to convey domestic flows during the wet weather season. As such, some pipe deterioration may have occurred over the years. In the future, a condition assessment of the Cannery Segregation Line may be needed to confirm whether lining is necessary. The City currently

anticipates that lining would be needed for half of the pipeline's length. This effort would involve slip-lining the existing outfall pipeline with a plastic liner to improve its condition and reliability.

Jennings Plant Components

CIPs proposed at the Jennings Plant include various modifications to the secondary and tertiary treatment facilities and construction of new primary treatment and solids processing facilities including digesters and drying beds. These Program improvements would accommodate planned growth for domestic and commercial wastewater flows through 2035. Figure 1-4 shows the existing site plan of the Jennings Plant. Such improvements would increase the impermeable surface area of the Jennings Plant by approximately 27 acres. Additional detail about each CIP is provided below.

Biological Nutrient Removal/Tertiary Phase 3 Expansion

Biological Nutrient Removal (BNR)/Tertiary Phase 3 Expansion (JP-1.1) The City plans to expand tertiary treatment facilities by 2027 to reliably meet BOD loading limits and to increase tertiary effluent. In June 2017, the Central Valley RWQCB issued a renewed NPDES permit (Order R5-2017-0064, NPDES No. CA0079103) that allows tertiary treated wastewater discharge to the San Joaquin River. Currently, the NPDES permit allows discharges of up to 14.9 mgd, and upon completion of the Phase 3 upgrades, the City will be permitted to discharge up to 19.1 mgd year-round. In the near future, the Central Valley RWQCB is expected to issue a new waste discharge requirement (WDR) that decreases the secondary effluent BOD limit for land application from 300 to 40 milligrams per liter (mg/L). The tertiary facilities were designed to be expanded in three phases (Phases 3-5). The first of these phases, the proposed Phase 3 expansion, would be required within the planning period. **Figure 2-13** shows the general location of the expanded tertiary treatment facilities.

Secondary Treatment Modifications

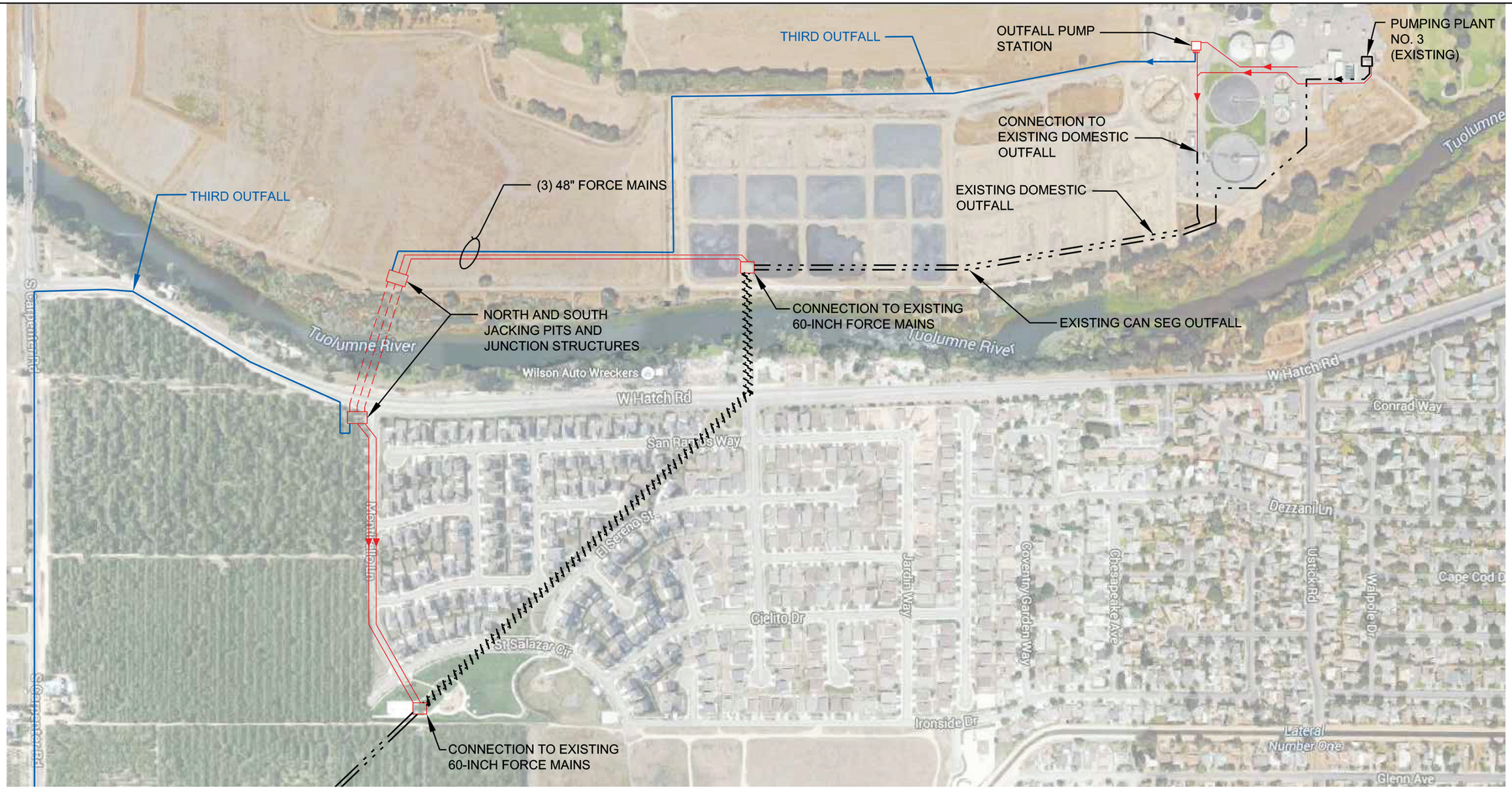
Within the next 5 years, the City plans to complete the following modifications at the Jennings secondary treatment plant facilities:

- **Fixed Film Reactor (FFR) Rehabilitation (JP-2.1)**. This CIP involves replacing the damaged portion of the existing FFR media as well as the rotary distributor, and air supply fans to increase the FFRs' performance. The pumps in the FFR pump station would be replaced with variable frequency drives to meet minimum hydraulic loading requirements. In addition, the FFR Effluent Box would be expanded and a new connection piping would be installed.

- **Dredging (JP-2.2)**. The digestion pits of the facultative ponds are currently full. Dredging of the digestion pits in Facultative Pond No. 3 would be required to restore treatment capacity. Approximately 2,100 dry tons of solids would be removed from this pond. The solids would be dewatered and disposed off-site at an appropriate facility.

- **Dissolved Air Flotation Piping (JP-2.3)**. Under this CIP, the City would modify DAF effluent piping to convey flow to the Irrigation Forebay, which is used for Ranch Land irrigation. The DAFs remove algae and suspended solids from the pond effluent.

These modifications are also shown in **Figure 2-14**.



LEGEND

- EXISTING PIPELINE
- NEW RIVER CROSSING
- NEW PIPELINE
- NEW STRUCTURE
- EXISTING PIPELINE TO BE ABANDONED

N

400 200 0 400

Feet

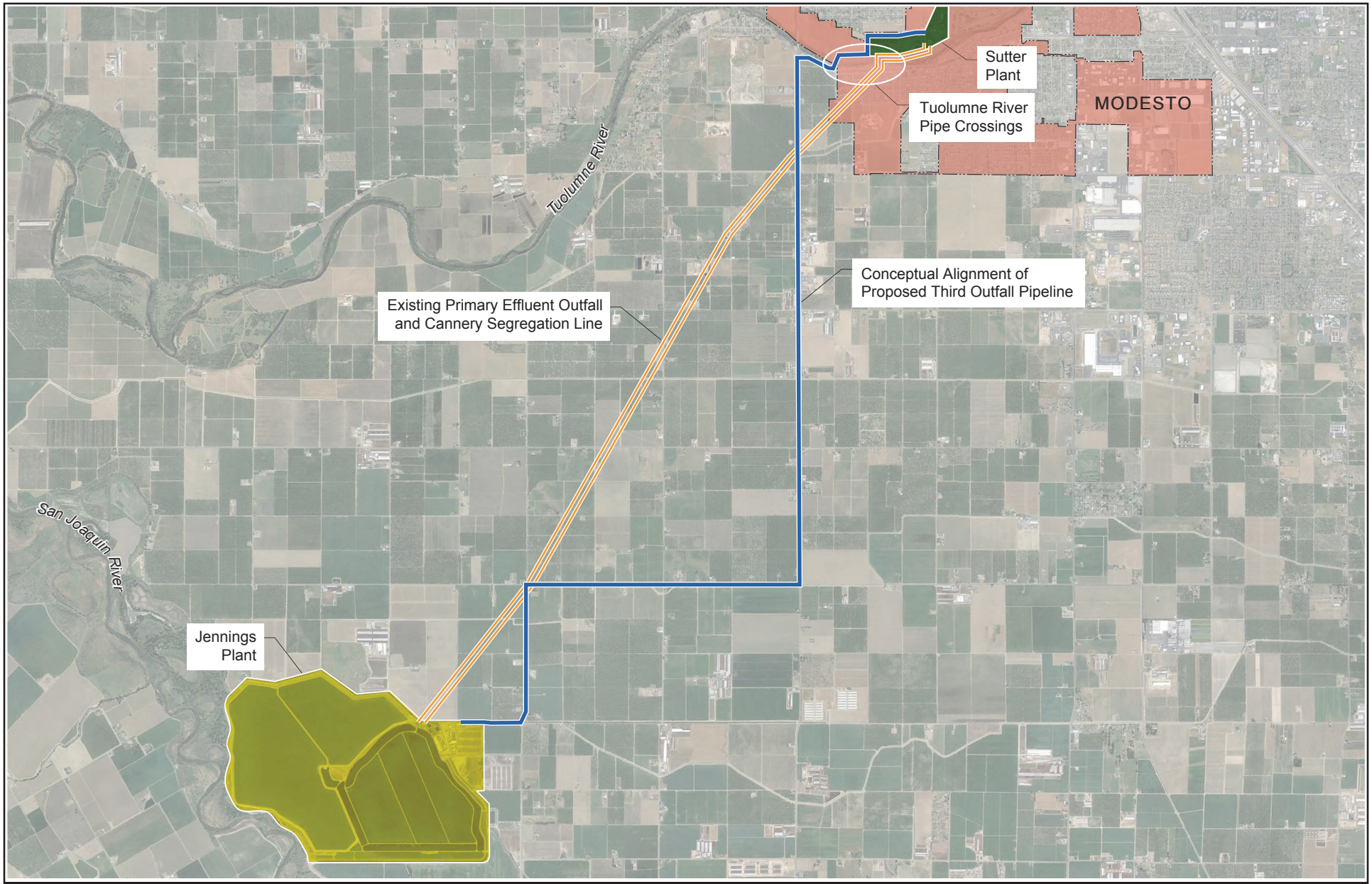
Source: Carollo 2016a

Figure 2-11.
Site Plan for Proposed Tuolumne River Pipeline Crossings

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Horizon WATER and ENVIRONMENT

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Wastewater Master Plan EIR

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Source: Carollo 2016a

LEGEND

- Route for Third Outfall
- Existing Route

N

4000 2000 0 4000

Feet

Prepared by:

Horizon WATER and ENVIRONMENT

Figure 2-12. Proposed Alignment for Third Outfall Pipeline

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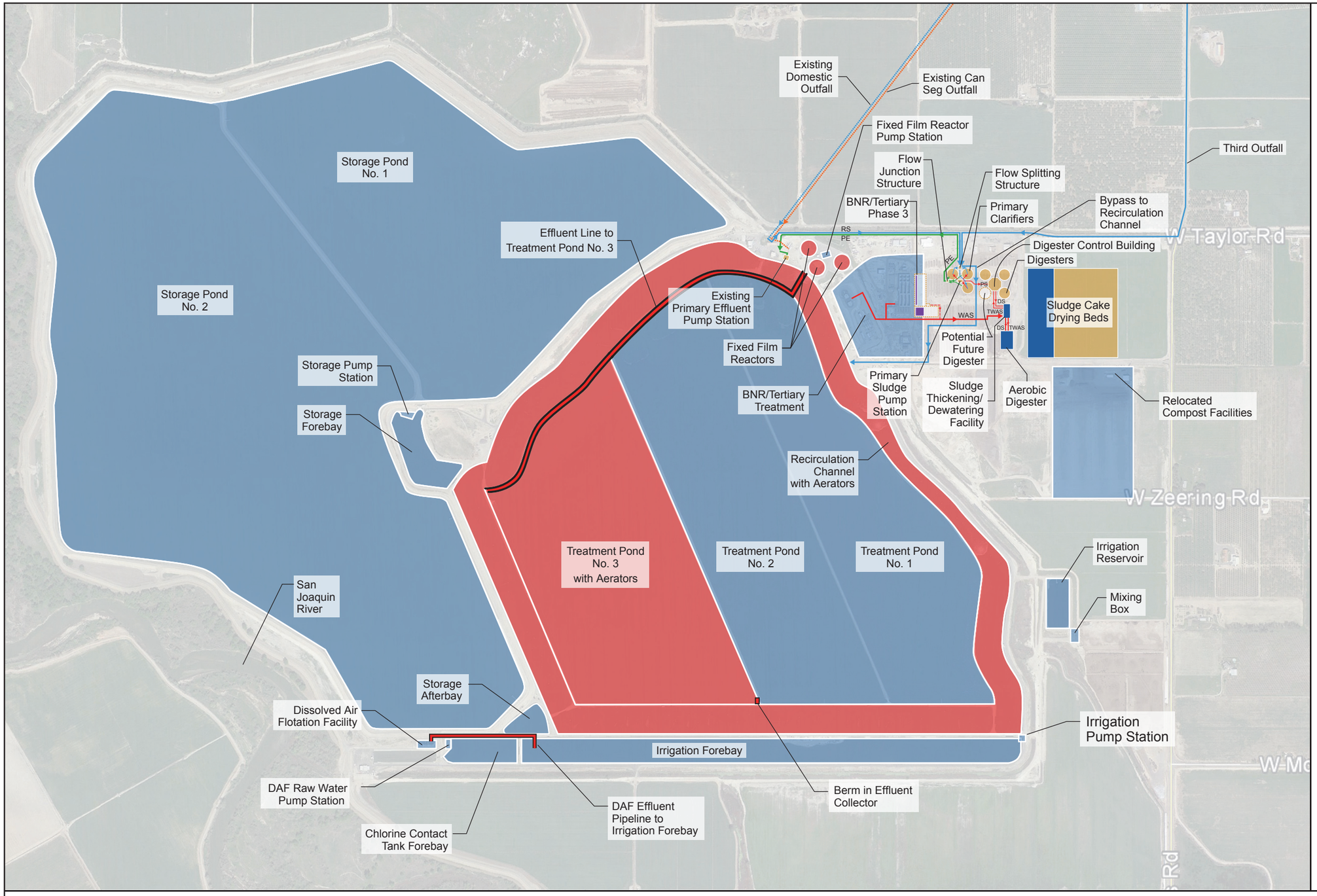
Source: Carollo 2016a

Figure 2-13. Proposed Primary Treatment and Solids Handling Facilities at Jennings Plant

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Source: Carollo 2016b

Figure 2-14. Overview of New/Modified Facilities at Jennings Plant

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Cannery Segregation Treatment Facilities Upgrade

The City may begin accepting additional cannery segregation flow from the canneries during the canning season. Up to approximately 25 percent of the current peak canning season flows and loads are anticipated; this is equivalent to an additional 5 mgd. To allow for new discharges to the cannery segregation system or enable the system to reduce BOD loading, several upgrades are necessary. A portion of the existing secondary treatment infrastructure would be upgraded and designated for treating the additional flow.

- **Aerators in Recirculation Channel (JP-3.1)**. Approximately sixty 50-horsepower (hp) surface mechanical aerators, or another aeration system, would be installed in the Recirculation Channel to increase treatment capacity. A new electrical system, including transformers, motor control centers, and new ductbanks, would replace the mostly abandoned existing electrical service.

- **Nutrient Feed System (JP-3.2).** This would consist of installing new chemical feed pumps and storage tanks.**Effluent Channel Berm and FFR Effluent Pipeline (JP-3.3).** A berm in the existing effluent channel would be added to keep effluent from the designated domestic pond (Facultative Treatment Pond No. 3) separate from the designated Cannery Segregation ponds (Facultative Treatment Ponds No. 1 and 2). The recirculation channel would be designated for cannery segregation flow and therefore, a new FFR effluent pipeline to Facultative Pond No. 3 would also be installed.

- **Dredging (JP-3.4).** The digestion pits of the facultative ponds are currently full. The Recirculation Channel also has large amounts of biosolids accumulated on the bottom of the channel. Dredging of the digestion pits of Facultative Ponds No. 1 and 2 and the Recirculation Channel would be required to restore treatment capacity. Approximately 16,000 dry tons of solids would be removed from these facilities. Dredging and dewatering work would be performed by another party and solids disposal would occur offsite.

- **Pond Aerators (JP-3.5)**. Under this project, twelve new 50-hp surface mechanical aerators would be installed to meet the BOD loading limit. As part of this effort, new electrical systems, transformers, and motor controls would be installed to support the aerators. Existing electrical hardware would be either abandoned or removed.

Interim Waste Activated Sludge Handling Facilities

Within the next five years, the City plans to install interim WAS handling facilities to treat WAS prior to the primary treatment and solids handling facilities relocation to the Jennings Plant. Figure 2-13 shows the location of the proposed interim WAS handling facilities.

- **Aerobic Digester (JP-4.1)**. A 2-MG aerobic digester would stabilize WAS from the Phases 1 and 2 BNR/tertiary treatment processes. Eight fifty-horsepower surface aerators and the associated electrical system would provide mixing and oxygen to the process.

- **Solids Processing Building (JP-4.2)**. Under this, the biosolids dewatering and WAS thickening equipment would be constructed and enclosed in a new solids processing building. Two sieve drum concentrators, which are used to thicken and reduce the

WAS volume before and after the digester, would be installed in the building. One would thicken WAS before anaerobic digestion, while the other would thicken digested sludge prior to dewatering. The sludge would then be directed to a belt filter press or similar process equipment to dewater the digested sludge.

- **Sludge Cake Drying Beds (JP- 4.3)**. Sludge cake, which is dewatered digested sludge, would be solar-dried in new drying beds to reduce its volume and weight and to treat it to Class B[1] standards for land application at the City's approximately 2,500-acre ranch lands. The new drying beds would be constructed on City-owned land that was formerly used as a composting facility to the east of the BNR/tertiary treatment facilities. Five acres of drying beds would be required for WAS treatment. The drying beds would consist of an asphalt-paved area with concrete containment walls and piping for drainage and decant return to the existing tailwater pump station. To accommodate additional flows, the tailwater pump station would be rehabilitated as the drying bed facilities are constructed. Once the biosolids have dried and treated to Class B standards, they would be applied to the City's ranch lands; no additional land would need to be acquired.

Primary Treatment and Solids Handling Facilities Relocation

Figure 2-13 shows the locations of proposed primary treatment and solids handling facilities to be constructed at the Jennings Plant. These facilities would replace the aging facilities at the Sutter Plant and would be constructed just east of the existing Jennings Plant facilities. The City currently plans to construct these components between 2023 and 2025.

- **New Primary Treatment Facilities (JP-5.1)**. Three 110-foot diameter clarifiers and primary sludge and scum pumping equipment would be installed.

- **Yard Piping Structures (JP-5.2)**. This CIP includes installing new yard piping to connect new primary treatment and solids handling facilities to the existing secondary treatment facilities. Flow splitting structures would also be installed.

- **Anaerobic Digesters (JP-5.3)**. Under this CIP, three new anaerobic digesters and a Digester Control Building would be constructed. The digesters would be 115 feet in diameter and have a 31-foot side-water depth, and would treat WAS and primary sludge from the new clarifiers and new Digester Control Building. The building would include electrical, mechanical, instrumentation and controls, digester mixing, and heating equipment.

- **Solids Processing Building (JP-5.4)**. The two existing sieve drum concentrators would thicken WAS before it is sent to the digesters. Afterward, four belt filter presses, three new and one existing from the interim WAS handling project, or another process, would dewater the digested sludge before it is sent to the sludge cake drying beds. The WAS thickening and biosolids dewatering equipment would be located in an enclosed building constructed during interim WAS handling project.

[1] The disposal of biosolids is regulated by the federal biosolids rule (40 Code of Federal Regulations Part 503), which identifies allowed uses for Class A biosolids (contain no detectible levels of pathogens) and Class B biosolids (treated but contain higher levels of detectible pathogens than Class A biosolids). Class B biosolids are currently produced at the Sutter Plant.

- **Sludge Drying Beds (JP-5.5)**. The 5-acre drying beds constructed as part of component JP-4.3, described above, would be expanded to 18.6 acres. Dewatered digested sludge would be solar-dried in new beds just east of the new primary plant. The drying beds would be asphalt-paved areas with concrete containment walls and piping for drainage and decant return to the existing tailwater pump station. Dried sludge would meet Class B standards and would eventually be applied to City's ranch land.

Lighting and Landscaping

Jennings Plant improvements may require on-site exterior lighting. New lighting at this facility would be consistent with outdoor lighting currently used at the two wastewater treatment plants. New lighting at the Jennings Plant would be directed inward to avoid glare or spillover effects, and may be motion-activated where beneficial and effective.

2.5.4 Construction Methods

Construction of proposed improvements to the City's collection system and treatment facilities would involve several types of activities: site preparation; demolition and removal of some existing facilities; earthwork (grading and excavation); pipeline installation; and facility construction. These activities are described below. As indicated in Section 2.4.5, Construction Schedule and Phasing, construction would occur throughout the Program planning period and within the construction period for each component, there would be periods of more intensive activity and associated peaks in construction traffic, typically during ground-disturbing activities, followed by longer periods of reduced activity.

Site Preparation and Demolition

Site preparation would include clearing and grubbing at each CIP site. Clearing and grubbing would be conducted using standard excavators, bulldozers, and hand labor. Depending on the CIP project, other site preparation work may involve demolition of existing facilities/structures, excavation, import, and placement of fill, and compaction. Demolition of primary treatment facilities at the Sutter Plant (e.g., primary clarifiers and digesters) would involve removal and proper disposal of all mechanical and electrical equipment, and demolition of above- and below-ground structures. An estimated 14,000 cubic yards of building material would be demolished at the Sutter Plant. Demolition waste would consist of concrete, steel, and other miscellaneous building materials. Some or all of the waste would require disposal at a landfill or hazardous waste facility. An estimated 12,000 cubic yards of material would be excavated, and approximately 48,000 cubic yards of material would be backfilled at the Sutter Plant. Once these facilities have been demolished, the site would be leveled so that the site could be used for future facilities.

To the extent feasible, excavated soil would be reused on-site. If required, fill would be delivered to the project sites by conventional haul trucks with a capacity of up to 20 cubic yards (cy) per load. Fill material would be placed with an excavator and compacted with a compactor/roller.

Pipeline Construction

Pipeline construction activities would take place using either open trench or trenchless methods. These activities are described below. In general, typical equipment utilized during pipeline installation includes excavators and backhoes, loaders, tractor trailer trucks for

hauling equipment, concrete trucks, graders, asphalt pavers and rollers, compaction equipment, and various smaller service vehicles.

Open Trench. For new pipelines that would be installed beneath existing streets, the general process for pipeline installation involves digging a trench, installing the pipe, and backfilling the trench ("cut and cover"). In existing streets, the cut-and-cover method involves removing the asphalt, roadway base, and underlying soil; all materials are replaced at the completion of the program. The depth and width of the trenches would vary depending upon the size of the pipe and take into consideration the presence of other existing utility lines. For the new effluent outfall pipeline, the width of the trench would be approximately 8 feet wide and approximately 11 feet deep. Depending on the time of year and soils underlying the CIP site, groundwater dewatering work may be required.

In general, the maximum length of an open trench would be the distance necessary to accommodate the amount of pipe that can be laid in one day. For new sewer pipelines, typically 200 to 400 feet can be laid with one crew working. A typical crew size includes 5 workers. In the event that multiple crews are working on a particular pipeline project, more than 400 feet of new pipeline can be installed. For the new outfall pipeline, average pipeline construction would progress at a rate of 100 feet per day.

To the extent feasible, pipeline construction activities would occur within the limits of the City or County right-of-way boundaries, City utility easement, and/or construction easement. The width of the construction area varies both on the extent of applicable easements and pipeline diameter. For the purposes of the EIR analysis, the approximate width of the construction areas would be 20 feet. Depending on the project location, construction crews may close one lane of traffic temporarily during pipe installation.

Trenchless Methods. Where new or replacement sewer pipelines and outfall pipelines would cross creeks (e.g., Dry Creek and Tuolumne River) or where open trench methods would be problematic due to the presence of underground utilities, railroad crossings, or other right-of-way issues; the City would use trenchless pipeline installation methods including HDD, microtunneling, or pipe bursting. New sewer pipeline construction may also entail slip-lining or CIPP methods. In addition, pile drivers would be used for horizontal drilling. These methods are summarized below.

- HDD involves the use of a drill rig that is tilted at the top at an angle of 10-15 degrees from the surface. A small pilot hole is drilled along a pre-determined horizontal and vertical alignment from the entry pit to exit pit. A slurry consisting of water clay is then drilled via a drill string; the pressure along with the rotating drill bit excavates the material. The excavated material is transported back to the entry pit along the outside of the drill string.

- Microtunneling requires the construction of insertion pits, pipe jacking (pipes pushed behind the small tunneling machine), and application of a lubricant to maintain pressure and prevent the shafts and the tunnel from collapsing. The tunneling machine is controlled by a computer and is typically accurate. The construction crews first establish the launch pit and a receiving pit on either side of the waterway or utility crossing. Temporary dewatering may be needed at the pits.

- Pipe bursting is another trenchless method in which an insertion pit and receiving pit are established on both sides of the waterway and/or utility or road crossing. Temporary groundwater dewatering may be needed at the pit excavation areas. A mechanically applied bursting tool is used to apply force on the existing pipe which breaks either by brittle fracture or by splitting. At the same time, a new pipe is pulled in to replace the existing pipe and the back end of the bursting head connects with the new pipe. The front end is connected to a cable or pulling rod that is pulled from the receiving pit. The bursting head is pulled through the existing pipe debris and creates a temporary cavity.

- CIPP lining is a trenchless method used to rehabilitate cracked, broken or failed sewer pipes. A resin-saturated felt tube consisting of polyester, fiberglass cloth or another substance for resin impregnation, is inverted or pulled into a damaged pipe typically from the upstream side. The liner and resin is pressed into cracks, joints, and lateral connection flares to lock the liner into place.

- Sliplining is conducting by installing a smaller (referred to as a "carrier pipe") into a larger ('host pipe'), grouting the annular space between the two pipes, and sealing the ends.

Construction of Lift Stations and Other Aboveground Facilities

Most of the lift station upgrades would be constructed within the existing footprint of lift station structures. For new lift stations, construction activities would generally involve excavation, shoring, and possible groundwater dewatering. Other new aboveground facilities to be constructed such as primary clarifiers and anaerobic digesters, would entail excavation for foundations of the structures and conventional concrete and steel methods. Construction may also include sheeting and shoring work for necessary piping and underground utility connections. Other activities would likely include connecting mechanical, structural, and electrical instruments.

River Trunk Realignment Project Construction

Construction of the River Trunk Realignment Project would occur in three different phases.

- **Dry Creek Crossing and Pipeline to River Trunk Pump Station (Phase 1)**: The first phase of the project includes constructing a new 48-inch-diameter pipeline crossing at Dry Creek, the River Trunk Pump Station at Morton Boulevard, a new gravity pipeline along B street that connects to the River Trunk Pump Station, and a portion of the new River Trunk force main. Currently, the City is considering two different approaches for establishing a dry and stable work area for the River Trunk Pump Station: (1) designing the temporary shoring system to be part of the permanent pump station, or (2) design a temporary shoring system to create a dry and stable work area and construct permanent structural walls for the pump station separately (Carollo Engineers 2016c). Pile drivers would be used during the horizontal drilling process and during construction of the wet well.

- **Gravity Pipelines (Phase 2)**: The second phase of the project includes constructing the Tuolumne and Neece junction structure and gravity pipelines beneath Tuolumne Boulevard, Colorado Avenue, and across the Dryden Golf Course. This phase also includes constructing the force main from the River Trunk Pump Station to the Tuolumne and Neece junction structure.

- **Shackelford Pump Station and Pipeline (Phase 3)**: The third phase of the project includes constructing the new Shackelford Pump Station located west of Crows Landing Road and east of the Tuolumne River. This pump station will pump flows through a new force main under Tuolumne River using recently constructed inverted siphons. From the Tuolumne River crossing, a new force main would be installed through the Dryden Park Golf Course, continue west, and terminate at a manhole in Roselawn Avenue where the flow would be conveyed by gravity to the new River Trunk line at Colorado Avenue and Pelton Avenue. Pile driving would be required during construction of the wet well and pump station.

During the first phase of the project, both open trench and trenchless pipeline installation methods would be used. Open trench methods would mostly be employed for pipeline segments planned within the road right-of-way. Trenchless construction methods would be used to install the 48-inch pipeline beneath Dry Creek and the two pipeline crossings at 7th Street and the Southern Pacific Railroad crossing. Trenchless methods would also be used to install the overflow structure at the River Trunk Pump Station site. The Gallo Winery parking lot would be used as a staging area and another potential staging area would be located on a vacant lot located between Tuolumne Boulevard and South 7th Street. **Table 2-7** summarizes work areas associated with Phase 1 of the River Trunk Realignment Project.

Table 2-7. Summary of Construction Work Areas for River Trunk Realignment Project (Phase 1)

River Trunk Realignment Project – Phase 1 Work Areas	Approximate Area (square feet)
River Trunk Pump Station	57,000
Insertion Pits Near Tuolumne Blvd.	1,000
Insertion Pits Located South of Potential Staging Area	1,000
Potential Staging Area Near Tuolumne Blvd.	13,600
Gallo Staging Area	28,600

Pipeline construction activities are estimated to require excavation of approximately 102,400 cubic yards of soil and the pump stations would require roughly excavation of 15,900 cubic yards of soil. While much of this material would be reused as backfill, approximately 45,500 cubic yards of soil would require off-site disposal. Approximately 19,555 cubic yards of soil would be imported. Table B-1 in **Appendix B** (which contains air quality modeling results) summarizes key construction characteristics (e.g., cut and fill quantities, depth of excavation, construction equipment, and duration) of each element for the River Trunk Realignment Project.

2.5.5 Construction Schedule and Phasing

Construction of the overall Proposed Program is anticipated to last for up to approximately 25 years, beginning in 2019 and completed in 2030 to 2035. **Figure 2-15** presents the proposed schedule and phasing for construction of the Program components.

Figure 2-15. Modesto WWMP Construction Phasing

Project No.	Facility Name	Construction Timeframe/Phasing																			
		Phase 1					Phase 2					Phase 3					Phase 4				
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
River Trunk Realignment Project																					
1	Dry Creek Crossing and Pipeline to River Trunk Pump Station																				
2	Gravity Lines																				
3	Shackelford Pump Station and Force Main																				
Collection System Improvements																					
New and Upgraded Sewer Pipelines																					
W-1	West Trunk																				
W-3	West Trunk																				
W-4	West Trunk																				
W-6	West Trunk																				
W-7	West Trunk																				
D-1, D-3, D-4, and D	Dale Trunk																				
R-1	Rumble Trunk																				
R-2	Rumble Trunk																				
S-1	Sutter Trunk																				
DT-1	J Street Trunk																				
DT-2	Kimble Street																				
SR-4	Santa Rosa Trunk																				
EM-4	Empire Trunk																				
EM-3	Empire Trunk																				
SO-1 thru SO-3	Sonoma Trunk																				
SO-4	Sonoma Trunk																				
L-1 thru L-4	Lakewood Trunk																				
L-5	Lakewood Trunk																				
L-6	Lakewood Trunk																				
U-1 thru U-4	Ustick Trunk																				
N-1 and N-2	North Trunk																				
N-3 thru N-5	North Trunk																				
N-6	North Trunk																				
N-7 thru N-9	North Trunk																				
Sewer Rehabilitation Improvements																					
A-3	Carver Trunk																				
C-1	West Trunk																				
B-2	Woodland Trunk																				
D-2	Emerald Trunk																				
A-2	Sutter Trunk																				
S-4b/C-2	Sutter Trunk and South Trunk																				
C-3	Downtown Tributary																				
D-1	Downtown Tributary																				
A-1	Rose Celeste/Santa Rosa																				
B-1	Crows Landing Trunk																				
RT-9	River Trunk																				
RT-10	River Trunk																				
RT-11	River Trunk & CSL																				
RT-12	CSL Diversion Structures																				
SR-6	Santa Rosa Trunk																				
Lift Station Improvements																					
LS #29 - Rose & Cel	Rose-Celeste																				
LS #3 - Benson	Benson																				
LS #64	Dakota																				
LS #63	Kansas																				
LS #60	Chapman																				
LS #67	Litt Rd																				
LS # 59	Pelandale Rd																				
LS #61	Wood Sorrel																				
LS #62	Whitmore/Carpenter																				
LS #65	Kiernan Ave																				
LS #30	Rumble																				
LS #39	Woodland																				
Treatment Plant Improvements																					
Sutter Plant Modifications																					
SP-1	Influent Pump Station Improvements																				
SP-3	Primary Effluent Pump Station Replacement																				
SP-4	Demolition of Sutter Treatment Facilities																				
SP-5	Flood Protection Improvements																				
Outfall Pipelines																					
OP-1.1	New Tuolumne River Crossings																				
OP-1.2	New Primary Effluent Outfall																				
OP-3	Slip-lining a Portion of the Cannery Segregation Line																				
Jennings Plant Improvements																					
JP-1.1	Phase 3 of Tertiary Treatment Facility																				
JP-2.1	Fixed Film Reactors Rehabilitation																				
JP-2.2	Dredging																				
JP-2.3	Dissolved Air Flotation Piping																				
JP-3.1	Aerators in Recirculation Channel																				
JP-3.2	Nutrient Feed System																				
JP-3.3	Effluent Channel Berm and Effluent Pipeline																				
JP-3.4	Dredging																				
JP-3.5	Pond Aerators																				
JP-4.1	Aerobic Digester																				
JP-4.2	Solids Processing Building (WAS thickening and biosolids dewatering facilities)																				
JP-4.3	Sludge Cake Drying Beds																				
JP-5.1	Primary Treatment Facilities																				
JP-5.2	Yard Piping and Structures																				
JP-5.3	Anaerobic Digesters																				
JP-5.4	Solids Processing Building (WAS thickening and biosolids dewatering facilities)																				
JP-5.5	Sludge Cake Drying Beds																				

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River Trunk Realignment Construction Schedule

As described above, construction of the River Trunk Realignment Project would be completed in three phases. Phase 1 of the project, which involves construction of the pump station and pipeline crossing at Dry Creek, would occur over a 30-month period. The second phase of the project, which involves construction of the gravity pipelines, would occur over a 12-month period. The third phase, which entails construction of the Shackelford Pump Station and force main, would take place over an 18-month period.

Construction Schedule for Other Program-level Components

The City would construct the program-level components in several phases and are referred to as Phases 1, 2, 3, and 4. The CIPs are scheduled based on priority such that critical components are planned in the near-term.

In the near-term (between 2019 and 2020), the City plans to upgrade and rehabilitate several sewer trunk lines including the Crows Landing Trunk, Woodland Trunk, River Trunk, and others. The City also plans to construct the third phase expansion of the tertiary treatment facilities and secondary treatment plant components at the Jennings Plant within the next 5 years.

As shown in Figure 2-15 many CIPs are anticipated to occur in Phase 2 (between 2021 and 2025). Note that the bars presented in Figure 2-15 represent the general construction timeframe in which a particular CIP would take place (not the actual construction duration). Several sewer trunk pipelines would be replaced and upgraded including the Ustick Trunk, North Trunk, and Rumble Trunk. In addition, the City plans to complete five lift station projects, the Primary Effluent Pump Station Replacement, the new Primary Effluent Outfall pipeline, and the new primary treatment facilities at the Jennings Plant.

Under Phase 3 (2026-2030), the City anticipates completing three sewer upgrade projects and three lift station projects. Within this timeframe, the City would complete improvements to the Influent Pump Station, demolish several facilities at the Sutter Plant, and conduct flood protection improvements for facilities that would remain at the plant. A portion of the Cannery Segregation Line would also be slip-lined within this timeframe.

Lastly, Phase 4 (2031-2035) would primarily include sewer line and lift station upgrades that are necessary for accommodating future growth areas.

Construction activities would generally occur Monday through Friday between 7:00 a.m. and 5:00 p.m., excluding City-observed holidays. However, it is possible that some construction activities may need to occur on weekends or outside of the hours indicated above (after 5pm or before 7am).

2.5.6 Project Operations

Operation of the Proposed Program would primarily involve inspection and maintenance of the City-wide wastewater system. Following implementation of the Proposed Program, standard operating procedures and treatment methods currently performed at the Sutter Plant would be relocated to the Jennings Plant. All wastewater sanitation activities would be centralized and conducted at the Jennings Plant but in a manner similar to existing operations. Compared to existing conditions, systemwide electricity use at the Jennings Plant

would increase to operate the new primary treatment and solids handling facilities, secondary treatment modifications, and tertiary treatment upgrades,

Approximately 60 current staff working at the Sutter Plant are expected to relocate to the Jennings Plant. All other current Collection Systems staffing positions are expected to remain at the Sutter Plant, and would utilizing the existing buildings and space for wastewater collections operations and maintenance needs. The majority of staff relocating to the Jennings Plant would be responsible for operating the newly constructed plant facilities. In general, operation and maintenance activities would increase at the Jennings Plant due to construction of new BNR/Tertiary Phase 3 facilities, modifications to the secondary treatment facilities, and new primary treatment and solids handling facilities. Operation and maintenance activities at the Jennings Plant would result in greater commute trips and chemical deliveries to and from the plant, and less commuter and chemical delivery trips to and from the Sutter Plant. Because the new drying beds would be situated at the Jennings Plant, the truck trip length to and from the City's ranch lands would be substantially shorter compared to existing conditions as biosolids are currently hauled from the Sutter Plant to the ranch lands near the Jennings Plant.

2.6 Permits and Approvals

Table 2-8 below summarizes permits and approvals anticipated to be needed for implementation of the River Trunk Realignment Project.

Table 2-8. Anticipated Permit and Regulatory Requirements for the River Trunk Realignment Project

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
California Department of Fish and Wildlife	Fish and Game Code Section 1602	Applies to activities that will substantially modify a river, steam, or lake; includes reasonable conditions necessary to protect those resources	Streambed Alteration Agreement
California Department of Transportation (Caltrans)	Section 660 of the California Streets and Highways Code	Applies to pipeline construction activities that occur beneath Caltrans right-of-way	Encroachment permit
California State Lands Commission	General Lease-Public Agency Use	Required for forcemain crossing the Tuolumne River	Approval of improvements under General Lease
Central Valley Flood Protection Board	Water Code 8710, California Code of Regulations Title 23	Required for Dry Creek pipeline crossing and forcemain crossing the Tuolumne River	Encroachment Permit

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
San Joaquin Valley Air Pollution Control District	Rule 8021	Limit fugitive dust emissions from construction	Construction Notification Form
Union Pacific Railroad	N/A	Required for pipeline crossing beneath Union Pacific Railroad	License Agreement

With respect to other components of the Proposed Program, the EIR may be used by various regulatory agencies issuing permits or other approvals, or conducting consultations for individual Proposed Program components. Many of these agencies are similar to those described above for the River Trunk Realignment Project; agencies that may use the EIR as part of their decision-making process for the larger Proposed Program include the following:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- State Water Resources Control Board
- Central Valley Regional Water Quality Control Board
- California Department of Fish and Wildlife
- California Department of Transportation
- California State Lands Commission
- Central Valley Flood Protection Board
- Stanislaus County
- San Joaquin Valley Air Pollution Control District
- Modesto Irrigation District
- Turlock Irrigation District

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Chapter 3
INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

3.1 OVERVIEW

Chapters 4 through 18 of this DEIR describe the potentially affected environmental resources and potential environmental impacts (and applicable mitigation measures) of the Proposed Program. The regulatory setting discussion in each chapter identifies applicable federal, state, and local plans, policies, and regulations.[1] Each chapter also describes the existing environmental setting and background information on the resource topics to help the reader understand the conditions that could be affected by the Proposed Program. In addition, each chapter includes a discussion of the methodology and criteria used in determining the significance levels of the Proposed Program's environmental impacts. Finally, for identified significant impacts, where feasible, mitigation measures are proposed to reduce the adverse effects of significant impacts.

This chapter summarizes the EIR study area, describes the DEIR's consideration of baseline conditions, describes terminology used throughout this DEIR, clarifies how program-level versus project level-analyses are presented in this DEIR, defines who is responsible for implementing proposed mitigation measures, and describes resource sections that have been eliminated from further consideration in the DEIR.

3.2 EIR STUDY AREA AND PROGRAM AREA

The study area for this DEIR encompasses the sewer service area for the WWMP that would be addressed by the various CIPs, including the limits of the City of Modesto, a portion of north Ceres, Beard Industrial Park District, and the unincorporated community of Empire. The study area also includes areas within the City's sphere of influence, the proposed alignment of the third outfall, the Jennings Plant, and the approximately 2,500 acres of City-owned ranch lands south of the Jennings Plant.

As noted in Chapter 2, the term "Program area" refers to areas where proposed CIPs would be constructed, including the City proper and unincorporated Stanislaus County. All proposed CIPs are within the jurisdictional limits of the City of Modesto or unincorporated Stanislaus County. No CIPs are planned in north Ceres or other communities in the City's sewer service area.

3.3 CHARACTERIZATION OF BASELINE CONDITIONS

Under CEQA, the environmental setting, or "baseline," serves as a gauge to assess changes to existing physical conditions that would occur as a result of a Proposed Program. In

[1] State CEQA Guidelines Section 15125 requires an EIR to discuss any inconsistencies between the proposed project and applicable general plans, specific plans, and regional plans. This discussion is included in Chapter 13, *Land Use and Planning*.

accordance with State CEQA Guidelines (14 CCR Section 15125), for purposes of this EIR, the environmental setting is generally the existing physical conditions in and around each CIP site as those conditions exist at the time the NOP was published (2016).

3.4 SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

According to CEQA, an EIR should define the threshold of significance and explain the criteria used to determine whether an impact is above or below that threshold. Significance criteria are identified for each environmental resource topic to determine whether implementation of the Program would result in a significant environmental impact when evaluated against the baseline conditions as described in the environmental setting. The significance criteria vary depending on the environmental resource topic. In general, effects can be either significant (above threshold) or less than significant (below threshold). In some cases, a significant impact will be identified as significant and unavoidable if no feasible mitigation measure(s) is/are available to reduce the impact to a less-than-significant level. If the Program is subsequently adopted despite identified significant impacts that would result from the Program, CEQA requires the lead agency to prepare and adopt a statement of overriding considerations describing the social, economic, and other reasons for moving forward with the program despite its significant impact(s). (See generally State CEQA Guidelines Sections 15092, 15093, 15126.2)

3.4.1 TERMINOLOGY USED IN IMPACT ANALYSES

This DEIR uses the following terminology to describe environmental effects of the Proposed Program:

- A finding of *no impact* is made when the analysis concludes that the Program would not affect the particular environmental resource or issue.
- An impact is considered *less than significant* if the analysis concludes that there would be no substantial adverse change in the environment and that no mitigation is needed.
- An impact is considered *significant* if the analysis concludes that there could be a substantial adverse effect on the environment.
- An impact is considered *less than significant with mitigation* if the analysis concludes that there would be no substantial adverse change in the environment with the inclusion of the mitigation measures described.
- An impact is considered *significant and unavoidable* if the analysis concludes that there could be a substantial adverse effect on the environment and no feasible mitigation measures are available to reduce the impact to a less than significant level.
- *Mitigation* refers to specific measures or activities adopted to avoid, minimize, rectify, reduce, eliminate, or compensate for an impact.
- A *cumulative impact* can result when a change in the environment results from the incremental impact of a project when added to other related past, present, or reasonably foreseeable future projects. Significant cumulative impacts may result

from individually minor but collectively significant projects. The cumulative impacts analysis in this DEIR focuses on whether the Proposed Program's incremental contribution to other significant cumulative impacts caused by past, present, or probable future projects is cumulatively considerable (i.e., significant).

- Because the term "significant" has a specific usage in evaluating impacts under CEQA, it is used only to describe the significance of impacts and is not used in other contexts within this document. Synonyms such as "substantial" have been used when not discussing the significance of an environmental impact.

3.4.2 PROGRAM-LEVEL ANALYSIS

As described in Chapter 2, *Program Description,* the DEIR impact analysis considers most Proposed Program components at a program level of detail, with one individual component considered at a project-specific level of detail. Table 2-1 provides an overview of all projects considered throughout the DEIR. Each resource chapter includes an impact summary table that clearly identifies the impact significance by project or program component.

The Proposed Program includes a number of components for each of the sewer service areas which would be designed and implemented over the 20-year planning period. These are discussed at a more general, program level of detail in this DEIR, and many would likely require additional environmental review prior to approval, as described below. Where appropriate, environmental impacts of program-level components are discussed under the following subheadings for each impact statement:

- ***Collection System Components*** – new and upgraded sewer lines, sewer rehabilitation, lift stations, stormwater/sanitary sewer disconnections, and other small pipeline rehabilitation and replacement projects.

- ***Outfall Pipelines*** – new Tuolumne River pipeline crossings for the Cannery Segregation Line and Primary Effluent Outfall (OP-1.1), new primary effluent outfall pipeline extending from the Sutter Plant to the Jennings Plant (OP-1.2), and slip lining a portion of the Cannery Segregation Line (OP-1.3).

- ***Sutter Plant Components*** – influent pump station components (SP-1), primary effluent pump station replacement (SP-3), demolition of Sutter Treatment facilities (SP-4), and flood protection components (SP-5).

- ***Jennings Plant Components*** – modifications to the tertiary treatment facilities, secondary treatment facility modifications, Cannery Segmentation Line facilities upgrades, interim WAS handling facilities, and new primary treatment facilities.

For some resource sections, the impact analyses are discussed collectively and no subheading is shown. In other sections, additional subheadings have been established for sub-categories of collection system components.

Potential Need for Additional Future Analysis

As described in Section 2.5, "Proposed Program Characteristics," in Chapter 2, *Program Description*, program-level components are projects that the City would likely construct in the future, but the design of these components has not been advanced to a level at which a

detailed evaluation can be completed. As the planning process for a specific component reaches a more defined stage, the City will review the component's consistency with this EIR to determine whether substantial changes to the program-level component, the circumstances under which the program component is being undertaken, or new information have been identified that require additional environmental review (Pub. Res. Code Section 21166; State CEQA Guidelines Section 15162). Depending on the level and nature of new impacts, the City would then undertake the appropriate level of analysis under CEQA.

3.4.3 PROJECT-LEVEL ANALYSIS

The DEIR evaluates one near-term component, the River Trunk Realignment Project, at a project level of detail. This component is discussed under the following subheading:

- ***River Trunk Realignment Project*** – This project is typically discussed individually. However, in some resource sections, the impact analysis for the River Trunk Realignment Project has been combined with the evaluation of program-level components.

3.4.4 OVERALL CONCLUSION

At the end of each impact analysis in which discussions are organized by the different WWMP components, a summary of the conclusions has been provided under the following subheading:

- ***Overall Conclusion*** – This section considers the impacts of all the various WWMP components as a whole; in general, the overall conclusion reflects the greatest level of impact identified for the various components.

3.5 MITIGATION MEASURES

As lead agency, the City will be responsible for ensuring that mitigation measures identified in this DEIR and adopted by the City are fully implemented as part of the Proposed Program. Mitigation measures would be incorporated into contract specifications to be implemented by either contractors or City staff, and monitored by the City. A mitigation monitoring and reporting program (MMRP) will be developed which identifies the responsible parties for carrying out requirements specified in the mitigation measures throughout the design, construction, and operation phases of the Program. The MMRP will be adopted by City Council with certification of the Final EIR.

3.6 RESOURCE AREAS ELIMINATED FROM FURTHER ANALYSIS

The following CEQA checklist resource topics have been eliminated from further analysis based on the nature and scope of the Proposed Program activities. A brief summary and description of these resource topics are below.

3.6.1 FORESTRY RESOURCES

The Proposed Program would not result in the loss of forest lands or the conversion of forestland to non-forest use. Stanislaus County does not have lands zoned for forestland/ timberland, as indicated in its General Plan DEIR (ICF International 2016). For this reason,

the Proposed Program would not impact forest lands and would not conflict with lands zoned for forest land or timberland uses.

3.6.2 MINERAL RESOURCES

Based on review of the *Stanislaus County General Plan* (2016) and California Department of Conservation (CDOC) Surface Mining and Reclamation Act Mineral Lands Classification mapping (CDOC 2016), there are no known mineral resource zones, historic or active mines or quarries within the study area. In addition, construction and operation of the proposed components would not directly affect mineral production sites or prevent future availability of mineral resources. As a result, the Proposed Program would have no impact on mineral resources.

3.6.3 PUBLIC SERVICES

Public services include police, fire, schools and parks serving the study area. The Proposed Program involves upgrades to the City's wastewater collection and treatment system and would accommodate growth projected within the City's sewer service areas, including that projected in the City's General Plan (2008). During construction, incidents could require law enforcement, fire protection, or emergency services; however, many proposed components are located within the urban area of Modesto, which is currently served by existing public services like police and fire protection, schools and parks. The Jennings Plant and ranch lands in unincorporated Stanislaus County receive police and fire protection services from Stanislaus County Sheriff's Department, California Highway Patrol, and two fire protection districts (Mountain View and Westport). No CIPs are planned in north Ceres or other communities in the City's sewer service area. The potential temporary increase in such incidents would not be substantial and would not result in the need to construct new or physically altered governmental facilities to maintain acceptable service ratios or response times or meet performance objectives. Operation and maintenance activities described in Chapter 2, *Program Description,* would be substantially the same in nature as existing maintenance and operation activities, while additional facilities would be constructed that would require operations and maintenance, this would only require a small number of additional staff and would not be expected to result in a substantial increase in service calls for police or fire protection, etc. Therefore, operation of the Proposed Program would not substantially change the demand for public services in a manner which would create a need for new or physically altered governmental facilities to maintain acceptable service ratios or response times or meet performance objectives of public service providers. Construction and operation of the Proposed Program would therefore have a less than significant impact on public services.

3.6.4 RECREATION

The Proposed Program would not directly generate increased demand for recreational facilities. Increased demand for parks or recreation facilities due to population growth are addressed in Chapter 15, *Population and Housing*. Construction of the new outfall pipeline crossings (component no. OP-1.1) would involve construction at St. Salazar Park, where the new force mains would connect with the existing Primary Effluent Outfall and Cannery Segregation Line. Some stormwater/sanitary sewer cross-connect disconnection improvements would occur in open space areas and could temporarily affect park amenities such as J.M. Pike Park and Catherine Everett Park. Any park amenities affected by

construction would be replaced after construction is completed. The temporary closure of any of these facilities could result in a short-term increase in use of other nearby parks and recreational facilities. Given the number of other parks and recreational facilities in Modesto that would be accessible while the few above-mentioned parks are temporarily unavailable, the Proposed Program would not substantially increase the use of any existing parks or recreational facilities such that physical deterioration of those facilities would occur or be accelerated. No CIPs are planned in north Ceres or other communities in the City's sewer service area. In addition, the Proposed Program does not include recreational facilities and would not directly require the construction or expansion of any such facilities. Therefore, based on the above discussion, there would be a less-than-significant impact on recreational uses or facilities.

3.6.5 WILDFIRE

The Proposed Program is not located in or near state responsibility areas or lands classified as very high fire hazard severity zones. The California Department of Forestry and Fire (CAL FIRE) has determined that there are no very high fire hazard severity zones in local responsibility areas. The Program area is an urban and agricultural setting. As stated above in Section 3.6.1, the County does not have any forestland or timberland. As such, the Proposed Program would have no wildfire effects.

Chapter 4
AESTHETICS AND VISUAL RESOURCES

4.1 OVERVIEW

This chapter describes the existing aesthetic resources within the study area and pertinent federal, state, and local plans and policies regarding the protection of visual and scenic resources. The impacts on scenic resources, public views of scenic vistas, visual character of the study area, and nighttime views from construction and operation of the Proposed Program are evaluated, and mitigation is proposed to address the impacts found to be significant.

The term "aesthetics" refers to visual resources and the quality of what can be seen or overall visual perception of the environment, and may include such characteristics as building scale and mass, design character, and landscaping. Visual impacts are analyzed through an examination of views and/or viewsheds. Views refer to visual access and obstruction of prominent visual features, including both specific visual landmarks and panoramic vistas. Viewsheds refer to the visual qualities of a geographic area. The geographic area is defined by the horizon, topography, and other natural features that give an area visual boundary and context. Viewshed impacts are typically characterized by the loss and/or obstruction of existing scenic vistas or other major views in the area of the Program area that are available to the general public. Sensitive viewers are individuals or groups who are particularly affected by changes to the aesthetics of the surrounding area. View analysis is based upon relative visibility with regard to viewing location and proposed on-site development.

4.2 REGULATORY SETTING

4.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

Other than the National Historic Preservation Act, which is discussed in Chapter 8, *Cultural and Paleontological Resources*, there are no federal regulations pertaining to visual resources that would affect this Program.

4.2.2 STATE LAWS, REGULATIONS, AND POLICIES

California Scenic Highway Program

The California Scenic Highway Program was established in 1963 under Sections 260–263 of the Streets and Highways Code. The Scenic Highway Program includes a list of highways that are either designated or eligible for designation as scenic highways (California Department of Transportation [Caltrans] 2017a). In Stanislaus County, the only designated scenic highway is Interstate 5 (Caltrans 2017b). There are no highways near the study area that are eligible for designation as scenic highways or have been officially designated.

4.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

Stanislaus County General Plan

The *Stanislaus County General Plan's* Conservation/Open Space Element encourages the protection and preservation of natural and scenic areas throughout the County (Stanislaus County 2016). Although the Conservation/Open Space Element does not identify specific policies concerning the preservation of scenic views of aesthetic resources, the following goal and policy apply to the Proposed Program:

Goal One. Encourage the protection and preservation of natural and scenic areas throughout the County.

Policy One. Maintain the natural environment in areas dedicated as parks and open space.

City of Modesto Urban Area General Plan

Chapter VII of the *City of Modesto Urban Area General Plan* (City of Modesto 2019a), "Environmental Resources, Open Space and Conservation," establishes policies which are intended to guide development within the City's Planning Districts. The pertinent aesthetic and visual resource policies from the general plan are listed below.

Policy VII-B.7[a]. Visual corridors of the river will be protected and enhanced.

Policy VII-B.7[b]. Visual corridors and access points on the riverfront will be recreated through development.

Policy VII-B.7[q]. The scenic resources of Public Trust lands and resources shall be considered as protected as a resource of public importance. Permitted development shall be cited and designed to protect scenic views associated with Public Trust lands and resources.

Additionally, the City's inventory of Landmark Preservation Sites (listed in Section V-8 of the General Plan Master EIR [City of Modesto 2019b] and further discussed in Chapter 8, *Cultural, Paleontological, and Tribal Cultural Resources,* of this DEIR) includes not only historic structures, but also several landmark trees.

Tuolumne River Regional Park Master Plan

A joint powers authority comprised of the City, the City of Ceres, and Stanislaus County (the County) adopted the Tuolumne River Regional Park (TRRP) Master Plan in December 2001 (EDAW 2001a). This plan is intended to shape development of active- and passive-use parkland along the river corridor, including its span through Modesto. The TRRP Master Plan EIR (EDAW 2001b) refers to the Tuolumne River as "a significant natural landscape feature" that has unique trees and rock outcroppings. The plan further states:

The visual experience of the river corridor includes areas that are of high visual quality, and other areas where the visual environment has been degraded by urban development. Along the river corridor, the area with the highest existing visual

quality is the eastern-most portion of the park, which supports a majestic, mature oak woodland on the north bank.

Public visual access to the river, parks, and enhanced/restored riparian areas is and will be provided throughout the regional park. The 185-acre Carpenter Road Area is envisioned to include a regional sports field to the north of the Sutter Plant and a network of trails weaving through meadows and riparian terraces to the west of the plant. Under this Plan, visual access would be provided from a river overlook and a canoe and kayak launch area would be established south of the Sutter Plant along the Tuolumne River. The plan describes the possibility of expanding the riparian corridor south of the Sutter Plant.

In addition, the plan envisions a new paved pedestrian and bicycle path (referred to as "Riverwalk"), which would be established along the entire right-bank of the Tuolumne River. The proposed Shackelford force main alignment would overlap geographically with a portion of the future Riverwalk path.

The TRRP Master Plan specifically designates several land-based "vista points" within proposed park development and enhancement areas, but the plan does not specify policies in relationship to these features. Specifically, one vista point is designated at the corner of B Street and South Morton Boulevard, just west of the proposed River Trunk Pump Station. Another vista point is designated on the west bank of Dry Creek near the River Trunk Realignment project. The TRRP Master Plan also identifies several "river overlooks" within the park-enhancement areas. Proposed WWMP components would not be located in proximity to these river overlooks.

4.3 ENVIRONMENTAL SETTING

4.3.1 REGIONAL AND LOCAL

Modesto is located in the Central Valley, a broad and generally flat area bordered by the Sierra Nevada mountain range to the east and the Coast Ranges to the west. Due to the region's flat topography and openness, extensive views are accessible across the valley. Modesto is rural in nature, characterized by its predominantly agricultural lands and associated infrastructure. Features that contribute to the rural and agricultural character of the area include orchards, row crops, vineyards, cleared fields, hay bales, farm structures, farming and ranching equipment (such as tractors), and farmhouses. Pockets of urban development bordering the agricultural areas provide contrast to this rural character. Agricultural and residential/urban areas in the Modesto region have abrupt boundaries, lacking transition and beginning where the other ends. The City's visual quality is low-to-moderate because of the general lack of visual continuity and coherence. Modesto's historic downtown is one square mile and has a historic-style main street at the city center, surrounded by old, established neighborhoods and mature trees and landscaping.

Agriculture and industrial buildings, such as silos, warehouses, and factory buildings, remain visually prominent and contribute to the overall visual quality of the region. Recent development, including big-box and chain commercial shopping areas, is commonly seen on the outskirts of Modesto.

The Tuolumne River runs along the southern edge of Modesto, and the Stanislaus River runs roughly parallel to the northern boundary of the Modesto urban area. Dry Creek drains into the Tuolumne River from the northeast in the southeastern portion of Modesto.

4.3.2 PROGRAM VICINITY

Sutter Plant

The Sutter Plant is located near the southern end of Modesto along the northern bank of the Tuolumne River. Lands immediately north and west of the Plant are vacant and flat. These parcels are dedicated and planned to be developed as part of the Tuolumne River Regional Park (described above in the Regulatory Setting). Bellenita Park is located northwest of the Plant's sludge drying beds. The Sutter Plant and vacant lands give this area a quasi-utilitarian and rural visual character.

Primary viewers of the Sutter Plant include residents and motorists on John Street, as well as recreationists at Bellenita Park. While views of the Plant are accessible from this park and John Street across the undeveloped land, mature trees along the Plant's western drying beds partially screen views of the Plant from this area. Near the intersection of John Street and Hays Street, motorists and residents have clearer views of the Plant. From this vantage point (see **Figure 4-1,** Photo 1), views of the circular digesters (up to 32 feet tall, and approximately 60 to 104 feet wide in diameter) and other Plant facilities across the vacant land are accessible. No views of the Tuolumne River are accessible from these public roads. Due to the presence of wastewater infrastructure and vacant ruderal lands with some mature trees, the visual quality is considered low-moderate. As some views of the Plant are partially screened by mature trees and due because vacant land provides a buffer between nearby roads and the Plant itself, the visual sensitivity is moderate.

South of the Sutter Plant and Tuolumne River, land uses predominantly include residential uses and an auto wrecking company. As the Tuolumne River sites about 15-20 feet lower in elevation, views looking toward the Plant from Hatch Road and residences are screened by riparian vegetation and trees.

Other viewers of the Sutter Plant include on-water recreationists such as kayakers and boaters that use the Tuolumne River.



Photo 1. Southeast facing view of the Sutter Plant from the corner of John Street and Hayes Street.



Photo 2. West facing view of the River Trunk Realignment Project at the intersection of Tuolumne Boulevard and Colorado Avenue.

Figure 4-1. Representative Views of the Program Area

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Photo 3. West facing view of the River Trunk Pump Station site at 9th Street and South Morton Boulevard.

Figure 4-1. Representative Views of the Program Area

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River Trunk Realignment

The proposed River Trunk Realignment begins at a parking lot at the Gallo Winery property located east of Dry Creek, continues west across Dry Creek and vacant lands between the creek and 9th Street, and jogs northwest to the triangular parcel at B Street and South Morton Boulevard where the River Trunk Pump Station site is located. From the pump station, two pipelines would continue westward: (1) a gravity line that follows B Street, which becomes Tuolumne Boulevard; and (2) a force main that extends south and across a vacant parcel currently being developed as part of the Tuolumne River Regional Park, across the Union Pacific Railroad (UPRR) tracks, and eventually Tuolumne Boulevard. The gravity system would continue west on Tuolumne Boulevard to Paradise Avenue, and extend south on Colorado Avenue to the Dryden Golf Course, eventually terminating at the Sutter Plant. The Shackelford Pump Station site is on a vacant parcel located east of the Tuolumne River and west of Zeff Road and Crows Landing Road. The Shackelford force main system would traverse the Dryden Golf Course and connect with another gravity system that extends from Neece Drive, crosses the golf course parking lot, continues south on Roselawn Avenue, west on Pelton Avenue and connects with the gravity line on Colorado Avenue. The following paragraphs describe the visual character, visual quality, and visual sensitivity of the River Trunk project site by its phasing.

Dry Creek Crossing and Alignment from Gallo Winery to River Trunk Pump Station Site. The northeastern segment of the alignment is surrounded by industrial facilities including warehouses, storage facilities, and parking lots. Beard Brook Park is located just north of the eastern portion of the alignment. Viewer groups in this portion of the project alignment include motorists and workers at the industrial facilities themselves. Motorists have short duration views of the area and workers have longer duration views, though are accustomed to the industrial setting. Due to the industrial and working character of the eastern portion of the alignment, the visual quality is relatively low and the visual sensitivity is also low.

Gravity Pipelines. The gravity pipeline system along Tuolumne Boulevard, Colorado Avenue, Neece Drive, Roselawn Drive, and Pelton Avenue is surrounded by residential uses. Primary viewers of this section of the project include mostly residents, motorists, recreationists at the Modesto Municipal Golf Course. Modesto High School's sports fields are situated near the alignment at Tuolumne Boulevard and Colorado Avenue. High school athletes and recreationists using those fields have partial views of the alignment as well. Residential views along the gravity pipeline alignment typically include views of other residences, landscaping and trees lining the road, electric power lines, and cars. A typical view from the perspective of a motorist traveling on Tuolumne Boulevard is shown in Figure 4-1, Photo 2. The visual quality is characteristic of the surrounding residential uses and is considered moderate. Since residents tend to have longer duration views of their immediate surroundings, the visual sensitivity is moderate to high.

Shackelford Force Main Alignment. Viewer groups in the vicinity of the Shackelford force main alignment include recreational golfers at the Dryden Golf Course. Recreationists at Dryden Golf Course have a higher expectation for quality views; existing views from the golf course consist of a manicured greenway and mature trees. For this reason, the visual quality is high and the visual sensitivity for golfers is high.

Shackelford Pump Station Site. The Shackelford pump station site is a vacant parcel located east of the Tuolumne River and accessible from Zeff Road and Crows Landing Road from the east. Surrounding land uses include auto sale centers to the north and east. Existing views looking toward the site include ruderal vegetation on the site and riparian vegetation lining the river in the distance. Viewer groups of the site include motorists traveling on Zeff Road and Crows Landing Road and workers at the auto sale centers. Typical views include auto shops, other commercial uses, vacant lands to the west of Crows Landing Road, electric lines and distant views of riparian vegetation along the river. The visual quality is low-moderate and the visual sensitivity is also low-moderate.

Jennings Plant and Surrounding Lands

The following section describes the visual setting of the Jennings Plant and land uses along the proposed primary effluent outfall pipeline alignment. Jennings Plant is located approximately 7 miles southwest of the Sutter Plant, and is accessible from Jennings Road to the east. From the Tuolumne River crossing, the new primary effluent outfall pipeline alignment would extend south along Carpenter Road, west on Keyes Road, south on Jennings Road, west and terminate at the Jennings Plant.

Both the Jennings Plant and the new primary effluent outfall pipeline alignment are surrounded by agricultural lands and this area's visual character is defined by the flat and openness of the rural region. The numerous orchards, row crops, electric distribution lines, and alternating roads create a rectilinear grid-like pattern. This pattern offers expansive views across the valley floor and open lands. Residences, agricultural buildings, and mature trees are scattered along public roads. While the San Joaquin River is not visible from most of the Jennings Plant, the riparian trees and vegetation along the river banks can be seen from a distance at certain vantage points along Jennings Road.

The Jennings Plant facilities are not visible from the nearest public roads in the area including Jennings Road to the east and Keyes Road to the north. Plant facilities like the clarifiers and pump stations are located at the interior of the Plant and are approximately 0.5 mile away from Jennings Road or more. From these distances, the Plant structures are hardly noticeable. Therefore, the visual sensitivity of this area is low.

4.4 IMPACT ANALYSIS

4.4.1 METHODOLOGY

The visual impact analysis evaluates the visual changes that would occur from construction and operation of the Proposed Program, using the standards of quality, consistency, and symmetry typically used for a visual assessment. The evaluation is based on a review of the local plans and policies discussed in Section 4.2.3, as well as maps, site photographs, and aerial photographs.

Visual effects were assessed based on the Program's potential to substantially alter scenic resources or to degrade the visual character of the site. The evaluation of temporary or short-term visual impacts considers whether construction activities could substantially degrade the existing visual character or quality of the site or surrounding area, as well as the duration over which any such changes would occur. Because of their short-term nature, construction activities occurring in an area for less than one year are typically considered to have a less-

than-significant effect on visual quality. However, construction activities occurring in an area for over one year have been evaluated for potentially significant visual impacts.

Proposed activities with long-term visual effects, such as constructing new or altered structures, grading roads, removing trees, and introducing new sources of light and glare can permanently alter the landscape in a manner that could affect the existing visual character or quality of the area, depending on the perspective of the viewer. In determining impact potential, the assessment considers the visual sensitivity of the project area. Since damage to scenic resources such as trees, rock outcroppings, and other features of the built or natural environment would typically constitute a long-term effect, the potential for project implementation to damage scenic resources is evaluated solely as a long-term effect and is not included in the analysis of construction-related impacts.

4.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on aesthetics if it would:

- 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; or
- Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area.

4.4.3 Environmental Impacts

Impact AES-1: Adverse Effects on Scenic Vistas (Less than Significant)

No designated scenic vistas or viewpoints exist in the study area. However, some components including the River Trunk Pipeline Realignment and River Trunk Pump Station would be visible from vista points and the planned Riverwalk pathway identified in the TRRP Master Plan. While not all of those vista points and recreational trails have been developed, some are publicly accessible, including the vista point planned on the parcel south of B Street just southwest of the proposed River Trunk Pump Station and the vista point planned west of Dry Creek in Beard Brook Park near the River Trunk Pipeline Realignment. From the future vista point along B Street, most viewers would be facing southward toward the Tuolumne River. While the pump station would be visible from this future viewpoint, such views would not be adversely affected because views are anticipated to be focused southward (away from the pump station). In addition, the majority of the pump station would be below ground, and aboveground components associated with the pump station would be similar in character to other industrial facilities in the vicinity. From the future vista points near Dry Creek, recreationists may have temporary views of pipeline construction activities. Once construction is completed, however, the pipelines would not be visible since they would be below ground, and construction in any given area is anticipated to be short term (less than one year). For these reasons, impacts on existing scenic vistas would be **less than significant**.

Impact AES-2: Damage to Scenic Resources (Less than Significant)

As noted in Section 4.2.2, the only state-designated scenic highway in Stanislaus County is Interstate 5 which is over 6 miles away from the Proposed Program components including those at the Jennings Plant. As such, the various Proposed Program components would not be located in proximity to or visible from a scenic highway and there would be no impact on scenic resources located along a scenic highway. Furthermore, based on information available for the Proposed Program, there would be no work in proximity to any of the trees listed in the City's Landmark Preservation Sites inventory. This impact would be **less than significant**.

Impact AES-3: Degradation of Visual Character or Quality of Site and Surroundings During Construction (Less than Significant with Mitigation)

Collection System Components, Sutter Plant Components, and Outfall Pipelines

Construction of proposed collection system and Sutter Plant components, and outfall pipelines would be visible to various receptors near the construction work areas. For the various collection system components, nearby residents, patrons at nearby businesses, motorists, and recreationists using public roads would have temporary views of construction activities including heavy equipment operation, materials stockpiling, earth movement associated with trenching and grading, and pipeline and other associated materials. Views of these operations may be perceived as a degradation of the City's visual character. While such activities would be temporary and effects on the area's visual character would cease after construction is complete for a given CIP, disturbance could be significant for individual projects particularly if construction extends for over a year in a given area. Therefore, this impact would be significant. Implementation of **Mitigation Measure AES-1 (Locate Staging Areas Away from Public Areas and Install Screening)**, which requires that staging areas be sited away from public areas and that work areas are maintained as clean as practical, would reduce this impact to **less than significant with mitigation**.

Jennings Plant Components

No sensitive viewers are located in the vicinity of the Jennings Plant, as the closest public road is approximately 0.5 mile away and access to the plant is restricted to plant staff. Some distant and occasional views of construction activities may be available from public roads. Therefore, construction of the proposed tertiary, secondary and primary treatment components would hardly be visible and would not substantially degrade the visual character or visual quality of the surrounding area. Construction-related effects on the Jennings Plant and surrounding area's visual character or visual quality would be **less than significant**.

River Trunk Realignment Project

As shown in Figure 2-1, the River Trunk Realignment Project includes construction of gravity pipelines, force mains, and two new pump stations. Staging and work areas have been established on a vacant parcel between Tuolumne Boulevard and 7th Street, the River Trunk Pump Station site, and the parking lot on the Gallo property just east of Dry Creek. Pipeline construction activities would be mostly visible from public roadways including South Morton Boulevard, B Street, Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, Roselawn Avenue, and Neece Drive. Construction of the River Trunk Pump Station would be visible from B Street and 9th Street, and construction of the Shackelford Pump Station would be visible from Crow's Landing Road. Pipeline construction activities would generally progress

at a rate of 100 feet per day. For the gravity system, staging areas would be sited within the construction zone or the staging areas shown in Figure 2-1.

Project construction would be temporarily visible to adjacent residents, motorists, patrons at nearby businesses, golfers at Dryden Golf Course and Modesto Municipal Golf Course, and recreationists using the sports fields at Modesto High School. These viewer groups would have views of trenching and excavation, staging and stockpiling of construction materials and equipment, pipeline installation, and other construction activities associated with the new pump stations over the construction duration (approximately 30 months).

Existing residences located along the gravity pipeline alignment, motorists using nearby roads, and golfers at Dryden Golf Course would have close-up views of pipeline construction activities and equipment. Motorists would have fleeting views due to the speed of travel. For residents, views of pipeline construction activities would generally be of short duration since construction equipment would advance onto the next segment and areas affected by pipeline installation work would be restored to pre-construction conditions. Of the viewer groups, golfers at the Dryden Golf Course have a higher expectation of scenic views and would have close-up views of pipeline construction activities that occur on the golf course.

Motorists traveling on 9th Street and B Street would have short duration views of construction activities at the River Trunk Pump Station, and motorists and business patrons along Crow's Landing Road would have fleeting views of construction work at the Shackelford Pump Station.

While such activities would be temporary and effects on the area's visual character would cease after construction is complete, given the project's overall duration of approximately 30 months, visual disturbance at Dryden Golf Course and along public roads could be substantial. This impact is considered significant. Implementation of Mitigation Measure AES-1 would reduce this impact to **less than significant with mitigation**.

Overall Conclusion

Considering the various WWMP components as a whole, construction-related impacts to visual character and quality would be significant. With implementation of Mitigation Measure AES-1 for the applicable Program components, impacts would be **less than significant with mitigation.**

Mitigation Measure AES-1: Locate Staging Areas Away from Public Areas and Install Screening.

Applies to Collection System Components, Sutter Plant Components, Outfall Pipelines, and River Trunk Realignment Project

For components located in residential areas and near public parks, the City shall implement the following measures. Construction staging areas for equipment, vehicle parking, and material storage will be sited as far as possible from residences, major roadways, parks and other public areas. With the exception of designated staging areas for the River Trunk Realignment Project, to the extent practicable, staging areas for Program components shall be sited in areas where existing topography and vegetation can help screen views of the staging area. Where on-street or on-site staging areas are necessary, chain-link fencing with slats (either earth tone or another

neutral color) or other screening methods shall be installed around designated staging areas to screen views of equipment and materials.

Impact AES-4: Degradation of Visual Character or Quality of Site and Surroundings During Program Operation (Less than Significant)

Collection System Components and Outfall Pipelines

Once constructed, all proposed pipeline components including replaced sewer lines, rehabilitated sewer lines, stormwater/sanitary sewer disconnections, and outfall pipeline components would be underground and would not be visible. Underground components would therefore have no impacts on the visual character of the surrounding area.

Upgraded or replaced lift stations would appear similar to existing lift stations. As described in Chapter 1, *Introduction,* all of the City's existing lift stations are underground with the exception of ancillary facilities including control panel boxes, small radio antenna, back-up generators, and security fencing surrounding the site. Upgraded or replaced lift stations would also be underground. Minor modifications associated with upsizing the lift station or pump station would be limited to the existing footprint of existing lift station sites. Aboveground elements would consist of one or more control panels, a small radio antenna (up to 25 feet tall), and some facilities would include a single restroom or wash station and back-up generators. The control panels would be comprised of metal boxes approximately 5 feet tall, 3 feet wide, and 1 foot thick. All lift station sites would be surrounded by either a concrete masonry unit wall or security fencing consisting of wrought iron or steel poles, and possibly some landscaping. New and upgraded lift stations would be sited in residential or agricultural areas. In agricultural areas, these facilities would not be substantially noticeable and would not significantly degrade the existing visual character of the area. In addition, given the small size of these facilities and because these are commonly seen throughout the City already, introduction of new lift stations in residential areas would not substantially alter the visual character or quality of an individual site. Therefore, this impact would be **less than significant**.

Sutter Plant Components

At the Sutter Plant, once demolition of primary treatment facilities such as the digesters and clarifiers is complete, those facilities would no longer be visible from the residential area to the northwest of the plant and could thereby improve the visual character and quality of this area. Upgrades to the existing influent pump station and replacement of the effluent pump station would not be noticeable from any public viewpoints, other than occasional on-water recreationists from the Tuolumne River. Since the facility upgrades would appear similar to the existing pump stations, these components would not substantially alter the visual character or quality of the area. The impact would be **less than significant**.

Jennings Plant Components

For the same reasons provided in Impact AES-3, proposed CIPs at the Jennings Plant would not substantially change the appearance of the existing plant because, in general, no public views of the plant are available. While there is a possibility that distant or partial views of the new plant facilities could be accessible from nearby public roads, this would not be considered a significant impact because the appearance of the plant would not be

substantially changed. Impacts on the visual character of the surrounding area would be **less than significant**.

River Trunk Realignment Project

Similar to the impact discussion provided above, once construction of the River Trunk Realignment Project is complete, all pipelines would be below ground and would not be visible. The River Trunk Pump Station and Shackelford Pump Station would introduce a new quasi-industrial structure to the Program area. Figure 2-4 shows a rendering of the aboveground layout of the River Trunk Pump Station. As shown in this figure, aboveground features would include the staircase structure, make-up air units, the 36-inch force main and five air valves, an exhaust louver structure, and monorail structure where access vehicles can enter and exit the facility. Motorists traveling on Morton Street, B Street, and 9th Street would have fleeting views of the facility.

At the Shackelford Pump Station, aboveground elements include the electrical building (approximately 15.5 feet tall) and generator (approximately 8 feet tall). The surrounding fence and/or gate would be about 8 feet tall and the retaining wall would be about 6 feet tall. Motorists on Zeff Road and Crow's Landing Road would have short duration views of the Shackelford Pump Station. Introduction of the two pump stations would be located in industrial areas and would not substantially degrade the visual character or quality of the sites, particularly since the visual quality is low to low-moderate at these sites. In addition, similar to lift stations seen throughout the City, unobtrusive earth tones with matte finishes would be used to coat aboveground features. For these reasons, this impact would be **less than significant**.

Overall Conclusion

Considering the WWMP components as a whole, impacts of the constructed facilities on visual character and quality would not be substantial. Impacts would be **less than significant.**

Impact AES-5: Permanent Source of Substantial Light or Glare (Less than Significant)

Collection System Components and Outfall Pipelines

As described above under Impact AES-4, once constructed, all pipelines and sewer disconnection projects would be underground and would therefore not result in a new source of substantial light or glare. Similar to other existing lift stations, aboveground elements of these facilities would be painted by non-reflective paint and would not include features that generate daytime glare. Outdoor lighting at new lift stations would be directed inward to avoid glare or spillover effects. Depending on the types of land uses surrounding lift stations, some lighting would be motion activated. In areas where there are less sensitive receptors, lighting may be left on continually. These design features would ensure that this impact would be **less than significant**.

Sutter Plant Components, Jennings Plant Components, and River Trunk Realignment Project

Plant improvements and the new River Trunk and Shackelford pump stations may require on-site exterior lighting. New lighting at these facilities would be consistent with outdoor lighting currently used at the two wastewater treatment plants. New lighting at these facilities would be directed inward to avoid glare or spillover effects. Depending on adjacent receptors, some lights would be on continually and some lights may be motion activated. Exterior coating of new pump stations would appear similar to similar structures seen throughout Modesto, and that earth tones with non-reflective finishes would be used to coat aboveground components at lift stations and pump station sites. These design features/approaches would ensure that permanent light and glare impacts would be **less than significant**.

Overall Conclusion

Considering the WWMP components as a whole, and the design approaches that will be used to minimize effects related to lighting and glare, impacts would be **less than significant.**

Chapter 5
AGRICULTURAL RESOURCES

5.1 OVERVIEW

This chapter describes the regulatory setting and environmental setting, and impacts of the Proposed Program related to agricultural resources.

The regulatory and environmental settings and impact analysis for agricultural resources were developed through a review of:

- The California Department of Conservation's (CDOC's) *Stanislaus County Important Farmland Map* (2017a) and Williamson Act Lands GIS data for Stanislaus County (2016a);
- The *Stanislaus County General Plan* (2016);
- The *City of Modesto Urban Area General Plan* (2019);
- The City of Modesto *Wastewater Treatment Master Plan Final Draft* (Carollo Engineers 2016);
- The Stanislaus Local Agency Formation Commission Policies and Procedures (Stanislaus County Local Agency Formation Commission [LAFCO] 2015); and
- Other regulations and planning documents for outlying communities.

5.2 REGULATORY SETTING

5.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

U.S. Environmental Protection Agency – 40 CFR Part 503

The federal standards for Use and Disposal of Sewage Sludge (40 Code of Federal Regulations [CFR] Part 503, Subpart B – Land Application) includes regulations for bulk sewage sludge application to agricultural land. These standards are intended to ensure that agricultural resources of value are not adversely affected by the application of metals and other contaminants that could impose long-term effects on the land. While these regulations do not explicitly address any loss of agricultural lands, they describe and regulate the application, concentration, location and rate of bulk sewage sludge and septage that the U.S. Environmental Protection Agency (USEPA) categorizes as pollutants (USEPA 1999). These regulations establish ceiling concentrations for metals and pathogen and vector attraction reduction standards; management criteria for the protection of water quality and public health; and annual and cumulative discharge limitations of persistent pollutants such as

heavy metals. These regulations are intended to protect livestock, crop and human health and water quality protection.

5.2.2 STATE LAWS, REGULATIONS, AND POLICIES

California Department of Conservation – Farmland Mapping and Monitoring Program

Developed by the California Department of Conservation, the Farmland Mapping and Monitoring Program (FMMP) provides consistent, timely and accurate data for use in assessing agricultural land resource status in California. The program utilizes a combination of geographic information systems (GIS), aerial imagery, local agency comments, and other relevant information to combine soil quality data and current land use information to produce Important Farmland Maps.

The FMMP maps out five different farmland categories as well as urban, nonagricultural and natural vegetation, semi-agricultural and rural commercial land, rural residential land. These five categories are listed below (CDOC 2004):

- Prime Farmland – lands with the best combination of physical and chemical features able to sustain long-term production of crops. The land must be cropped and supported by a developed irrigation water supply that is dependable and of adequate quality during the grow season. It must also have been used for production during the previous four years.

- Farmland of Statewide Importance – lands similar to Prime Farmland but with minor shortcomings such as greater slope or less ability to store moisture.

- Unique Farmland – soils of lower quality that are used for producing California's leading agricultural crops. These lands are usually irrigated but may include non-irrigated orchards or vineyards.

- Farmland of Local Importance – lands such as dryland grains and irrigated pastures that are not considered Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

- Grazing Land – land on which the existing vegetation is suited to the grazing of livestock

California Land Conservation Act (Williamson Act)

The California Land Conservation Act, more commonly referred to as the Williamson Act, was passed in 1965 as a means to preserve agricultural and open space lands by discouraging "premature and unnecessary conversion to urban uses" (Government Code Section 51220[c]). Through this act, local governments and landowners may choose to forgo the possibility of developing their lands, or convert their property into nonagricultural or non-open space use for a set amount of time determined in a contract. In return, they would receive lower property taxes. Contracts have an initial term of ten years with renewal occurring automatically each year after that. Local governments are permitted to negotiate longer initial contract terms that exceed ten years (CDOC 2014).

According to the 2015 Stanislaus County Agricultural Report, 575,549 acres of the County are registered under Williamson Act contracts. This accounts for approximately 60 percent of the total amount of acres within the county (Stanislaus County 2015). The following land classifications are found either within or around the planned locations of the Proposed Program components:

- Williamson Act – Prime Agricultural Land
- Williamson Act – Non-Renewal
- Non-Williamson Act – Urban and Built-Up Land

Williamson Act lands designated as "non-renewal" are lands in which either the local government or landowner have initiated the nonrenewal process.

State Water Resources Control Board – Water Quality Order No. 2004-0012-DWQ

The State Water Resources Control Board issued Water Quality Order No. 2004-0012-DWQ, which establishes general waste discharge requirements for biosolids use as soil amendment in agricultural, horticultural, or other land reclamation activities. These biosolids are differentiated by two classes. Class A biosolids are defined as meeting the vector attraction and also the pollution concentration limits specified in 40 CFR Part 503 and pathogen reduction standards (40 CFR Part 503.32(a)). This class of biosolids generally must be reduced virtually non-detectible levels of pathogens and must comply with the strictest standards for vector attraction an, odors and other standards pertaining to metals. Class B biosolids are defined as meeting the vector attraction and meeting pollution concentration limits specified in 40 CFR Part 503 as well as pathogen reduction standards specified in 40 CFR Part 503.32(b). Class B biosolids must be treated but contain higher levels of detectible pathogens than Class A biosolids. The General Order establishes biosolid pollutant discharge limits for constituents including arsenic, cadmium, lead, mercury, molybdenum, nickel, selenium, and zinc. The General Order also contains various land application constraints. For example, after biosolids have been applied in a field, for at least 12 months after, public access is restricted and grazing of milking animals (used for producing unpasteurized milk for human consumption) is prevented. restricting the timeframe in which lands can be grazed or used for growing and harvesting food crops. The General Order also establishes staging and application guidelines whereby applied biosolids must be at least 10 feet away from property lines, 500 feet away from domestic water supply wells, 50 feet from public roads and occupied residences, 100 feet from surface waters, wetlands or creeks, and other buffer restrictions.

5.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

Stanislaus County Local Agency Formation Commission (LAFCO)

The Stanislaus County Local Agency Formation Commission's (LAFCO's) mission is to "discourage urban sprawl, preserve open space and prime agricultural lands, promote the efficient provision of government services and encourage the orderly formation of local agencies" (LAFCO 2012). In order to achieve their mission as well as to meet Government Code Section 56668(e) requirements, which requires LAFCO to consider the effect of a proposal on the maintenance of the physical and economic integrity of agricultural lands, they

adopted the Agricultural Preservation Policy on September 26, 2012. The amended policy, adopted in 2015, contains the following goals (LAFCO 2015):

- Guide development away from agricultural lands where possible and encourage efficient development of existing vacant lands and infill properties within an agency's boundaries prior to conversion of additional lands;
- Fully consider the impacts a proposal will have on existing agricultural lands;
- Minimize the conversion of agricultural land to other uses; and
- Promote preservation of agricultural lands for continued agricultural uses while balancing the need for planned, orderly development and the efficient provision of services.

On March 25, 2015, LAFCO amended the policy to include specific regulations regarding the use of in-lieu fees for acquiring and managing agricultural conservation easements (LAFCO 2015). LAFCO shall consider this policy, in addition to its existing goals and policies, as an evaluation standard for review of any proposals that could reasonably be expected to induce, facilitate, or lead to the conversion of agricultural land (LAFCO 2015). As required by the policy, a plan for agricultural preservation must be provided with any application for a sphere of influence expansion or annexation to a city or special district ("agency") providing one or more urban services (i.e. potable water, sewer services) that includes agricultural lands. Once the plan is provided, LAFCO will then evaluate it based on specific criteria that must be met (LAFCO 2015). The following applications or proposals are considered exempt from LAFCO's requirement for a plan for agricultural preservation: (1) proposals that include lands owned by a city or special district and currently used by that agency for public uses; and (2) proposals which have been shown to have no significant impact to agricultural lands including those in which lands are substantially developed with urban uses and proposals intended to provide irrigation water to agricultural lands (LAFCO 2015).

Stanislaus County General Plan

The *Stanislaus County General Plan*'s Land Use and Agricultural Elements (2016) includes goals and policies that are intended to promote and protect local agricultural resources. The main goals of the Agricultural Element are to strengthen the agricultural sector of the local economy, conserve the county's agricultural lands for agricultural uses, and protect the natural resources that sustain agriculture in Stanislaus County. The following goal and policies related to agricultural land include:

Land Use Element

Policy 16. Agriculture, as the primary industry of the County, shall be promoted and protected.

Agricultural Element

Goal 1. Strengthen the agricultural sector of our economy.

Policy 1.10. The County shall protect agricultural operations from conflicts with non-agricultural uses by requiring buffers between proposed non-agricultural uses and adjacent agricultural operations.

Implementation Measure 1: The County shall require buffers and setbacks for all discretionary projects introducing or expanding non-agricultural uses in or adjacent to an agricultural area consistent with the guidelines presented in Appendix "A" of the Agricultural Element.

Goal 2. Conserve our agricultural lands for agricultural uses.

Policy 2.5. To the greatest extent possible, development shall be directed away from the County's most productive agricultural areas.

Policy 2.14. When the County determines that the proposed conversion of agricultural land to non-agricultural uses could have a significant effect on the environment, the County shall fully evaluate on a project- specific basis the direct and indirect effects, as well as the cumulative effects of the conversion.

Policy 2.15. In order to mitigate the conversion of agricultural land resulting from a discretionary project requiring a General Plan or Community Plan amendment from "Agriculture" to a residential land use designation, the County shall require the replacement of agricultural land at a 1:1 ratio with agricultural land of equal quality located in Stanislaus County.

Buffer and Setback Guidelines

Appendix A of the *Stanislaus County General Plan* includes buffer and setback guidelines that are intended to physically avoid conflicts between agricultural and non-agricultural uses (Stanislaus County 2016). While these guidelines do not necessarily apply to the Proposed Program since the City owns the Jennings Plant and the approximately 2,500 acres of agricultural lands south of the plant, the guidelines include the following:

- All projects shall incorporate a minimum 150-foot wide buffer. All buffers shall incorporate a solid wall and vegetative screen consistent with the following standards:
- Fencing: A 6-foot high wall of uniform construction shall be installed along any portion of a buffer where the project site and the adjoining agricultural operation share a common parcel line.
- Permitted uses within a buffer area shall include: public roadways, utilities, drainage facilities, landscaping, parking lots and similar low human intensity uses. Walking and bike trails shall be allowed within buffers provided they are designed without rest areas.
- Landscaping within a buffer setback shall be designed to exclude turf areas which could induce activities and add to overall maintenance costs and water usage.
- A landowner's association or other appropriate entity shall be required to maintain buffers to control litter, fire hazards, pests, and other maintenance problems when a

project consists of multiple parcels which may be held, or have the potential to be held, under separate ownership.

- The Board of Supervisors may authorize the abandonment and reuse of buffer areas if agricultural uses on all adjacent parcels within a 150-foot radius of the project site have permanently ceased.

Stanislaus County Farmland Mitigation Program

Stanislaus County has established a Farmland Mitigation Program (FMP) as Appendix B of its general plan (Stanislaus County 2016). The purpose of the FMP is to aid in mitigating the loss of farmland resulting from residential development in the unincorporated areas of Stanislaus County by requiring the permanent protection of farmland based on a 1:1 ratio to the amount of farmland converted. The FMP is designed to utilize agricultural conservation easements granted in perpetuity as a means of minimizing the loss of farmland. These guidelines apply to any development project requiring a General Plan or Community Plan amendment from Agriculture to a residential land use designation of the Stanislaus County General Plan. As such, the Proposed Program would not be subject to the FMP.

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (2019) contains the following agricultural resources policies that are relevant to the Proposed Program:

> **Policy VII-D.3[a].** If a subsequent project is within the Baseline Developed Area or Downtown Area as identified on the General Plan Growth Strategy Diagram (Figure II-1), consider the project to have minimal effect on the conversion of agricultural lands, and no mitigation for that impact will be required.
>
> **Policy VII-D.4[a].** Do not annex agricultural land unless urban development consistent with the General Plan has been approved by the City.
>
> **Policy VII-D.4[b].** Support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent.
>
> **Policy VII-D.4[d].** Where necessary to promote planned City growth, encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.
>
> **Policy VII-D.4[e].** For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use. Potential measures to be implemented may include the following:
>
> (1) Include a buffer zone of sufficient width between proposed residences and the agricultural use.
>
> (2) Inform residents about the possible exposure to agricultural chemicals. (City of Modesto 2019)

5.3 ENVIRONMENTAL SETTING

Stanislaus County consists of a flat topography, good-to-excellent soil quality, favorable climate, and availability of natural water (City of Modesto 2019). Agriculture has become the County's leading industry, generating over $3.88 billion in agricultural commodities in 2015 alone (Stanislaus County 2016). Approximately 768,046 acres of land throughout the County is categorized as farmland, with approximately 4,143 farms in operation. The County's leading commodities are currently almond crops and milk (Stanislaus County 2015). Modesto is at the center of Stanislaus County's rich agricultural landscape. As the largest city in the County, Modesto is comprised of mostly urban and built-up land with its contiguous areas comprised of agricultural lands (CDOC 2017a).

Based on the most recent CDOC FMMP report, Stanislaus County has 249,967 acres of Prime Farmland, 33,172 acres of Farmland of Statewide Importance, 116,210 acres of Unique Farmland, and 26,029 acres of Farmland of Local Importance (CDOC 2016b). **Figure 5-1** shows Farmland in the Program vicinity. While the majority of proposed components would be located in urban and built-up areas of Modesto or along existing roadways, new lift stations along with some pipeline segments would be constructed on land classified as Farmland, as shown on Figure 5-1.

The proposed Tuolumne River Pipeline crossings would be constructed on land classified as Vacant or Disturbed Land. A portion of the new outfall pipeline alignment from the south jacking pit and junction structure to the 60-inch force main connection would be constructed along an existing roadway (Monticello Lane) with Prime Farmland directly to the west (CDOC 2016a). The new outfall pipeline would be installed within road-rights-of-way but would be surrounded by designated Prime Farmland that is under Williamson Act contracts. A small portion of the outfall pipeline alignment would also traverse through non-enrolled land (CDOC 2011).

5.4 IMPACT ANALYSIS

5.4.1 METHODOLOGY

Impacts to agricultural resources from the Proposed Program components were assessed by reviewing the *2015 Stanislaus County Agricultural Report,* the General Plan policies of Stanislaus County and the City of Modesto, Williamson Act maps, FMMP maps, and relevant federal and state regulations.

Improvements in the Proposed Program include replacement or upgrade of existing facilities and construction of new facilities such as sewer lines, lift stations, treatment plant improvements at the Sutter and Jennings Plants. Existing facilities are considered developed and are not expected to have agricultural resources impacts since construction would occur within the existing footprint of existing facilities. New facilities in the Proposed Program may be in developed areas, or within the public right-of-way, which are not expected to have agricultural resource impacts. However, new facilities proposed in non-developed areas will require the analysis outlined in the following sections. The effects of construction, operation, and maintenance of the proposed facilities on existing agricultural resources was evaluated according to the significance criteria below.

5.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on agricultural resources if it would:

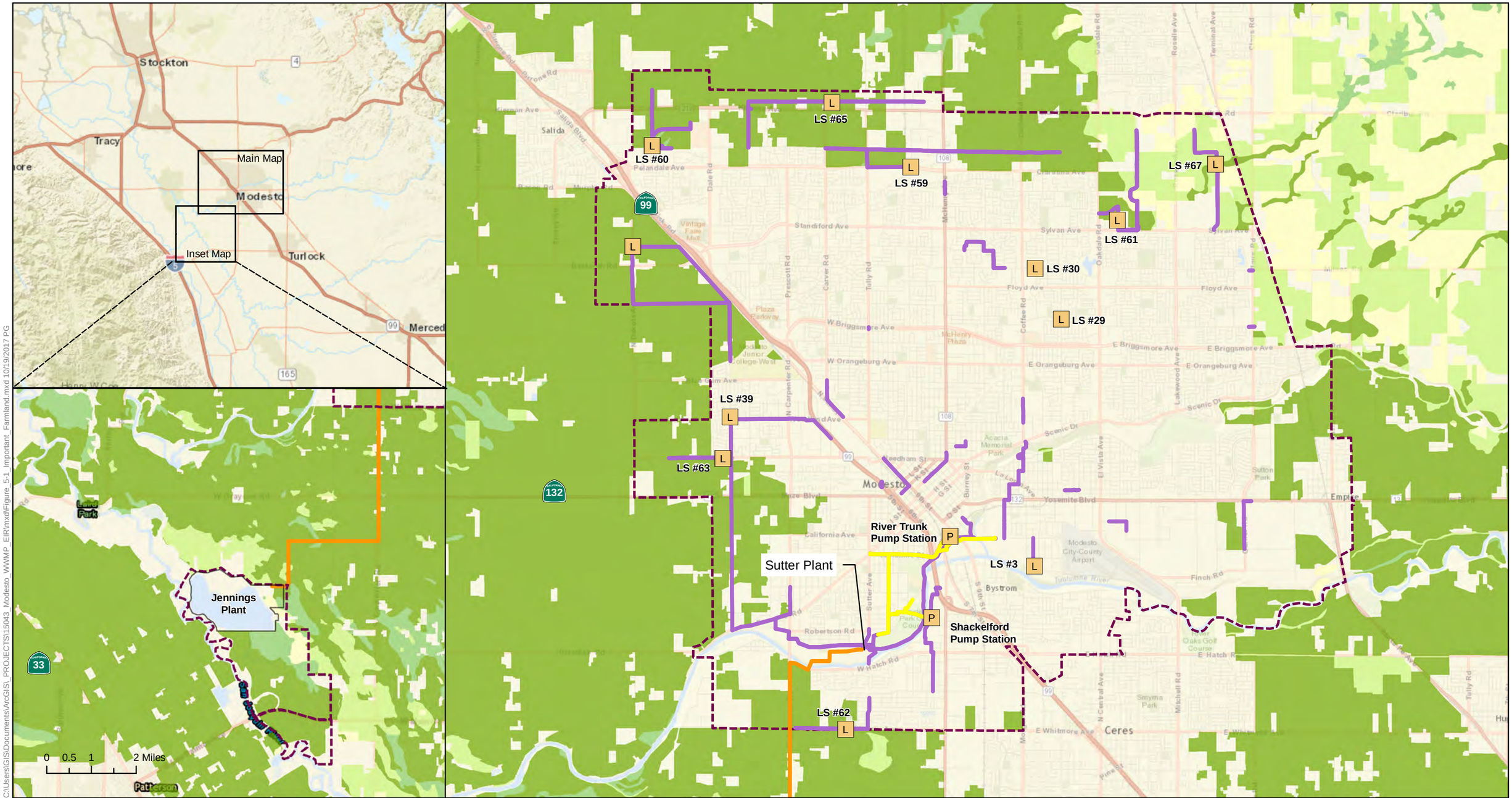
- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use.

5.4.3 ENVIRONMENTAL IMPACTS

Impact AG-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-agricultural Use (Significant and Unavoidable)

Figure 5-1 shows Farmland and the general location of pipeline alignments and locations of future facilities associated with the Proposed Program (e.g., lift stations). Program components were planned to serve future developed areas. However, these locations are preliminary and the exact alignments and locations of Program facilities are dependent upon County- and City-approved development plans and land ownership and/or easement agreements. Future roads and land uses would be refined as part of the development planning process and would identify future rights-of-way to be used for utility alignments and facilities, including Program components. In addition, some areas may be converted from Farmland to developed areas prior to construction of Program components. For the purpose of this analysis, Program components preliminarily located in or near Farmland areas were evaluated as if they would be located in Farmland, despite the potential for changes in their actual location or land use designation. Therefore, the evaluated impact area and potential impacts discussed below may overstate the Proposed Program's actual impact.

In addition, Program components located within the Baseline Developed Area or Downtown Area as identified in the *City of Modesto Urban Area General Plan* (2019), are considered to have minimal effect on agricultural lands and do not require mitigation for conversion of Farmland (City of Modesto 2019).



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Figure 5-1
Farmland Designations

City of Modesto
Wastewater Master Plan EIR

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Collection System Components

While the majority of proposed sewer pipelines would be constructed within existing roadways, some pipeline improvements would extend beyond roadways and onto land that is designated Farmland, as shown on Figure 5-1. All pipeline improvements would be installed to serve areas anticipated for growth and would involve open trench methods. Ground disturbing activities associated with pipeline improvements would be temporary and agricultural lands would be restored to pre-construction conditions following project completion. Thus, installation and operation of new pipeline segments associated with the Proposed Program would not permanently impact existing agricultural land, and this impact would be less than significant.

Upgrades or replacement of existing lift station components would occur on urban and built-up land area or other types of non-agricultural use lands. Under current conditions, construction of new stations (i.e., LS #60, LS #61, LS #62, LS #63, LS #65, and LS #67) would take place either adjacent to or on land that is designated as Farmland, as shown on Figure 5-1 (CDOC 2016a). Given that these lift stations would serve future growth areas, the locations of these facilities are preliminary and may change. In addition, lift stations would be constructed in existing or planned development areas and likely located along roadways. However, due to proximity of Farmland and because the exact location of these lift stations has not yet been determined, it is conservatively assumed that these CIPs could result in the permanent conversion of up to 1 acre of Farmland. This impact would be significant.

Considering LAFCO's Agricultural Preservation Policy (2015) and pursuant to Policy 2.15 in the *Stanislaus County General Plan,* the County policy requires that agricultural land converted to residential use be replaced at a 1:1 ratio with agricultural land of equal quality in Stanislaus County. However, since the Proposed Program is not a residential project, these policies do not apply to the Program. While the Stanislaus County's Farmland Mitigation Program provides a mechanism for establishing agricultural easements, the City has determined that this program is infeasible for the following reasons: (1) Stanislaus County policy is to mitigate the loss of and preserve Prime Farmland through the County's Farmland Mitigation Program, which is designed to address loss of farmland resulting from impacts of residential development, and the County policy is not to burden and increase the cost of new and improved public infrastructure that is needed by the community; and (2) the purchase of an agricultural conservation easement over other off-site agricultural land would not ultimately avoid or reduce the impact of converting Prime Farmland to non-agricultural uses caused by the Proposed Program because there still would be a net reduction in the total amount of Prime Farmland and therefore the easement over other land would not reduce the impact to a level of insignificance. No other feasible mitigation measures, such as restoration of Prime Farmland that has been previously converted or participation in another agricultural conservation easement program, have been identified to further reduce this impact. Therefore, this impact would be **significant and unavoidable**.

Outfall Pipelines

The proposed Tuolumne River Pipeline Crossings would be constructed and operated on land that is designated as Vacant or Disturbed Land. The preliminary alignment of the southern trenchless pit occurs on land designated as Farmland. Similar to the discussion above, ground-disturbing activities associated with pipeline installation would be temporary and agricultural lands would be restored to pre-construction conditions following the completion

of pipeline installation, resulting in no permanent impacts to Farmland. Therefore, this impact would be considered less than significant.

With the exception of a small portion of the pipeline extending from the southern jacking pit to West Hatch Road, the third outfall pipeline would be mostly installed within existing County roads using the open trench method. A large portion of the alignment is bordered by Farmland. This new outfall pipeline would require an excavated trench with an approximate width and depth of 8 feet and 11 feet. During pipeline construction, removal of topsoil using heavy equipment would have potential to adversely affect long-term soil characteristics and productivity of adjacent Farmland through compaction and removal of topsoil. However, since the new outfall pipeline would be underground and disturbance to topsoil on Farmland would be temporary, Farmland could be returned to pre-construction conditions after construction is complete, impacts to Farmland would be **less than significant**.

Sutter Plant Components

All proposed components associated with the Sutter Treatment Plant would occur on land that is designated as Urban and Built-Up Land. Therefore, these components would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. There would be **no impact**.

Jennings Plant Components

The majority of the components associated with the Jennings Plant would occur on urban/built-up land, while the Phase 3-5 BNR/Tertiary, primary treatment and solids handling facilities would be built on Semi-Agricultural and Rural Commercial Land. Construction of new Sludge Cake Drying Beds (Component Nos. JP-4.3 and JP-5.5) would occur on Farmland located to the east of the Jennings Plant and future dewatering facility. The sludge drying beds would be constructed in two different phases. As described in Chapter 2, *Program Description,* the 5 acres of drying beds constructed to support the interim WAS facilities would be expanded to 18.6 acres. The drying beds would be asphalt-paved areas with concrete containment. Construction of these beds and their associated facilities would result in permanent conversion of approximately 18.6 acres of Farmland, which is considered a significant impact. As described above for collection system improvements, the County's Farmland Mitigation Program is infeasible because it was intended to provide a mechanism for residential development projects to mitigate impacts associated with loss of Prime Farmland, and the cost of purchasing an agricultural easement over other off-site agricultural land would not ultimately avoid or reduce impacts due to converting Prime Farmland to non-agricultural land. For these reasons, this impact would be **significant and unavoidable**.

River Trunk Realignment Project

The entire River Trunk Realignment Project would be constructed on land that is either designated as urban and built-up land, or as vacant land. The Shackelford Pump Station would be constructed on vacant land adjacent to the Dryden Golf Course, while the River Trunk Pump Station would be constructed primarily on urban and built-up land. Figure 5-1 provides a visual reference to where the Project would be built, as well as the land use designations for this particular area as established by the FMMP (CDOC 2016a). As a result, the River Trunk Realignment Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. **No impact** would occur.

Overall Conclusion

Considering all of the WWMP components as a whole, while construction-related impacts of several components would be temporary, some WWMP components would result in permanent conversion of Farmland. As described above, the Stanislaus County's Farmland Mitigation Program is infeasible because it was intended to provide a mechanism for residential projects (not public infrastructures projects) to mitigate impacts associated with loss of Prime Farmland. No further feasible mitigation has been identified that could further reduce the Proposed Program's impacts related to permanent conversion of Farmland. Restoration and/or recovery of Farmland from existing urban uses to offset the loss of Farmland could mitigate the loss caused by the Proposed Program. However, such a measure would be unreasonably costly and inefficient and would, therefore, be infeasible. Therefore, the Proposed Program's overall impact would be **significant and unavoidable.**

Proposed Program Impact AG-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract (Less than Significant)

Collection System Components and Jennings Plant Components

Most collection system components would take place within developed (non-agricultural) areas of Modesto and would not conflict with lands zoned for agricultural use or a Williamson Act contract. However, some pipeline segments would be located on lands designated as non-enrolled Williamson Act lands and zoned for agricultural uses (Stanislaus County 2017). Ground disturbing activities associated with pipeline improvements would be temporary and likely along roadways or other developed areas. Additionally, ground disturbance to land zoned for agricultural use or a Williamson Act would be restored following project construction activities. Therefore, there would be no permanent impacts to agricultural lands or Williamson Act contracts from pipeline installation.

Some lift stations intended to serve future growth areas on the outskirts of Modesto would occur on land zoned for agricultural use or subject to a Williamson Act contract, as shown in the California Department of Conservation's Williamson Act Lands map (CDOC 2011) and **Figure 5-2**. Construction of new lift stations (LS #63, LS #64, LS #65, and LS #67) would be built on General Agriculture 40-acre zoned land (Stanislaus County 2006) and LS #67 (at Litt Road) on land that also has a Williamson Act contract. However, these lift stations would be built along existing roadways and would therefore not conflict with surrounding existing agricultural zoning.

As for the Jennings Plant, a large portion of the existing plant is designated as urban and built-up land but the area planned for development of expanded tertiary treatment and primary treatment facilities would occur on land under non-enrolled Williamson Act land with potential for conflict with Williamson Act contracts. However, according to Stanislaus County Ordinance Section 21.20.030, a Tier Three conditional use permit can be obtained for new facility construction planned on lands zoned for agricultural uses, including those subject to a Williamson Act contract. Allowable uses include construction of public facilities. As such, the proposed Jennings Plant improvements would meet conditional uses stated under Tier Three of this ordinance. Note that the requirements associated with County zoning do not apply to actions undertaken by the City; regardless, the City's actions would be consistent with the County's existing zoning (considering that public facilities are a conditionally approved use).

For these reasons, the conflicts with Williamson Act lands and land zoned for agricultural uses from these Proposed Program components would be **less than significant**.

Sutter Plant Components

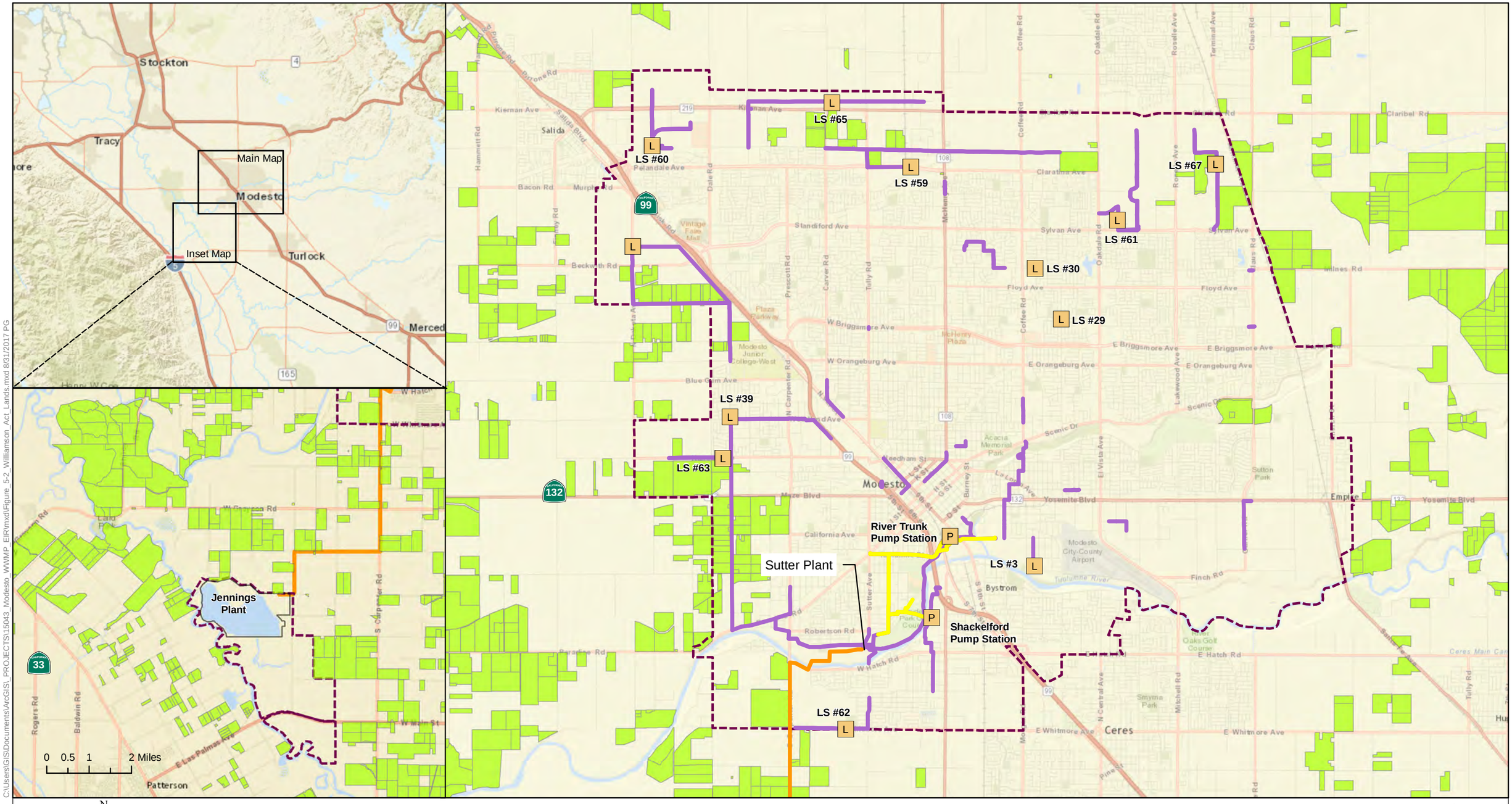
Construction of the Sutter Plant components would occur on land that is not zoned for agricultural use or under any Williamson Act contract. As a result, these components would have **no impact.**

Outfall Pipelines

The outfall pipeline crossings at Tuolumne River would be installed on lands designated as non-enrolled Williamson Act lands and zoned for agricultural uses. The new outfall pipeline would be approximately 9 miles in length and 54 inches in diameter. From the southern trenchless pit, this pipeline would be installed underground via open trench construction and would extend west on West Hatch Road, continue south along Carpenter Road, west on Keyes Road and south on Jennings Road, then continue west where it would terminate at the Jennings Plant. The pipeline alignment would be bordered by land that is zoned for General Agriculture, and the majority of land surrounding the pipeline is enrolled under Williamson Act contracts as Prime Farmland, although there are portions that are non-enrolled. Construction of the pipeline would mostly occur within the limits of County road right-of-way boundaries. Similar to the discussion above, pipeline installation would only result in temporary impacts and would not conflict with use of lands zoned for agricultural use or under a Williamson Act contract. Therefore, this impact would be **less than significant**.

River Trunk Realignment Project

The River Trunk Realignment Project would involve the construction of components on land predominantly zoned for low density residential uses and commercial – industrial uses. In addition, none of the lands traversed by the River Trunk Realignment Project are under a Williamson Act contract. Based on this information, this project would not conflict with land zoned for agricultural use, or land that is under a Williamson Act contract. There would be **no impact**.



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Figure 5-2
Williamson Act Contracts

City of Modesto
Wastewater Master Plan EIR

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Overall Conclusion

Considering the WWMP components as a whole, while some WWMP components have potential to conflict with Williamson Act contracts, the WWMP facilities would be conditionally allowable uses on County lands zoned for agricultural uses, including those subject to a Williamson Act. In conclusion, conflicts with lands zoned for agricultural uses and conflicts with Williamson Act lands would be **less than significant.**

Impact AG-3: Involve Other Changes in the Existing Environment Which, Due to Their Location or Nature, Could Result in Conversion of Farmland to Non-agricultural Use (Less than Significant)

The Proposed Program would not directly or indirectly induce substantial population growth during construction but could indirectly result in the conversion of farmland to non-agricultural uses as a result of land development which would be facilitated by the Proposed Program. The impacts of development of the urban area of Modesto have been previously considered in the City of Modesto's General Plan Master EIR. As described in Impact AG-1, the Stanislaus County's Farmland Mitigation Program is infeasible because the program was intended to provide a mechanism for residential development projects (not public infrastructure projects) to mitigate impacts associated with loss of Prime Farmland, and the purchase of an agricultural conservation easement over other off-site agricultural land would not ultimately avoid or reduce impacts of converting Prime Farmland to non-agricultural uses caused by the Proposed Program. In addition, the specifics regarding future development that may result in agricultural conversion are not known at this time.

This topic is discussed in more detail in Chapter 15, *Population and Housing,* under Impact PH-3.

While there is a potential for the Proposed Program to indirectly convert farmland to non-agricultural uses as a result of land development facilitated by the Proposed Program, the Proposed Program would benefit existing farmlands for the following reason. At WWMP build-out, the amount of biosolids produced at the Jennings Plant would increase to approximately 9,000 tons per year (Pers. Comm. Eve 2017). As described in Chapter 2, currently 3,000 to 4,000 tons per of biosolids are generated at the Sutter Plant so the Program would result in an increase of 5,000 to 6,000 tons/year of biosolids. Once dried out, the biosolids would be used as compost and applied on the ranch lands adjacent to the Jennings Plant similar to current conditions, which would have a beneficial effect on agricultural production. The Proposed Program would involve no other changes that could result in conversion of farmland to non-agricultural use.

Therefore, while the Proposed Program could indirectly result in the conversion of farmland to non-agricultural uses, provided that the Proposed Program would also benefit existing agricultural lands in the Program area due to the increased amount of biosolids generated at the Jennings Plant, on the whole, this impact would be **less than significant**.

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Chapter 6
AIR QUALITY

6.1 OVERVIEW

This chapter evaluates the Proposed Program's air quality impacts. The chapter first describes the air quality regulatory and environmental settings and then evaluates the Proposed Program's air quality impacts. The impact evaluation begins by describing the air quality significance criteria and the methodology used to evaluate significance, and then presents the impact evaluation. Mitigation measures are identified for impacts that are determined to be significant.

Air quality is descri20bed for a specific location as the concentration of various pollutants in the atmosphere. Air quality conditions at a particular location are a function of the type and amount of air pollutants emitted into the atmosphere, the size and topography of the regional air basin, and the prevailing meteorological conditions.

Key sources used in preparing this chapter are as follows:

- *Stanislaus County General Plan* Conservation/Open Space Element (Stanislaus County 2016a);
- *City of Modesto Urban Area General Plan* (City of Modesto 2019);
- San Joaquin Valley Air Pollution Control District (SJVAPCD) *Mitigation Measures* guidance document (SJVAPCD 2017a); and
- SJVAPCD *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a).

6.2 REGULATORY SETTING

6.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

The Clean Air Act is implemented by USEPA and sets ambient air limits, the National Ambient Air Quality Standards (NAAQS), for six criteria pollutants: carbon monoxide (CO), lead, nitrogen dioxide (NO_2), ground-level ozone, sulfur dioxide (SO_2), and particulate pollution which is subdivided into particulate matter of aerodynamic radius of 10 micrometers or less (PM_{10}) and particulate matter of aerodynamic radius of 2.5 micrometers or less ($PM_{2.5}$). Of these criteria pollutants, particulate matter and ground-level ozone pose the greatest threats to human health. **Table 6-1** shows the current attainment status for NAAQS.

Table 6-1. Attainment Status of the Federal and State Ambient Air Quality Standards

Contaminant	Averaging Time	Concentration	State Standards Attainment Status[1]	Federal Standards Attainment Status[2]
Ozone (O_3)	1-hour	0.09 ppm	N (Severe)	See footnote 3
	8-hour	0.070 ppm	N	
		0.075 ppm		N (Extreme)
Carbon Monoxide (CO)	1-hour	20 ppm	U/A	
		35 ppm		U/A
	8-hour	9.0 ppm	U/A	U/A
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	
		0.100 ppm[5]		U/A
	Annual arithmetic mean	0.030 ppm	A	
		0.053 ppm		U/A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	
		0.075 ppm		U/A
	24-hour	0.04 ppm	A	
		0.14 ppm		U/A
	Annual arithmetic mean	0.030 ppm		U/A
Particulate Matter (PM_{10})	24-hour	50 µg/m^3	N	
		150 µg/m^3		A
	Annual arithmetic mean	20 µg/m^3	N	
Fine Particulate Matter ($PM_{2.5}$)	24-hour	35 µg/m^3		N (Moderate)
	Annual arithmetic mean	12 µg/m^3	N	N (Moderate)
Sulfates	24-hour	25 µg/m^3	A	
Lead (Pb)[6]	30-day average	1.5 µg/m^3	A	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm	U	
Vinyl Chloride[6] (chloroethene)	24-hour	0.010 ppm	A	
Visibility-Reducing Particles	8-hour (10:00 to 18:00 PST)	See footnote 4	U	

A – attainment
N – nonattainment
U – unclassified
ppm – parts per million
µg/m^3 – micrograms per cubic meter
PST – Pacific Standard Time
km – kilometer
PM_{10}- particulate matter of aerodynamic radius of 10 microns or less
$PM_{2.5}$- particulate matter of aerodynamic radius of 2.5 microns or less

Notes:

1. California standards for O_3, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour averages), NO_2, PM_{10}, and visibility-reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe CO, Pb, H_2S, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average (i.e., all standards except for Pb and the $PM_{2.5}$ and PM_{10} annual standards), some measurements may be excluded. In particular, measurements are excluded that the California Air Resources Board (CARB) determines would occur an average of less than once per year.
2. National standards shown are the "primary standards" designed to protect public health. National air quality standards are set by the U.S. Environmental Protection Agency (USEPA) at levels determined to be protective of public health with an adequate margin of safety. National standards other than for O_3, particulates, and those based on annual averages are not to be exceeded more than once per year. The 1-hour O_3 standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is less than or equal to one. The 8-hour O_3 standard is attained when the 3-year average of the fourth highest daily concentrations is 0.075 ppm (75 parts per billion) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the ninety-ninth percentile of monitored concentrations is less than 150 $\mu g/m^3$. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of ninety-eighth percentiles is less than 35 $\mu g/m^3$. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met by spatially averaging annual averages across officially designated clusters of sites and then determining whether the 3-year average of these annual averages falls below the standard.
3. The national 1-hour O_3 standard was revoked by USEPA on June 15, 2005. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. However, the attainment status has not yet been updated based on this revised 8-hour standard. It is likely that the region will remain in nonattainment.
4. Statewide Visibility-Reducing Particle Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per km when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment resulting from regional haze and is equivalent to a 10-mile nominal visual range.
5. To attain this standard, the 3-year average of the ninety-eighth percentile of the daily maximum 1-hour average at each monitoring station within an area must not exceed 0.100 ppm (effective January 22, 2010).
6. CARB has identified Pb and vinyl chloride as toxic air contaminants with no threshold level of exposure below which there are no adverse health effects determined.

Sources: SJVAPCD 2017b, CARB 2017a, USEPA 2017

USEPA and, in California, the California Air Resources Board (CARB) regulate various stationary sources, area sources, and mobile sources. USEPA has regulations involving performance standards for specific sources that might release criteria pollutants and/or toxic air contaminants (TACs), known at the federal level as hazardous air pollutants (HAPs). These regulations are 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAP). Large sources of emissions may be classified as major sources and are subject to the Clean Air Act Title V program. In addition, USEPA has regulations involving emission criteria for off-road sources, such as emergency generators, construction equipment, and vehicles as well as other releases of toxic chemicals.

6.2.2 State Laws, Regulations, and Policies

California Clean Air Act

CARB sets standards for criteria pollutants in California that are more stringent than NAAQS and includes the following additional contaminants: visibility-reducing particles, hydrogen sulfide (H_2S), sulfates, and vinyl chloride. The Proposed Program is located in the San Joaquin Valley Air Basin (SJVAB) and managed by SJVAPCD, which manages air quality in Stanislaus County for attainment and permitting purposes.

CARB is responsible for setting emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also establishes passenger vehicle fuel specifications.

Statewide Truck and Bus Regulations

On December 12, 2008, CARB approved a regulation to substantially reduce emissions of diesel particulate matter (DPM), oxides of nitrogen (NO_X), and other pollutants from existing on-road diesel vehicles operating in California. The regulation requires affected trucks and buses to meet performance standards and requirements between 2011 and 2023. Affected vehicles included on-road, heavy-duty, diesel-fueled vehicles with a gross vehicle weight rating greater than 14,000 pounds. The regulation was updated in 2011 and 2014 with revisions that provide more compliance flexibility and reflect the impact of the economic recession on vehicle activity and emissions. Heavy-duty trucks used during construction of Proposed Program components would be required to comply with this regulation.

In-use, Off-road Diesel Vehicle Regulation

In 2007, CARB adopted a regulation to reduce DPM and NO_X emissions from in-use, off-road, heavy-duty diesel vehicles in California. The regulation imposes limits on vehicle idling and requires fleets to reduce emissions by retiring, replacing, repowering, or installing exhaust retrofits to older engines. In December 2011, major amendments were made to the regulation, including modifications to the compliance dates for performance standards and establishing requirements for compliance with verified diesel emission control strategy technologies that reduce PM and/or NO_X emissions.

Heavy-duty Vehicle Inspection Program

The heavy-duty vehicle inspection program requires heavy-duty trucks and buses to be inspected for excessive smoke and tampering and for compliance with engine certification labels. Any heavy-duty vehicle (i.e., a vehicle with a gross vehicle weight rating greater than 6,000 pounds) traveling in California, including vehicles registered in other states and foreign countries, may be tested. Tests are performed by CARB inspection teams at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations. Owners of trucks and buses found to be in violation are subject to penalties starting at $300 per violation. Heavy-duty trucks used during construction of Proposed Program components would be subject to the inspection program.

Heavy-duty On-board Diagnostic System Regulations

In 2004, CARB adopted regulations requiring on-board diagnostic (OBD) systems on all 2007 and later model year heavy-duty engines and vehicles (i.e., vehicles with a gross vehicle weight rating greater than 14,000 pounds) in California. CARB subsequently adopted a comprehensive OBD regulation for heavy-duty vehicles model years 2010 and beyond. The heavy-duty OBD regulations were updated in 2010, 2013, and 2016 with revisions to enforcement requirements, testing requirements, and implementation schedules. Heavy-duty trucks used during construction of proposed components would be required to comply with the heavy-duty OBD regulatory requirements.

California Standards for Diesel Fuel Regulations

State regulations require diesel fuel with sulfur content of 15 parts per million (ppm) or less (by weight) to be used for all diesel-fueled vehicles that are operated in California. The standard also applies to non-vehicular diesel fuels. The regulations also contain standards for the aromatic hydrocarbon content and lubricity of diesel fuels.

Airborne Toxic Control Measures

CARB regulates TACs by requiring implementation of various airborne toxic control measures (ATCMs), which are intended to reduce emissions associated with toxic substances. Relevant ATCMs to the Proposed Program are as follows:

- ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater
- ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling
- ATCM to Reduce Particulate Emissions from Diesel-Fueled Engines Standards for Nonvehicular Diesel Fuel
- ATCM for Stationary Compression Ignition Engines
- Asbestos ATCM for Construction, Grading, Quarrying and Surface Mining Operations

In addition to ATCMs, TACs are controlled under several regulations in California, including the Tanner Air Toxics Act, Air Toxics Hot Spots Information Act, and Assembly Bill (AB) 2588: Air Toxics "Hot Spots" Information and Assessment Act. In addition, Proposition 65 (the Safe Water and Toxic Enforcement Act of 1996) requires that the state publish a list of chemicals known to cause cancer or birth defects or other reproductive harm. Proposition 65 requires businesses to notify Californians about substantial amounts of chemicals in the products they purchase or that are released into the environment.

6.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

At the local level, responsibilities of air quality districts include overseeing stationary-source emissions, approving permits, maintaining emissions inventories, maintaining air quality monitoring stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents under CEQA. The air quality districts are also responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws, as well as for ensuring that the NAAQS and California Ambient Air Quality Standards (CAAQS) are met.

Local governments are essential partners in the effort to reduce air pollutant emissions. The local governments have influence through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations.

San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Air Basin (SJVAB) is comprised of a single air district, the San Joaquin Valley Air Pollution Control District (SJVAPCD), and is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and the San Joaquin Valley Air Basin portion of Kern. SJVAPCD has local air quality jurisdiction over the Proposed Program and in other counties under its jurisdiction. SJVAPCD's recommended CEQA thresholds are outlined in its *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a). SJVAPCD has adopted attainment plans to address ozone and PM.

1-Hour Ozone

Although USEPA revoked its 1979 1-hour ozone standard in June 2005, many planning requirements remain in place, and the SJVAB must still attain this standard before CAA Section 185 fees (which are required when attainment is not reached) can be rescinded. SJVAPCD's most recent 1-hour ozone plan, the 2013 Plan for the Revoked 1-hour Ozone Standard (SJVAPCD 2013), demonstrated attainment of the 1-hour ozone standard by 2017. In July 2016, USEPA made a final determination that the SJVAB has attained the 1-hour ozone NAAQS based on the most recent 3-year data period (2012–2014) of sufficient, quality-assured, and certified data (SJVAPCD 2017c). For the SJVAB to be officially designated as an attainment area, SJVAPCD must verify that attainment is due to permanent and enforceable emission reductions and prepare a maintenance plan.

8-Hour Ozone

SJVAPCD's far-reaching 2007 Ozone Plan demonstrates attainment of USEPA's 1997 8-hour ozone standard by 2023. USEPA approved the 2007 Ozone Plan effective April 30, 2012. The district has prepared a 2016 Ozone Plan to address USEPA's 2008 8-hour ozone standard, which the SJVAB must attain by 2032 (SJVAPCD 2016a). This extremely stringent standard is nearing the SJVAB's naturally occurring background concentrations of ozone. The 2016 plan identifies that, without mobile sources transitioning to near-zero emission levels through the implementation of transformative measures such as ultra-low tailpipe emissions standards (which SJVAPCD does not have the authority to implement), attainment of the federal standards is not possible (SJVAPCD 2016a).

PM_{10}

PM is a complex mixture of extremely small particles and liquid droplets, made up of multiple components, including acids, organic chemicals, metals, and soil or dust particles. PM_{10} is typically found near roadways and around dusty industrial sites. Based on PM_{10} measurements from 2003-2006, USEPA found that the SJVAB has reached attainment of federal PM_{10} standards. On September 21, 2007, the SJVAPCD Governing Board adopted the 2007 *PM_{10} Maintenance Plan and Request for Redesignation*, which demonstrates that the SJVAB will continue to meet the PM_{10} standard. USEPA approved the document and, on September 25, 2008, the SJVAB was redesignated to attainment/maintenance (SJVAPCD 2017d). The District is in the process of developing the 2017 PM_{10} Maintenance Plan to demonstrate the maintenance of the standard for an additional ten-year period of 2020 through 2029 (SJVAPCD 2017d, 2017e).

$PM_{2.5}$

$PM_{2.5}$ is found in smoke and haze. Changes in the federal $PM_{2.5}$ air quality standard (in 1997, 2006, and 2012) and recent drought conditions in California have resulted in the development of multiple $PM_{2.5}$ air quality plans by SJVAPCD. The 2008 and 2015 $PM_{2.5}$ Plans have been prepared to achieve attainment of USEPA's first $PM_{2.5}$ standard, set in 1997. The attainment deadline for the 1997 standard has been delayed to 2020 (SJVAPCD 2015b).

USEPA lowered the $PM_{2.5}$ standard in 2006. Although SJVAPCD's 2012 $PM_{2.5}$ Plan showed attainment of this standard by 2019, USEPA reclassified SJVAPCD to serious nonattainment for the 2006 $PM_{2.5}$ standard in January 2015, and SJVAPCD must prepare a revised plan to address this nonattainment.

On September 15, 2016, SJVAPCD adopted the "2016 Moderate Area Plan for the 2012 PM2.5 standard" to address another $PM_{2.5}$ standard issued by USEPA in 2012 and USEPA's determination that the SJVAB is a moderate nonattainment area for the 2012 federal $PM_{2.5}$ standard. SJVAPCD continues to work with USEPA on issues surrounding these plans, including USEPA implementation updates and is in the process of developing an attainment strategy to address the multiple $PM_{2.5}$ standards (1997, 2006, and 2012) (SJVAPCD 2017d, 2017e).

SJVAPCD Rules

The Proposed Program may be subject to the following district rules. These rules have been adopted by SJVAPCD to reduce emissions throughout the SJVAB:

- **Rule 2010 – Permits Required**. This rule requires an applicant to obtain an Authority to Construct and Permit to Operate for certain types of stationary air pollution sources.

- **Rule 2201 – New and Modified Stationary-Source Review Rule** applies to all new stationary sources and all modifications to existing stationary sources subject to SJVAPCD permit requirements that, after construction, emit or may emit one or more pollutants regulated by the rule.

- **Rule 2280 – Portable Equipment Registration** applies to portable emissions units that may operate in participating districts throughout California. The rule requires applicable portable equipment to be registered.

- **Rule 2520 – Federally Mandated Operating Permits** describes which major sources must obtain a Title V operating permit. Generally, major sources are those stationary sources with the potential to emit greater than identified designated limits of criteria pollutants (i.e., 10 tons per year (tpy) of NOx or VOC, 100 tpy of CO, or 70 tpy of PM10 or Sox) and major toxic sources with the potential to emit greater than 10 tpy of any single hazardous air contaminant or 25 tpy of any combined hazardous air contaminants.

- **Rule 3135 – Dust Control Plan Fees** requires the applicant to submit a fee in addition to a dust control plan. The purpose of this rule is to recover SJVAPCD's cost for reviewing these plans and conducting compliance inspections.

- **Rule 4001 – New Source Performance Standards** applies to new or modified sources of air pollution that must comply with standards, criteria and requirements for the applicable sources. This incorporates by reference the federal NSPS.

- **Rule 4002 – National Emission Standards for Hazardous Air Pollutants** applies to sources of air pollution that must comply with standards, criteria and requirements for the applicable sources of TACs. This incorporates by reference the federal NESHAPs.

- **Rule 4101 – Visible Emissions** prohibits emissions of visible air contaminants into the atmosphere and applies to any source operation that emits or may emit air contaminants.

- **Rule 4102 – Nuisance** applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation of this rule and subject to SJVAPCD enforcement action.

- **Rule 4201 – Particulate Matter Concentration** applies to any source operation which emits or may emit dust, fumes, or total suspended particulate matter.

- **Rule 4202 – Particulate Matter - Emissions Rate** limits particulate matter emissions by establishing allowable emission rates.

- **Rule 4301 – Fuel Burning Equipment** limits the concentration of combustion contaminants and specifies maximum emission rates for sulfur dioxide, nitrogen oxide and combustion contaminant emissions.

- **Rule 4311 – Flares** This rule is to limit the emissions of volatile organic compounds (VOCs) and NO_X from the operation of flares.

- **Rule 4565 – Biosolids, Animal Manure, and Poultry Litter Operations** applies to facilities that generate these materials and operator who landfills, land applies, composts or co-composts these materials. Specific control requirements are applicable to these facilities.

- **Rule 4601 – Architectural Coatings.** The purpose of this rule is to limit volatile organic compound (VOC) emissions from architectural coatings.

- **Rule 4701 – Internal Combustion Engines—Phase 1** limits the emissions of NO_X, CO, and VOCs from internal combustion engines. These limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).

- **Rule 4702 – Internal Combustion Engines—Phase 2** limits the emissions of NO_X, CO, and VOCs from spark-ignited internal combustion engines.

- **Regulation VIII – Fugitive PM_{10} Prohibitions** is a series of rules (Rules 8011–8081) designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, and other activities. This regulation is discussed in more detail below.

- **Rule 9410 – Employer-Based Trip Reduction** requires large employers to establish an Employer Trip Reduction Implementation Plan, which is a set of measures that encourages employees to use alternative transportation and ridesharing for their commutes.

- **Rule 9510 – Indirect Source Review** is intended to reduce a project's impact from indirect sources such as on-road and off-road vehicles on air quality through project design elements or mitigation by payments of applicable off-site mitigation fees. Compliance with Rule 9510 is designed to reduce construction exhaust NO_X and PM_{10} emissions by 20 percent and 45 percent, respectively. Compliance with Rule 9510 is designed to reduce operational emissions of NO_X and PM_{10} emissions by 33.3 percent and 50 percent, respectively. This rule is only applicable to certain development projects that exceed size requirements at buildout (e.g., 25,000 square feet of light industrial space).

Fugitive Dust Measures (Regulation VIII)

The Proposed Program would also be required to implement the mandatory control measures listed in Table 2 of the SJVAPCD's Mitigation Measures guidance document (SJVAPCD 2017a) to reduce fugitive dust emissions. These measures are not considered mitigation measures under CEQA because they are required by law.

The Regulation VIII requirements (some of which are not applicable to the Proposed Program) are listed below:

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant.

- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled of fugitive dust emissions by utilizing an application of water or by presoaking.

- With the demolition of buildings up to six stories in height, all exterior surfaces of the building will be wetted during demolition.

- All materials transported off site will be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.

- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.

- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, piles will be effectively stabilized to prevent fugitive dust emissions utilizing sufficient water or a chemical stabilizer/suppressant.

- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.

- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.

Stanislaus County General Plan 2015

The *Stanislaus County General Plan 2015* Conservation/Open Space Element (Stanislaus County 2016a) identifies air quality–related goals and policies. These are aimed at reducing criteria pollutant emissions and improving regional air quality by requiring all development projects to include reasonable air quality mitigation measures, reducing motor vehicle emissions, and increasing public awareness of air quality problems and solutions.

City of Modesto Urban Area General Plan

Chapter VII of the *City of Modesto Urban Area General Plan* (City of Modesto 2019), includes policies pertaining to air quality. The following are relevant to the Proposed Program:

> **Policy VII-H.2[h].** Consult with the SJVAPCD during CEQA review for discretionary projects with the potential for causing adverse air quality impacts.

> **Policy VII-H.2[m].** Implement measures to reduce the temporary, yet potentially significant, local air quality impacts from construction activities. Potential measures to be implemented may include those measures shown in Section V-2 of the Final Master Environmental Impact Report.

City of Ceres General Plan

The *City of Ceres General Plan's* Chapter 4, Agricultural and Natural Resources (2018) contains the following goals and policies related to air quality that may be relevant to the Proposed Project:

Goal 4.G: Protect and improve air quality in the Ceres area, and protect residents from harmful effects of air pollution.

> **Policy 4.G.4: Proposed Projects.** Solicit and consider comments from local and regional agencies on proposed projects that may affect regional air quality, and submit development proposals to the San Joaquin Valley Air Pollution District for review and comment pursuant to CEQA prior to consideration by the City.

> **Policy 4.G.8: Noxious Odors.** Do not permit new residential development within a half-mile radius of emitters of noxious odors. Require that any new potential odor source locating within project screening trigger levels of sensitive receptors, as established by the San Joaquin Valley Air Pollution District, undertake a detailed odor analysis.

Policy 4.G.9: Cumulative Impacts. Address impacts of new development projects that may individually have insignificant impacts on air quality, but which together with other projects in the Planning Area may be cumulatively significant by requiring mitigation at the plan level for area-wide plan development.

Policy 4.G.13: Thresholds of Significance. Use the San Joaquin Valley Air Pollution District's thresholds of significance for determining and mitigating project air quality impacts and related thresholds of significance for use in environmental documents.

Policy 4.G.14: Construction Mitigation. Require mitigation measures as a condition of obtaining permits to minimize dust and air emissions impacts from construction. Require contractors to implement dust suppression measures during excavation, grading, and site preparation activities. Techniques may include, but are not limited to:

- Site watering or application of dust suppressants;
- Phasing or extension of grading operations;
- Covering of stockpiles;
- Suspension of grading activities during high wind periods (typically winds greater than 25 miles per hour); and
- Revegetation of graded areas.

6.3 ENVIRONMENTAL SETTING

This section presents information on the existing physical environmental conditions in the Program vicinity related to air quality. This information will be used to determine impacts that could result from construction and operation of the Proposed Program, as presented in Section 6.4. Modesto is home to roughly 300,000 people and contains multiple busy roads and highways, railroads, and an airport. The Sutter and Jennings Plants and food processing plants operate in the study area and agricultural land uses are located around the edge of the City proper.

6.3.1 REGIONAL SETTING

San Joaquin Valley Air Basin

Modesto is located in the SJVAB, which forms the southern half of California's Central Valley and is approximately 250 miles long and averages 35 miles wide. The SJVAB is bounded by the Sierra Nevada to the east, the Coast Ranges to the west, and the Tehachapi Mountains to the south. The SJVAB contains all of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare Counties, as well as a portion of Kern County.

Climate and Topography

The Modesto area has an inland Mediterranean climate that is characterized by hot, dry summers and cool winters. Summer high temperatures average in the 90s and often exceed 100 degrees Fahrenheit (°F).

Although marine air generally flows into the basin from the Bay-Delta region, the surrounding mountain ranges restrict air movement through and out of the valley. Wind speed and direction influence the dispersion and transportation of pollutants; the greater the wind flow, the lower the accumulation. The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversion, leading to higher concentrations of emitted pollutants (SJVAPCD 2015a).

Precipitation and fog tend to reduce pollutant concentrations. Ozone is formed when chemical compounds such as VOCs and NO_X (collectively known as ozone precursors) react with sunlight. Clouds and fog block the solar radiation for the ozone-forming reaction. Annual precipitation in the San Joaquin Valley decreases from north to south, averaging approximately 20 inches in the north, 10 inches in the central portion, and less than 6 inches in the south (SJVAPCD 2002). In the Modesto area of the SJVAB, the average annual precipitation is approximately 12 inches (Western Regional Climate Center 2017).

6.3.2 EXISTING AIR QUALITY CONDITIONS

Air Monitoring Data

USEPA, CARB, and local air districts operate an extensive air monitoring network to measure maintenance of or progress toward attainment of NAAQS and CAAQS. **Table 6-2** shows the most recent three years of available data for PM_{10}, $PM_{2.5}$ and ozone.

Table 6-2. Air Monitoring Data for 2013–2015

Monitoring Station	Pollutant	Standard	2015		2014		2013	
			No. Exceed[1]	Maximum Concentration[1]	No. Exceed[1]	Maximum Concentration[1]	No. Exceed[1]	Maximum Concentration[1]
Stanislaus County Modesto-14th Street	PM_{10}	24-hour	31.1/0	85.6 µg/m^3	37.6/0	122.5 µg/m^3	57.7/0	73 µg/m^3
	$PM_{2.5}$	24-hour	*	44.0 µg/m^3	17.0	58.2 µg/m^3	37.6	83.2 µg/m^3
	Ozone	8-hour	24/16	0.093 ppm	24/12	0.090 ppm	13/2	0.082 ppm
	Ozone	1-hour	5/0	0.111 ppm	1/0	0.103 ppm	0/0	0.088 ppm

Notes:

CO = carbon monoxide; NO_2 = nitrogen dioxide; $PM_{2.5}$ = particulate matter of 2.5 micrometers or less; PM_{10} = particulate matter of 10 micrometers or less; SO_2 = sulfur dioxide; ppm = parts per million; µg/m^3 = micrograms per cubic meter; * = There was insufficient (or no) data available to determine the value.

1. Indicates the number of exceedance days recorded annually at this monitoring station for a particular constituent compared to that constituent's NAAQS and CAAQS. The first number is the state value and the second number is the federal value if they are different. Used National Maximum

Source: CARB 2017b

Existing Sources of Air Pollution and Odors

Existing sources of air pollution and odor in the Modesto area include: heavy duty trucks, passenger vehicles, farm equipment, off-road equipment, food processing plants, industrial facilities, waste management facilities, the county airport, and agricultural operations. Air pollution transported from the San Francisco Bay and Sacramento areas may account for roughly a quarter of the pollution in the Modesto area (SJVAPCD 2017e).

Existing Emissions from City's Collection System and Wastewater Treatment Facilities

Monitoring data or comprehensive estimates of existing emissions of criteria pollutants or TACs from the City's collection system and treatment facilities is not available. The types of emissions associated with the wastewater collection and treatment facilities include the following:

- Fugitive emissions of volatile organic compounds and odors from sewer pipes where such emissions can escape to the surface through pipe breaks, cross connections to the storm drain, malfunctioning catch basins, or similar escape routes. Wastewater may contain small amounts of volatile toxic air contaminants (particularly from industrial waste discharge) that can escape into the air.

- Criteria pollutant and TAC emissions from burning diesel fuel to run emergency generators at lift stations and treatment plants.

- Criteria pollutant and TAC emissions from burning natural gas or digester waste gas for boilers to heat the anaerobic digesters.

- Criteria pollutant and TAC emissions from burning waste gas from anaerobic digesters at the Primary Plant using the flare. Unburned hydrocarbons may be emitted. Hydrogen sulfide in the digester gas has been reduced by addition of ferrous chloride to the flow, but some hydrogen sulfide remains. It produces sulfur dioxide when burned.

- Odors from the headworks of the Sutter Plant, in the event that the biofilters on the headworks do not function properly or odors otherwise escape the building

- Odors from biosolids handling (including sludge drying) at the Sutter Plant.

- Potential fugitive emissions of criteria pollutants, ozone precursors, or volatile TACs from wastewater as it goes through treatment.

- Routine emissions of chlorine and sulfur dioxide as a result of the chlorination and dechlorination processes at the Jennings Plant for treated effluent that is discarded to the San Joaquin River.

- Potential accidental releases of chlorine and sulfur dioxide at the Jennings Plant.

The wastewater facilities are a potential source of odors. Sources of odors include headworks, anaerobic digestion, sludge handling, and other miscellaneous operations. SJVAPCD was contacted to obtain a list of all odor complaints received in the past 3 years associated with the Sutter Plant. **Table 6-3** summarizes the odor complaints.

Table 6-3. Sutter Plant Odor Complaints for 2014-2017

Complaint Date	Unconfirmed	Confirmed	Summary of Cause	Corrective Action Taken
10/9/2016	X			
10/7/2016	X			
10/6/2016	X			
10/5/2016	X			
9/15/2016		X	WWTP Operations	SWRCB Notified
7/27/2016	X			
5/4/2016		X	WWTP Operations	
5/4/2016		X	WWTP Operations	
4/28/2016		X	WWTP Operations	SWRCB Notified
4/19/2016	X			WWTP Facility Notified
2/29/2016	X			WWTP Facility Notified
10/23/2015	X			
9/23/2015	X			
9/11/2015	X			
7/29/2015		X	WWTP Operations	
3/27/2015	X			
3/13/2015	X			
1/28/2015		X	WWTP Operations	WWTP Facility Notified
1/10/2015	X			
11/26/2014	X			
11/26/2014	X			
11/22/2014	X			
11/18/2014		X	WWTP Operations	
11/18/2014		X	WWTP Operations	
11/16/2014		X	WWTP Operations	
11/14/2014		X	WWTP Operations	
11/3/2014		X	WWTP Operations	Call between SJVAPCD & WWTP
10/31/2014	X			
10/23/2014		X	WWTP Operations	SWRCB Notified
10/23/2014		X	WWTP Operations	SWRCB Notified
10/19/2014	X			

Complaint Date	Unconfirmed	Confirmed	Summary of Cause	Corrective Action Taken
10/16/2014	X			
10/13/2014	X			
10/9/2014		X	WWTP Operations	SWRCB Notified
10/9/2014		X	WWTP Operations	SWRCB Notified
10/7/2014		X	WWTP Operations	
10/7/2014		X	WWTP Operations	
10/6/2014		X	WWTP Operations	Meeting with WWTP
10/6/2014		X	WWTP Operations	SWRCB Notified
10/3/2014		X	WWTP Operations	
10/2/2014	X			
9/11/2014	X			
9/11/2014	X			
7/28/2014		X	WWTP Operations	Cannery waste sent to Jennings Plant
7/23/2014		X	WWTP Operations	Delayed treatment of tomato waste

Notes: SWRCB = State Water Resources Control Board; WWTP = wastewater treatment plant

Source: SJVAPCD 2017g

6.3.3 AIR POLLUTANTS

Carbon Monoxide

CO is an odorless, colorless gas that is highly toxic. CO is formed by the incomplete combustion of fuels and is emitted directly into the air. Ambient CO concentrations normally are considered a localized effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic, forming pollutant hot spots. CO concentrations are also influenced by wind speed and atmospheric mixing. Under inversion conditions, CO concentrations can be distributed more uniformly over an area to some distance from vehicular sources. CO binds with hemoglobin, the oxygen-carrying protein in blood, and reduces the blood's capacity for carrying oxygen (O_2) to the heart, brain, and other parts of the body. At high concentrations, CO can cause heart difficulties in people with chronic diseases, impair mental abilities, and cause death.

Nitrogen Oxides

NO_X is a family of gaseous nitrogen (N) compounds and are precursors to the formation of ozone (O_3) and PM. Nitrogen dioxide (NO_2), the major component of NO_X, is a reddish-brown gas that is toxic at high concentrations. NO_X result primarily from the combustion of fossil fuels under high temperature and pressure. Fuel combustion, primarily from on-road and off-

road motor vehicles, and industrial sources are the major sources of this air pollutant (SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015a).

Volatile Organic Compounds

VOCs are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and/or might themselves be toxic. VOC emissions are a major precursor to the formation of O_3. VOCs are also commonly referred to as reactive organic gases (ROG) (SJVAPCD 2015a).

Ozone

O_3 is a reactive gas consisting of three oxygen atoms. In the stratosphere, O_3 exists naturally and shields the earth from harmful incoming ultraviolet radiation. In the troposphere (the lowest region of the atmosphere); however, it is a secondary pollutant that is formed when NO_X and VOCs react in the presence of sunlight. O_3 at the earth's surface causes numerous adverse health effects and is a pollutant regulated by state and federal air quality agencies. It is a major component of smog. High concentrations of ground-level O_3 can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. O_3 also damages natural ecosystems, such as forests, foothill communities, and agricultural crops, as well as some human-made materials, such as rubber and plastics (SJVAPCD 2015a).

Particulate Matter

PM is a complex mixture of extremely small particles and liquid droplets. PM is made up of multiple components, including acids, organic chemicals, metals, and soil or dust particles. Particle size is directly linked to the potential for causing health problems. PM_{10} is of concern because these particles pass through the throat and nose and are deposited in the thoracic region of the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. PM_{10} is typically found near roadways and around dusty industrial sites. Fine particles ($PM_{2.5}$), which are found in smoke and haze, penetrate even more deeply into the thoracic and alveolar regions of the lungs (SJVAPCD 2015a).

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. Suspended SO_2 particles contribute to poor visibility and are a component of PM_{10} (SJVAPCD 2015a).

Lead

Lead (Pb) is a metal found naturally in the environment as well as in manufactured products. Historically, the major sources of Pb emissions have been mobile and industrial activities. The health effects of Pb poisoning include loss of appetite, weakness, apathy, and miscarriage. Pb poisoning can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract (SJVAPCD 2015a).

In the past, gasoline-powered automobile engines were a major source of airborne Pb through the use of leaded fuels. Because the use of leaded fuel has been mostly phased out, ambient concentrations of Pb have dramatically decreased.

Hydrogen Sulfide

H_2S is associated with refining, geothermal activity, sewage treatment plants, oil and gas production, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations and can cause death (SJVAPCD 2015a).

Sulfates

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds result primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates is comparatively rapid and complete in urban areas of California because of their regional meteorological features (SJVAPCD 2015a).

CARB's sulfate standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels that exceed the standard include decreased ventilatory function, aggravation of asthmatic symptoms, and increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property (SJVAPCD 2015a).

Vinyl Chloride

Vinyl chloride is a colorless gas that does not occur naturally; it is formed when substances such as trichloroethane, trichloroethylene, and tetrachloroethylene are broken down. Vinyl chloride is used to make PVC, which is used in plastic products, such as pipes, wire and cable coatings, and packaging materials (SJVAPCD 2015a).

Toxic Air Contaminants

TACs are air pollutants that can lead to serious illness or increased mortality, even when present in relatively low concentrations. Hundreds of different types of TACs exist, with varying degrees of toxicity. Many TACs are confirmed or suspected carcinogens or are known or suspected to cause birth defects or neurological damage. For some chemicals, such as carcinogens, no threshold exists below which exposure can be considered risk free. Examples of TAC sources associated with the Proposed Program are fossil fuel combustion and chemicals used in the wastewater treatment areas.

TACs associated with wastewater facilities include various TACs that are contaminants in the wastewater received primarily from industrial sources. In addition, the wastewater generates hydrogen sulfide and uses chlorine in the disinfection process.

Sources of TACs include stationary sources, area-wide sources, and mobile sources. USEPA maintains a list of 187 TACs, identified federally as HAPs. These HAPs are included on CARB's list of TACs along with additional chemicals identified as TACs in California (CARB 2017c).

According to the *California Almanac of Emissions and Air Quality* (CARB 2013), many researchers consider DPM to be a primary contributor to health risk from TACs because particles in the exhaust carry many harmful organics and metals, rather than being a single substance like other TACs. Unlike many TACs, outdoor DPM is not monitored by CARB because no routine measurement method exists; however, using the CARB emission inventory's PM10 database, ambient PM10 monitoring data, and results from several studies, CARB has made preliminary estimates of DPM concentrations throughout the state (California Office of Environmental Health Hazard Assessment [OEHHA] 2001).

Existing buildings might contain asbestos, which can become airborne during demolition activities. People exposed to low levels of airborne asbestos could be at an elevated risk (e.g., above background rates) for lung cancer and mesothelioma. The risk is proportional to the cumulative inhaled dose (quantity of fibers); the risk increases with the time since first exposure. Although various factors influence the disease-causing potency of the different forms of asbestos (such as fiber length and width, fiber type, and fiber chemistry), all forms are carcinogens. Existing regulations regarding demolition of asbestos-containing materials (described in Chapter 11, *Hazards and Hazardous Materials*) require prescriptive measures to ensure that public health is protected and exposure to asbestos is minimized.

6.3.4 SENSITIVE RECEPTORS

Sensitive receptors are those segments of the population most susceptible to the effects of poor air quality—children, the elderly, and individuals with preexisting serious health problems affected by air quality (e.g., asthma) (CARB 2005). Examples of locations that contain sensitive receptors are residences, schools and school yards, parks and playgrounds, daycare centers, nursing homes, and medical facilities. Residences include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds include play areas associated with parks or community centers.

Many, if not all, of these sensitive land uses can be found in the immediate vicinity of program-level components of the Proposed Program and the River Trunk Realignment Project. While specific sensitive receptors may change or move over the life of the Proposed Program, Figure 11-3 in Chapter 11, *Hazards and Hazardous Materials;* Figure 13-1 in Chapter 13, *Land Use and Planning*; and Figure 14-1 in Chapter 14, *Noise and Vibration,* show the locations of existing schools, zoned residential areas, and other existing sensitive receptors in the study area and River Trunk Realignment Project area. These figures provide a general context of the proximity of Proposed Program components to sensitive receptors.

River Trunk Realignment Project

The nearest sensitive receptors to the River Trunk Realignment Project include homes on Merced Avenue and Calaveras Avenue that are 170 and 250 feet, respectively, from the pipeline alignment. A church, school, and a daycare are located at the intersection of Calaveras Avenue and Tuolumne Boulevard, which are approximately 190, 280, and 260 feet from the pipeline alignment, respectively. Work on the gravity lines, particularly those along Tuolumne Blvd., Colorado Ave., and Pelton Ave. will take place in close proximity to numerous homes.

The nearest sensitive receptors to the pump station sites are residences on C Street and Pueblo Avenue, which are 800 feet and 1,100 feet from River Trunk Pump Station and Shackelford Pump Station, respectively. In addition, the planned Tuolumne River Regional Park, which will consist of over 500 acres of parkland along 7 miles of the Tuolumne River, would be located immediately south of the River Trunk Pump Station. For additional discussion regarding the Tuolumne River Regional Park planning effort, refer to Section 19.4, "Cumulative Impacts."

6.4 IMPACT ANALYSIS

6.4.1 METHODOLOGY

Construction and operation-related air quality impacts of program-level components within the SJVAB were evaluated qualitatively by considering the Proposed Program's sources of criteria pollutant, TACs, or odor emissions; proximity to sensitive receptors; and frequency and duration of emissions. In addition, the existing SJVAB's air quality attainment status and applicable air quality plans were reviewed and considered in the impact analysis. Where specific construction or operation-related details were lacking, impacts were conservatively judged to be significant, and prescriptive mitigation measures were developed to ensure significant impacts would be minimized. In addition, where applicable, specific guidance documents and tools used to analyze the River Trunk Realignment Project's air quality impacts, particularly those related to the qualitative assessment of TACs and odors, were used in the air quality analysis for program-level components.

As required by SJVAPCD, the California Emissions Estimator Model (CalEEMod) 2016.3.1, was used to quantify criteria pollutant emissions from the River Trunk Realignment's construction and operation activities. These emissions were then compared to the SJVAPCD's thresholds to determine the significance of impacts on air quality. For other elements of the Proposed Program, construction and operational impact significance were determined qualitatively by considering the project emission sources and duration since specific details of construction or operation for those program components have not yet been defined.

The SJVAPCD has established thresholds of significance for criteria pollutant emissions, which are based on SJVAPCD New Source Review offset requirements for stationary sources. As such, the impact analysis uses these thresholds of significance in the section below.

For TACs and odors associated with all of the Proposed Program components, impacts were evaluated qualitatively using SJVAPCD's *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015a). The odor impact evaluation for WWMP construction and operation was conducted qualitatively based primarily on whether the existing operations had elicited any odor or nuisance complaints from SJVAPCD in the past 3 years. In addition, other pertinent information regarding TAC and odor sources (i.e., frequency of emissions, type of sources) and the proximity to sensitive receptors was considered.

6.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

GAMAQI Thresholds

The SJVAPCD's recommended CEQA thresholds are outlined in its *GAMAQI* (SJVAPCD 2015a) and summarized in **Table 6-4**. SJVAPCD's thresholds for ROG and NO_X, which are ozone precursors, are 10 tons/year for each pollutant. Ozone precursor emissions are generated from both heavy- and light-duty vehicle use. The SJVAPCD has determined that projects with emissions below the thresholds of significance for criteria pollutants would be determined to be in compliance with the applicable SJVAPCD air quality plans (SJVAPCD 2015a).

According to SJVAPCD's guidance, impacts of operational and construction emissions are considered to be less than significant if fugitive dust (PM10 and PM2.5) emissions are below the significance levels listed in Table 6-4. In addition, SJVAPCD Regulation VIII requires all projects that involve earthmoving or travel on unpaved roads to implement fugitive dust control measures. Implementation of these control measures would be sufficient to reduce PM10 and PM2.5 impacts to a level considered less than significant.

These threshold limits apply to the annual emissions. These thresholds apply separately to construction, operational permitted sources and activities, and operational non-permitted activities. In other words, a project can emit up to 10 tons of NOX during construction, 10 tons of NOX from permitted activities, and an additional 10 tons of NO_X from non-permitted activities for a total of 30 tons of NO_X emissions and still be under the CEQA significance threshold and would be considered less than significant.

Table 6-4. Applicable SJVAPCD Construction and Operational Project-Level Significance Thresholds under CEQA

Pollutant	Construction Emissions Threshold (tons/year)	Operational Permitted Activities (tons/year)	Operational Non-permitted activities (tons/year)
Carbon monoxide (CO)	100	100	100
Oxides of nitrogen (NO_X; ozone precursor)	10	10	10
Reactive organic gases (ROG; ozone precursor)	10	10	10
Sulfur oxides (SO_X)	27	27	27
Particulate matter (PM_{10})	15	15	15
Fine particulate matter ($PM_{2.5}$)	15	15	15

Source: SJVAPCD 2015a

The following quantitative TAC thresholds of significance are identified in the *Guidance for Assessing and Mitigating Air Quality Impacts* (SJVAPCD 2015a), with implementation of the latest revisions to SJVAPCD's risk management policy (SJVAPCD 2015c) also serving as revisions to the CEQA thresholds:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 20 in 1 million, or
- Ground-level concentrations of non-carcinogenic TACs result in a Hazard Index greater than 1 for the MEI.

Due to the variable nature of construction activity, the generation of TAC emissions in most cases would be temporary at any given location, especially considering the short amount of time such equipment is typically operating within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations. Chronic and cancer-related health effects estimated over short periods are uncertain. Cancer potency factors are based on animal lifetime studies or studies of workers with long-term exposure to the carcinogenic agent. There is considerable uncertainty in trying to evaluate the cancer risk from exposure that would last only a small fraction of a lifetime. Some studies indicate that the dose rate may change the potency of a given dose of a carcinogenic chemical. In other words, a dose delivered over a short period may have a different potency than the same dose delivered over a lifetime (OEHHA 2017). Given that the construction period for each program-level component under the Proposed Program would vary and has not yet been defined, a qualitative analysis was determined to be the appropriate level of detail required to determine the impact of TAC emissions.

For operational TAC emissions, the Proposed Program's facilities are required to be below the health effects quantitative thresholds in order to obtain the required operating permits consistent with SJVAPCD regulations regarding permitted sources. For construction and operation, health risks from TACs were evaluated by identifying the Proposed Program's potential to generate TAC emissions and determining whether sensitive receptors could be affected by those emissions.

6.4.3 ENVIRONMENTAL IMPACTS

Impact AQ-1: Conflict with or Obstruct Implementation of an Applicable Air Quality Plan (Significant and Unavoidable)

Stanislaus County and the City have planned for growth and adopted general plans for future development (City of Modesto 2019, Stanislaus County 2016b). The City is currently in the process of updating its general plan. The SJVAPCD develops its air quality plans to attain Federal and State AAQS which are in part based on the population and growth estimates provided by the local planning agencies, including the City and County. The SJVAPCD established mass emission thresholds of significance for criteria pollutant emissions to be consistent with levels required to be consistent with the SJVAPCD air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of the applicable air quality plans provided there are no individual measures listed in the air quality plans that the project would conflict or obstruct.

The Proposed Program's purpose is to repair, replace, and install new wastewater infrastructure to support and accommodate new and existing development in the City's General Plan and SOI. The Proposed Program components would not directly add new housing or substantial sources of employment to the region. The River Trunk Realignment Project would involve facilities and operational uses consistent with and in support of the planned uses in the City's General Plan and SOI.

The Proposed Program, including the River Trunk Realignment Project, would follow all federal, state, and local regulations and policies related to sources of air pollutants, including applicable general plan policies. In addition, construction of the Proposed Program would follow local air district regulations for fugitive dust, VOCs, and NO_X emissions. As detailed in Impact AQ-2, the River Trunk Realignment Project's construction and operations would not result in NO_X emissions that exceed the 10 tons per year emission threshold. Thus, the River Trunk Realignment Project would not contribute to any conflicts with applicable air quality plans. Construction of various program-level CIPs may result in NO_X emissions that exceed the 10 tons per year emission threshold and could result in other criteria pollutant emissions that exceed SJVAPCD's thresholds; therefore, such components could obstruct implementation of applicable air quality plans, which would be a significant impact. It is also unknown at this time if the amount of operational emissions would exceed any significance threshold. Mitigation measures that would address construction emissions and operational emissions are discussed under Impact AQ-2. It is assumed that emissions from permitted sources would be addressed under the applicable permit process and any excess emissions would purchase offsets as required to obtain permits; however, this would not address construction or operational emissions which do not require permits.

For the reasons described above, the overall Proposed Program and the various CIPs could generate emissions greater than that accounted for in the applicable air quality plans. Therefore, the Proposed Program could obstruct or conflict with applicable air quality plans and would have a **significant and unavoidable** impact.

Impact AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation (Less than Significant with Mitigation)

The SJVAPCD considers PM_{10} emissions to be the greatest pollutant of concern when assessing construction-related air quality impacts. The SJVAPCD has determined that compliance with its Regulation VIII and the implementation of all feasible control measures specified in its GAMAQI (San Joaquin Valley Air Pollution Control District 2015a), constitute sufficient mitigation to reduce construction-related PM_{10} emissions to less-than-significant levels and to minimize adverse air quality effects. These mitigation measures are listed below under Mitigation Measures AQ-1 and AQ-2. All construction projects must abide by Regulation VIII. Consequently, this air quality analysis assumes that the City and its contractors will comply with Regulation VIII and that such compliance will be sufficient to eliminate any potentially significant air quality effects generated by construction activities. Implementation of Mitigation Measures AQ-1 and AQ-2 would reduce this impact to a less-than-significant level. In addition, Mitigation Measure AQ-3 would reduce emissions from exhaust, and SJVAPCD also recommends the measures listed below to reduce exhaust pollutant emissions from heavy construction equipment:

- Use aqueous diesel fuel in diesel equipment.
- Use diesel particulate filters on diesel equipment.
- Use cooled exhaust gas recirculation on diesel equipment.

Adherence to the mitigation measure and requirements above would reduce pollutant emissions below significance thresholds and would ensure that impacts would be less than significant.

The City does not consider cancer risk from diesel-fueled construction equipment to be an issue. The assessment of cancer risk is typically based on a 70-year exposure period. Construction activities are sporadic and short-term, and once construction activities have ceased, the emissions have ceased as well. Because the exposure period to construction diesel exhaust would be well below the 70-year exposure period, construction of the proposed program is not anticipated to result in an elevated cancer risk. This impact is considered less than-significant after implementation of Mitigation Measures AQ-1 and AQ-2.

All Program-level Components

Construction Impacts. The Proposed Program involves a range of new wastewater-related facilities and infrastructure components spread throughout the City of Modesto and in nearby surrounding communities and unincorporated County areas that are all within the SJVAB. Construction activities for individual components would generate emissions of criteria air pollutants via the use of heavy equipment, worker vehicle trips, and material hauling truck trips. The City would comply with all SJVAPCD rules and regulations, including Regulation VIII, Fugitive Dust Measures. With implementation of Mitigation Measures AQ-1 and AQ-2, construction-related impacts would be **less than significant with mitigation**.

Operational Impacts. Operation of the program-level components would include the operation, inspection, and maintenance of new pump stations, lift stations and wastewater

treatment plant facilities. These activities would result in the direct emission of criteria air pollutants through employee vehicle trips and infrequent use of backup generators primarily during emergencies or power outages, and emissions of VOCs and combustion products associated with wastewater treatment operations. This includes combustion of natural gas for boilers to heat aerators, combustion of digester waste gas in boilers or a flare, release of various VOCs during process operations, release of hydrogen sulfide or sulfur dioxide, and release of chlorine. Removal of waste material and land application of biosolids would generate fossil fuel combustion emissions from the vehicles used to transport the material and generate fugitive dust during biosolids land application. The increased number of employees required to support the Jennings Plant would be similar to those currently operating the Sutter Plant. The operation and maintenance of other program-level facilities would not require a substantial change in employees compared to existing conditions.

Emissions from the operation of emergency generator and other wastewater treatment plant sources would not be substantial since any new or modified emergency generators and wastewater treatment plant sources would go through the SJVAPCD permit process to ensure that project emissions are below the appropriate significance threshold for permitted sources and offsets provided if required. If the air quality thresholds of significance are expected to be exceeded, Mitigation Measure AQ-3 would be implemented to ensure equipment with best available control technology would be installed to minimize potential emissions. Thus, these operational impacts would be **less than significant with mitigation**.

River Trunk Realignment Project

Construction Impacts. Similar to the program-level components, construction of the River Trunk Realignment Project would result in construction-related emissions of fugitive dust and/or criteria air pollutants. The River Trunk Realignment Project's projected criteria air pollutant emissions during construction are shown in **Table 6-5**.

Table 6-5. Estimated Project Construction Emissions

Year	Emissions (tons per year)							
	CO	NO_X	ROG	SO_X	Exhaust PM_{10}	Fugitive PM_{10}	Exhaust $PM_{2.5}$	Fugitive $PM_{2.5}$
2018	4.9	8.2	1.1	0.014	0.29	0.13	0.27	0.035
2019	3.5	5.3	.51	0.0094	0.20	0.059	0.19	0.015
2020	1.6	2.3	0.24	0.0045	0.089	0.018	0.082	0.0047
2021	0.11	0.11	0.41	0.00023	0.0047	0.00078	0.0043	0.00021
SJVAPCD Significance Threshold (tons/year)	100	10	10	27	15		15	
Exceed Threshold?	No	No	No	No	No		No	

Source: Modeling conducted by Horizon Water and Environment in 2018 (Appendix B).

Based on comparison to the significance thresholds, all pollutants, would be well below the construction emission thresholds. As explained above, SJVAPCD has determined that those projects with mass emissions less than the thresholds of significance would not create additional violations of criteria pollutant emissions standards (SJVAPCD 2015a, SJVAPCD 2017f). In addition, because the River Trunk Realignment Project would be required to implement SJVAPCD dust control measures, fugitive dust emissions (PM_{10} and $PM_{2.5}$) would be less than significant. Compliance with SJVAPCD's required dust control measures would not be considered a mitigation measure under CEQA because implementation of these measures is required under Regulation VIII. Therefore, construction-related emissions would result in a **less-than-significant** impact.

Operational Impacts. The River Trunk Realignment Project's criteria air pollutant emissions during operation are shown in **Table 6-6**. Emissions were estimated assuming that the proposed pumps would be operating continuously year-round, which is a conservative assumption. The River Trunk Realignment Project's operational emissions would be below CEQA significance thresholds and would therefore result in a **less-than-significant** impact.

Table 6-6. Estimated Project Operation Emissions

	Emissions (tons per year)							
	CO	**NO_X**	**ROG**	**SO_X**	**Exhaust PM_{10}**	**Fugitive PM_{10}**	**Exhaust $PM_{2.5}$**	**Fugitive $PM_{2.5}$**
Total	0.40	0.45	0.41	0.0007	0.026	0.0013	0.03	0.00034
SJVAPCD Significance Threshold (tons/year)	100	10	10	27	15		15	
Exceed Threshold?	No	No	No	No	No		No	

Source: Modeling conducted by Horizon Water and Environment in 2018 (Appendix B).

Overall Conclusion

In conclusion, with implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, the Proposed Program's overall impacts would be **less than significant with mitigation**.

Mitigation Measure AQ-1: Implement SJVAPCD Regulation VIII Control Measures for Construction Emissions of PM_{10}

The following controls are required to be implemented by the City or its contractor at all construction sites.

- All disturbed areas, including storage piles, that are not being actively used for construction purposes will be effectively stabilized to avoid dust emissions through application of water, a chemical stabilizer/suppressant, or by covering these areas with a tarp or other suitable cover or vegetative ground cover.

- All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized to avoid dust emissions using water or a chemical stabilizer/suppressant.
- All land-clearing, grubbing, scraping, excavation, land-leveling, grading, cut-and-fill, and demolition activities will be effectively controlled to avoid fugitive dust emissions through the application of water during work or by presoaking.
- When materials are transported off-site, all material will be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. The use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions using sufficient water or chemical stabilizer/suppressant.
- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.

Mitigation Measure AQ-2: Implement Enhanced Control Measures for Construction Emissions of PM_{10}

The following measures will be implemented by the City or its contractor at construction sites when required to mitigate significant PM_{10} impacts as determined by SJVAPCD Air Quality Thresholds of Significance discussed above (note, these measures are to be implemented in addition to Regulation VIII requirements).

1. Limit traffic speeds on unpaved roads to 15 mph.
2. Install sandbags or other erosion-control measures to prevent silt runoff.

The following measures are strongly encouraged at construction sites that are large in area, are located near sensitive receptors, or that warrant additional emissions reductions for any other reason.

1. Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.
2. Install wind breaks at windward sides of construction areas.
3. Suspend excavation and grading activity when winds exceed 20 miles per hour (mph).

4. Limit the area subject to excavation, grading, and other construction activity at any one time.

5. Regardless of the wind speed, an owner/operator must comply with Regulation VIII's 20% opacity limitation.

Mitigation Measure AQ-3: Implement Control Measures for Operation Emissions of PM_{10} and for Ozone Precursors (ROG and NO_x)

In compliance with SJVAPCD rules, when the Air Quality Thresholds of Significance will be exceeded, the City or its contractor shall install equipment with Best Available Control Technology, as indicated in a site-specific air quality analysis to reduce emissions below the SJVAPCD significance threshold. Installed equipment with Best Available Control Technology may include but not be limited to pumping, dewatering, aerating, or heating equipment. This measure will be implemented at all new or modified wastewater system sites when required to mitigate significant PM_{10} and ozone impacts, due to exceedance of Air Quality Thresholds of Significance.

Impact AQ-3: 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 (Significant and Unavoidable)

As discussed earlier, program-level components and the River Trunk Realignment Project would be located in an area that is in non-attainment for federal and state ozone and $PM_{2.5}$ standards and state standards for PM_{10}. Thus, the combined emissions of past, present, and probable future projects would have a significant cumulative impact on air quality in the project area. No single CIP, however, would be sufficient in size, by itself, to cause nonattainment of the regional air quality standards. The River Trunk Realignment Project would result in emissions of ozone precursors (ROG, NOx,), and particulate matter ($PM_{2.5}$, PM_{10}) below the significance thresholds for project-level impacts established by SJVAPCD (2015a, 2017f). With implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, none of the program-level components or the River Trunk Realignment Project would result in mass emissions above the significance threshold. However, because these measures would not completely avoid emissions, the Proposed Program could make a considerable contribution to cumulative impacts related to criteria pollutant emissions for which the region is in non-attainment, a significant impact. This impact would remain **significant and unavoidable**.

Impact AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations (Less than Significant with Mitigation)

During construction activities for the proposed improvements, construction emissions have the potential to affect sensitive receptors located at and near program-level component sites and River Trunk Realignment Project work areas. These sensitive receptors include single-family residential units and schools around proposed improvement sites. Therefore, nuisances associated with fugitive dust and construction activity emissions would affect adjacent residences. During operational activities, stationary emission sources would also emit pollutants. With implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, the impact on sensitive receptors from fugitive dust and other pollutants would be **less than significant with mitigation**.

Impact AQ-5: Create Objectionable Odors Affecting a Substantial Number of People (Less than Significant)

All Program-level Components

Construction Impacts. Construction activities of program-level components would not generate permanent or long-term objectionable odors. The odors associated with the operation of diesel-powered equipment for construction activities may be detected by nearby sensitive receptors. These odors would be of relatively short duration in any given location and would be unlikely to affect a substantial number of people at a given time, given that construction of the various Proposed Program components would be spread out over time, as well as factors such as the migration of construction equipment along pipeline routes during construction. This impact would be **less than significant**.

Operational Impacts. The SJVAPCD's GAMAQI identifies common types of facilities that have been known to produce odors in the San Joaquin Valley and distances from these sources that have the potential to result in significant odor impacts. For wastewater treatment facilities, the screening level distance is 2 miles. Numerous residences and other sensitive receptors are located within two miles of the Sutter Plant. As described in Section 6.3.2 (Table 6-3), SJVAPCD has received and confirmed odor complaints associated with the City's Sutter Plant facilities in the last three years (SJVAPCD 2017g). Odors from lift stations are not expected to be a concern because equipment is enclosed and underground.

The Proposed Program would include the replacement and operation of wastewater facilities and equipment, which would generally have a beneficial effect on existing odor impacts by ensuring that the City's treatment and collection system is functioning more efficiently, correctly, and reliably. Some program-level components are specifically designed to improve and minimize past sources of odor by enhancing biofilters and moving to more advanced treatment options that are less odorous methods. As discussed in Chapter 2, *Program Description*, odor control provisions would be included at the Sutter Plant for the new outfall pump station (SP-3), though these controls have not been defined at this time, and existing odor control biofilters and blowers would be floodproofed. Furthermore, after new primary treatment facilities have been constructed and are fully operating at the Jennings Plant, primary treatment facilities at the Sutter Plant would be demolished. For these reasons, odor issues would be expected to be reduced compared to baseline conditions, and this impact is considered **less than significant**.

River Trunk Realignment Project

Construction Impacts. Similar to the program-level components, construction of the River Trunk Realignment Project would not generate permanent or long-term objectionable odors. While odors associated with operating diesel-powered equipment for construction activities may be detected by nearby sensitive receptors, such odors would be of short duration and would be unlikely to affect a substantial number of people. This impact would be **less than significant**.

Operational Impacts. As described in Chapter 2, *Project Description*, the River Trunk Realignment Project includes the construction of odor controlling equipment (biofilter and odor-controlling vents) to minimize the potential objectionable odors from the project's proposed facilities. The nearest sensitive receptors to the project's pump stations are residences within 800 feet and the proposed regional park. By operating the odor controlling

equipment, this particular project would reduce odor emissions and result in a **less-than-significant impact**.

Overall Conclusion

Considering the WWMP components as a whole, the River Trunk Realignment Project would have less than significant odor effects, and odor issues would improve at the Sutter and Jennings Plants in the long-term. Odor impacts of lift stations would not be substantial given that the facilities are largely below ground. The Proposed Program's overall impact would be **less than significant**.

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Chapter 7
BIOLOGICAL RESOURCES

7.1 OVERVIEW

This chapter presents the environmental setting and impacts of the Proposed Program related to biological resources. The biological resources include special-status plant and wildlife species; sensitive natural communities, including jurisdictional wetlands and other waters; and wildlife movement corridors.

7.2 REGULATORY SETTING

7.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

Endangered Species Act

The Endangered Species Act (ESA) (16 U.S. Government Code [USC] Section 1531 et seq.; 50 CFR Parts 17 and 222) provides for the conservation of species that are endangered or threatened throughout all or a substantial portion of their range, as well as protection of the habitats on which they depend. The USFWS and the National Oceanic and Atmospheric Administration's (NOAA's) NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS) share responsibility for implementing the ESA. In general, USFWS manages terrestrial and freshwater species; NMFS manages marine and anadromous species.

Section 9 of the ESA and its implementing regulations prohibit the "take" of any fish or wildlife species listed under the ESA as endangered or threatened, unless otherwise authorized by federal regulations. The ESA defines the term "take" to mean "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC Section 1532). Section 7 of the ESA (16 USC Section 1531 et seq.) outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitats.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC Chapter 7, Subchapter II) protects migratory birds. Most actions that result in take or the permanent or temporary possession, of a migratory bird constitute violations of the MBTA. The MBTA also prohibits the destruction of occupied nests. USFWS is responsible for overseeing compliance with MBTA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC Section 668; 50 CFR Part 22) prohibits take of bald and golden eagles and their occupied and unoccupied nests. USFWS administers the Bald and Golden Eagle Protection Act.

Clean Water Act

The Clean Water Act (CWA) (33 USC Section 1251) establishes the basic structure for regulating discharges of pollutants (including dredged or fill material) into waters of the United States (U.S.), including wetlands, and for regulating quality standards for surface waters. The CWA provides policies for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

CWA Section 404 prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a permit from USACE. CWA Section 401 requires that an applicant for a federal license or permit that allows activities with the potential to result in a discharge to waters of the U.S., including wetlands, obtain a state 401 water quality certification.

Wetlands and Other Waters Potentially Exempt from USACE Jurisdiction

A number of exemptions from CWA regulations exist for areas that would otherwise qualify as waters of the U.S. Certain areas, which meet the technical definition of wetlands, generally are not considered waters of the U.S. (33 CFR 328.3(a)). Such potentially non-jurisdictional areas include:

- Non-tidal drainage and irrigation ditches excavated on dry land;
- Artificially irrigated areas, which would revert to upland, if the irrigation ceased;
- Artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
- Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating and/or diking dry land to retain water for primarily aesthetic reasons; and
- Water filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States.

USACE and USEPA reserve the right to determine that a particular water body within the categories is a water of the U.S. on a case-by-case basis. In general, potentially non-jurisdictional waters such as ditches are delineated during a wetland delineation, and submitted for verification by USACE.

7.2.2 STATE LAWS, REGULATIONS, AND POLICIES

California Fish and Game Code

The California Fish and Game Code (F&G Code) includes various statutes that protect biological resources, including the Native Plant Protection Act of 1977, the California Endangered Species Act (CESA), and requirements for lake or streambed alteration agreements.

The Native Plant Protection Act (F&G Code Sections 1900–1913) authorizes the Fish and Game Commission to designate plants as endangered or rare and prohibits take of any such plants, except as authorized under limited circumstances.

CESA (F&G Code Sections 2050–2098) prohibits state agencies from approving a project that would jeopardize the continued existence of a species listed under CESA as endangered or threatened. Section 2080 of F&G Code prohibits the take of any species that is state listed as endangered or threatened, or designated as a candidate for such listing. CDFW may issue an incidental take permit authorizing take of listed and candidate species if that take is incidental to an otherwise lawful activity, subject to specified conditions.

F&G Code Sections 3503, 3513, and 3800 protect native and migratory birds, including their active or inactive nests and eggs, from all forms of take. In addition, Sections 3511, 4700, 5050, and 5515 identify species that are fully protected from all forms of take. Section 3511 lists fully protected birds, Section 5515 lists fully protected fish, Section 4700 lists fully protected mammals, and Section 5050 lists fully protected amphibians.

CDFW regulates activities that will interfere with the natural flow of, or substantially alter, the channel, bed, or bank of a lake, river, or stream. Section 1602 of the F&G Code requires that CDFW be notified of lake or streambed alteration activities. If CDFW subsequently determines that such an activity might adversely affect an existing fish and wildlife resource, it has the authority to issue a streambed alteration agreement, including requirements to protect biological resources and water quality.

7.2.3 Local Laws, Regulations, and Policies

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* was adopted in January 2019 (City of Modesto 2019). The Jennings Plant is not within the boundaries of the Urban Area General Plan, but other Proposed Program components are within these boundaries.

The General Plan's natural resource policies in the Open Space and Conservation element are based on the realization that the remaining riparian and riverine corridors are perhaps the most significant providers of wildlife habitat in the County. The General Plan seeks to protect riparian and wetland habitats while allowing compatible uses where appropriate.

The General Plan identifies two areas within the study area to be preserved as natural resources: the Tuolumne River and Dry Creek. It also provides the following guidance regarding wildlife and other natural resources:

> **Policy VII-E.2[a].** For proposed development consistent with the adopted Urban Area General Plan on lands within the Baseline Developed Area and Downtown Area, exclusive of lands within the Dry Creek and Tuolumne River Comprehensive Planning Districts, no further biological study is warranted unless habitat is present or if specific information concerning the known or potential presence of significant biological resources is identified in future updates of the California Natural Diversity Database (CNDDB), or through formal or informal input received from resource agencies or other qualified sources.

Stanislaus County General Plan 2015

The following goals and policies in the Conservation/Open Space Element of the Stanislaus County General Plan 2015 (2016) are relevant to the Proposed Program:

Conservation and Open Space Element

Goal One: Encourage the protection and preservation of natural and scenic areas throughout the County.

Policy Three: Areas of sensitive wildlife and plant life (e.g., vernal pools, riparian habitats, flyways and other waterfowl habitats, etc.) including habitats and plant species listed in the General Plan Support Document or by state or federal agencies shall be protected from development and/or disturbance.

Policy Four: Protect and enhance oak woodlands and other native hardwood habitat.

Goal Ten: Protect fish and wildlife species of the County.

Policy Twenty-nine: Habitats of rare and endangered fish and wildlife species, including special status wildlife and plants, shall be protected.

Stanislaus County does not have a tree protection ordinance.

7.2.4 HABITAT CONSERVATION PLAN

The PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan (PG&E O&M HCP) (PG&E 2006) covers specific PG&E activities throughout nine counties in the San Joaquin Valley, including Stanislaus County. The PG&E O&M HCP complies with the federal and state ESA and addresses multiple species and critical habitats. The PG&E O&M HCP outlines steps on minimizing, avoiding, and compensating for possible direct, indirect, and cumulative adverse effects on threatened and endangered species that could result from PG&E operation and maintenance activities in the San Joaquin Valley. The Proposed Program lies within the PG&E O&M HCP boundaries but is not a covered activity under the PG&E O&M HCP.

7.3 ENVIRONMENTAL SETTING

7.3.1 REGIONAL SETTING

The Proposed Program is situated in the central San Joaquin Valley. The study area generally has gently sloping terrain. The Tuolumne River flows westerly through the southern portion of Modesto. Dry Creek, a tributary to the Tuolumne River, runs through the central portion of Modesto before joining the Tuolumne River near South 9th Street and River Road. The San Joaquin River is located adjacent to the Jennings Plant. Elevations range from approximately 40 feet above mean sea level (msl) at the Jennings Plant to approximately 120 feet above msl in the eastern portion of the study area.

The landscape in the study area is dominated by the urban development and agriculture. Other land uses in the study area include wastewater treatment facilities, transportation, and open space. Natural habitats are mostly found along the Tuolumne River, Dry Creek, and along the San Joaquin River adjacent to the Jennings Plant.

7.3.2 SURVEYS AND METHODS

Horizon biologist Robin Hunter conducted a reconnaissance survey (a preliminary survey to identify habitat types, potential special-status species habitat, and other biological resource issues) of the alignment and staging areas for the River Trunk Realignment Project in June 2017. Reconnaissance surveys were not conducted for components that are evaluated in this EIR at a program level because locations of some project components are conceptual, project designs have not been finalized for the proposed CIPs, and some components would not be constructed for a decade or more. For these reasons, reconnaissance surveys would potentially be out of date and no longer accurate by the time components would be constructed.

Instead, several documents covering biological resources in the vicinity of the Program were reviewed for relevant habitat and setting information. This existing information is sufficient to identify sensitive resources and evaluate impacts at a program level. These resources include:

- City's Modesto Wastewater Master Plan Update Draft Master Environmental Impact Report (City of Modesto 2007);
- City of Modesto Wastewater Collection System Master Plan. Final Draft. (Carollo Engineers 2016a);
- City of Modesto Wastewater Treatment Master Plan. Final Draft. (Carollo Engineers 2016b);
- Wastewater System Upgrades Project Draft Master Environmental Impact Report. (City of Modesto 2014); and
- North Valley Regional Recycled Water Program Draft Environmental Impact Report/Statement (Bureau of Reclamation and City of Modesto 2015).

Special-status plant and animal species with the potential to occur within the Program were identified through a review of the following resources:

- USFWS list of federally endangered and threatened species that may occur in the study area, and/or may be affected by the Proposed Program (USFWS 2017a);
- CDFW's CNDDB queries for the U.S. Geological Survey (USGS) 7.5-minute quadrangles within the study area and the quadrangles immediately adjacent to them, which are: Salida, Riverbank, Brush Lake, Ceres, Manteca, Avena, Escalon, Oakdale, Waterford, Denair, Turlock, Hatch, Crows Landing, Patterson, and Westley, Ripon (CDFW 2017);
- California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California queries for the USGS 7.5-minute quadrangles within the study area and the quadrangles immediately adjacent to them (CNPS 2017); and

- eBird records for the study area (eBird 2017a).

Results from these database queries are provided in [Appendix C, *Biological Resources Analysis Supporting Information]*.

7.3.3 VEGETATION AND LAND COVER – STUDY AREA

Descriptions of vegetation and land cover occurring in the study area are adapted from previous documents related to the study area, including the 2008 Master EIR for the City's general plan (ICF Jones & Stokes 2008), the City of Modesto Wastewater Master Plan Update EIR (Turnstone Consulting 2006), and the North Valley Regional Recycled Water Program DEIR/Statement (Bureau of Reclamation and City of Modesto 2015). Wildlife typically associated with these biological communities is also described below.

Urban

The majority of the study area consists of urban land cover. This includes roads, parking lots, housing, landscaping, golf courses and commercial and industrial facilities. This habitat consists of a wide range of ornamental/landscaped vegetation and some native plants. This habitat supports a variety of urban-adapted wildlife.

Birds typical of urban habitats include American crow (*Corvus brachyrhynchos*), scrub jay (*Aphelocoma californica*), mockingbird (*Mimus polyglottos*), house finch (*Haemorhous mexicanus*), wrentit (*Chamaea fasciata*), bushtit (*Psaltriparus minimus*), and oak titmouse (*Baeolophus inornatus*). Common mammals include raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), striped skunk (*Mephitis mephitis*).

Agricultural Lands

Agricultural lands within the study area include pastures, orchards, and row crops. Pastures are typically cultivated in grasses and/or legumes such as alfalfa (*Medicago sativa*), rescue grass (*Bromus catharticus*), Johnson's grass (*Sorghum halepense*), tall fescue (*Festuca arundinaceae*), and Italian ryegrass (*Festuca perennis*). The primary orchard crops in the vicinity of the Program components are almond (*Prunus dulcis*) and English walnut (*Juglans regia*) cultivars.

Pastures provide food, cover, and nesting habitat for wildlife species; the value of the habitat varies with crop type and agricultural practices. Bird diversity can be high in irrigated pastures (Hartman and Kyle 2010). Species commonly utilizing pasture lands include red-winged blackbird, Brewer's blackbird (*Euphagus cyanocephalus*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), killdeer (*Charadrius vociferous*), American crow, and American kestrel. Some pasture lands and crop fields provide suitable breeding habitat for northern harrier (*Circus cyaneus*). Small mammals such as gophers (*Thomomys* spp.) and voles (*Microtus* spp.) present in pastures and row crops provide important prey resources for raptors such as red-tailed hawk and Swainson's hawk.

In orchards, understory vegetation is generally removed, which limits the abundance and diversity of wildlife species in this habitat, but some wildlife adapted to agriculture may use these habitats. Species such as the side-blotched lizard (*Uta stansburiana*) can occur in this habitat type. American crow and yellow-billed magpies (*Pica nuttalli*), which forage on nut crops, are often present (City of Patterson 2010).

Riverine

The Tuolumne River and Dry Creek support multiple species of freshwater and anadromous fish. Introduced freshwater species greatly outnumber native species in the Tuolumne River and associated waterways. Largemouth and smallmouth bass (*Micropterus salmoides* and *M. dolomieu*), and sunfishes (*Lepomis* spp.) are abundant and occur in many aquatic habitats. Anadromous fish rear and spawn in freshwater habitats and spend the remainder of their life in marine habitats. The amount of time individuals spent as adults in the ocean or as juveniles in freshwater various from species to species. Special-status fish in the Tuolumne River include Chinook salmon (Central Valley fall- late fall-run Evolutionarily Significant Unit [ESU]) (*Oncorhynchus tshawytscha*), Central Valley steelhead (*Oncorhynchus mykiss*), Sacramento splittail (*Pogonichthys macrolepidotus*), and hardhead (*Mylopharodon conocephalus*).

Some irrigation ditches also provide riverine-type habitat, but these areas provide only marginal habitat for aquatic species.

Valley Foothill Riparian

Riparian habitat in the study area is limited to the Tuolumne River, San Joaquin River, and Dry Creek. Common species in this habitat include willows (*Salix* spp.), valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), Oregon ash (*Fraxinus latifolia*), wild grape (*Vitis californicus*), and California blackberry (*Rubus ursinus*). Invasive species in riparian areas include Himalayan blackberry (*Rubus armeniacus*) and arundo (*Arundo donax*). Blue elderberry (*Sambucus nigra* ssp. *caerulea*) shrubs are common in this habitat, and are the host plant for the federally-threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

Riparian areas provide food, water, shelter, and migration corridors for a wide variety of wildlife. Mammals such as raccoon, desert cottontail (*Sylvilagus audubonii*), deer mouse (*Peromyscus maniculatus*), striped skunk, American beaver (*Castor canadensis),* and coyote (*Canis latrans*) are common in riparian woodlands. Raptor species such as great horned owl (*Bubo virginianus*), red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), and American kestrel (*Falco sparverius*) may nest and forage in riparian habitats. A wide variety of passerine species use this habitat for breeding and foraging, including belted kingfisher (*Megaceryle alcyon*), downy woodpecker (*Picoides pubescens*), northern flicker (*Colaptes auratus*), black phoebe (*Sayornis nigricans*), bushtit, and Bewick's wren (*Thryomanes bewickii*).

Wetlands and Vernal Pools

Wetlands within the study area are located in transitions between aquatic and terrestrial habitats, such as along the fringes of riverine habitat or in seasonally flooded grasslands.

Vernal pools are shallow, ephemeral waterbodies that form in depressions in grasslands, pastures, and woodlands. Vernal pools support specialized species adapted to their conditions. Conversion of natural habitats to agricultural and developed uses has eliminated much of the vernal pool habitat in the Central Valley. While vernal pools are unlikely in areas where Program activities would take place, they could not be ruled out as a possibility. This

habitat type was also included in the Modesto General Plan Update Final Master EIR (ICF Jones and Stokes 2008) and other documents related to the study area.

In the study area, wetlands could occur adjacent to or within the Tuolumne River, Dry Creek, or the San Joaquin River. Vernal pools could potentially occur in pastures and grasslands. Wetlands in the study area are dominated by bulrushes (*Schoenoplectus* spp. and *Scirpus* spp.,), cattails (*Typha* spp.), sedges (*Carex* spp.), and rushes (*Juncus* spp.). Vernal pools support a number of special-status species, such as vernal pool fairy shrimp (*Branchinecta lynchi*) and San Joaquin Valley Orcutt grass (*Orcuttia inaequalis*).

Wetlands provide important habitat for birds and amphibians. Common wildlife species in wetlands include bullfrog (*Lithobates catesbeianus*), egrets (*Ardea* and *Egretta* spp.), sora (*Porzana carolina*), American coot (*Fulica americana*), and red-winged blackbird (*Agelaius phoeniceus*).

Grassland

Grassland habitat consists of a mixture of annual and perennial grasses, and forbs. In the Central Valley, grasslands are dominated by a variety of non-native annual grasses such as wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*) or foxtail barley (*Hordeum murinum*), with native grass species only infrequently present. Grasslands are relatively uncommon in the study area and are generally somewhat disturbed Grasslands provide food and cover for birds, reptiles, and small mammals. Many raptors may forage in this habitat.

7.3.4 VEGETATION AND LAND COVER – RIVER TRUNK REALIGNMENT PROJECT AREA

Vegetation and land cover within the River Trunk Realignment Project footprint includes Urban, Valley Foothill Riparian, Riverine, and Grassland. The majority of the River Trunk Realignment Project takes place in existing roadways with low or no biological resource value. The alignment crosses Dry Creek and its associated riparian area, as well as grassland between the Gallo Staging Area and the Pump Station Area (Figure 2-1 in Chapter 2, *Project Description*). The majority of grassland habitat is disturbed, and has been disked. The pipeline alignment also crosses through the Dryden Golf Course. This is an urban habitat that has more biological resource value than roadways.

7.3.5 SPECIAL-STATUS SPECIES

For the purposes of this EIR, special-status plant and wildlife species refers to those species that meet one or more of the following criteria:

- Species that are listed as threatened or endangered under the ESA (50 CFR 17.12 for listed plants, 50 CFR 17.11 for listed animals);
- Species that are candidates for possible future listing as threatened or endangered under ESA (76 Federal Register [FR] 66370);
- Species that are listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5);
- Plants listed as rare under the California Native Plant Protection Act of 1977 (F&G Code Section 1900 et seq.);

- Plants listed as California Rare Plant Rank (CRPR) 1, 2, 3, or 4;
- Species that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- Animals fully protected in California (F&G Code Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]); and
- Nesting raptors protected in California (F&G Code Section 3503.5).

Special-status species known to occur within the general Proposed Program vicinity were identified from the queries described in Section 7.3.2. A list of these species is provided in **Table 7-1,** and **Figures 7-1** and **7-2** show the CNDDB occurrences of special-status plants and animals, respectively, and critical habitat[1] within a five-mile radius of the Proposed Program. The potential for special-status species to occur in areas affected by the Proposed Program was evaluated according to the following criteria:

- **None:** the area contains a complete lack of suitable habitat, the local range for the species is restricted, and/or the species is extirpated in this region.
- **Not Expected:** suitable habitat or key habitat elements might be present but might be of poor quality or isolated from the nearest extant occurrences. Habitat suitability refers to factors such as elevation, soil chemistry and type, vegetation communities, microhabitats, and degraded/substantially altered habitats.
- **Possible:** the presence of suitable habitat or key habitat elements that potentially support the species.
- **Present:** either the target species was observed directly or its presence was confirmed by diagnostic signs during field investigations or in previous studies in the area.

7.3.6 SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities include those that are of special concern to resource agencies, such as those that are protected under CEQA, Section 1600 of the F&G Code, or Sections 401 and 404 of the CWA. These include sensitive communities documented in the *List of Vegetation Alliances and Associations* (California Department of Fish and Game [CDFG] 2010) or that are tracked in the CNDDB (CDFW 2017), riparian communities, and waters of the U.S. and state, including wetlands. Sensitive natural communities within the study area include wetland and riparian communities. Riparian communities are located along the Tuolumne River, Dry Creek, and San Joaquin River. Wetlands are also associated with these watercourses, and may also be found in non-riparian areas in the study area, such as depressions or other low places in the landscape. These communities could be affected by Program components that are constructed within or adjacent to riparian or wetland areas. Vernal pools are a subset of wetlands that are unlikely in areas where Program activities would take place, but could potentially occur in pastures and grassland in the study area.

[1] Critical habitats are specific geographic areas identified by USFWS or NMFS that contain features essential to the conservation of a federally-listed species and that may require special management and protection.

7.3.7 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are established migration routes between multiple locations used by resident and migratory species. CEQA requires the analysis of a project's potential to substantially interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors (see Section 7.4.2, below). Hence, resource agencies consider wildlife corridors to be a sensitive resource in the evaluation of projects.

The Tuolumne River, Dry Creek, and San Joaquin River are wildlife movement corridors. The rivers themselves are a movement corridor for anadromous fish such as steelhead, and the adjacent riparian areas allow for terrestrial wildlife movement.

7.4 IMPACT ANALYSIS

7.4.1 METHODOLOGY

The Proposed Program includes four primary types of improvements, as identified in Chapter 2, *Program Description*: pipelines, lift stations, treatment plant components, and disconnections of stormwater/sanitary sewer cross-connects. The Proposed Program may affect biological resources through direct or indirect disturbance, modification, or destruction of habitat that results in death, injury, or harassment of individuals or populations of plant or animal species, or that impedes or prevents the dispersal of individuals or populations of special-status species. Impacts on existing biological resources were evaluated by comparing the quantity and quality of habitats present in the study area under baseline conditions to conditions after construction of proposed components. The River Trunk Realignment Project was analyzed at a project level of detail, while all other components are evaluated at a program level of detail. Direct and indirect impacts on special-status species were assessed based on the potential for the species or their habitat to be disturbed or enhanced by construction of the Proposed Program.

Improvements included in the Proposed Program include replacement or upgrade of existing facilities. Existing facilities are considered developed, and are not expected to have biological impacts, impact habitat or riparian areas. New facilities in the Proposed Program may be in developed areas, or within the public right of way, which again are not expected to have biological resource impacts, however new facilities proposed adjacent to the Tuolumne River and Dry Creek or in non-developed areas will require the analysis outlined in the following sections.

In general, once construction is complete, operation and maintenance of the Proposed Program including the River Trunk Realignment Project, as described in Chapter 2, would continue similar to existing conditions. More staff would be required at the Jennings Plant in the long-term; while the level of ongoing operation and maintenance activities would be anticipated to increase from adding capacity to serve growth, this increased operation and maintenance is not anticipated to cause disturbance to biological resources. Unless otherwise stated below, impacts associated with operation and maintenance are considered unlikely or less than significant, and are not discussed further.

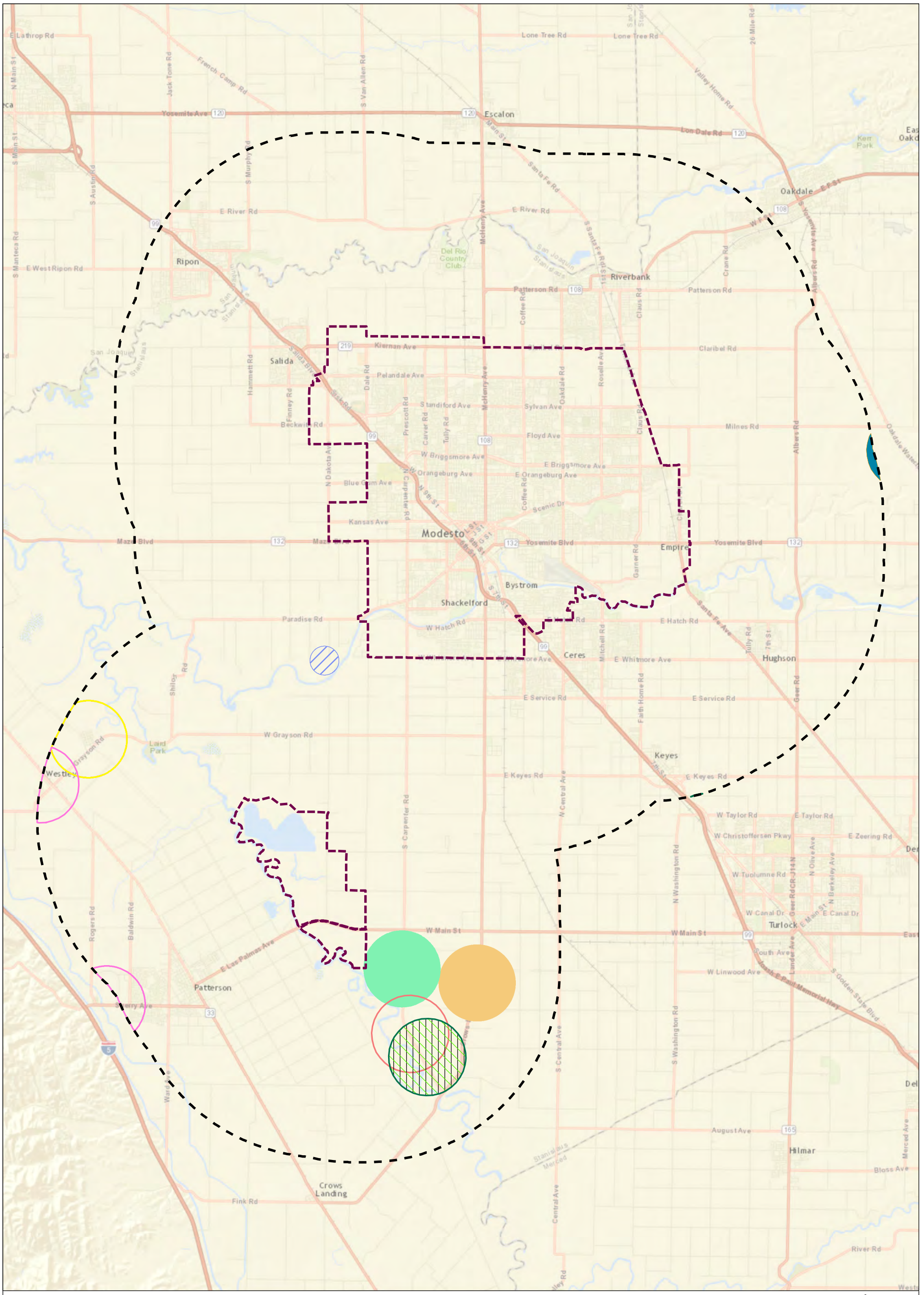


Figure 7-1
Special-Status Plant Species and Critical Habitat within 5 miles of the Proposed Program

N

0 1 2
Miles

Study Area Boundary
5-mile Buffer

California alkali grass
Colusa grass
Delta button-celery
Greene's tuctoria
San Joaquin Valley Orcutt grass
alkali milk-vetch
big tarplant
heartscale
lesser saltscale
prairie wedge grass
round-leaved filaree
subtle orache
vernal pool smallscale

Source: CDFW, CNDDB, July 2017 update

Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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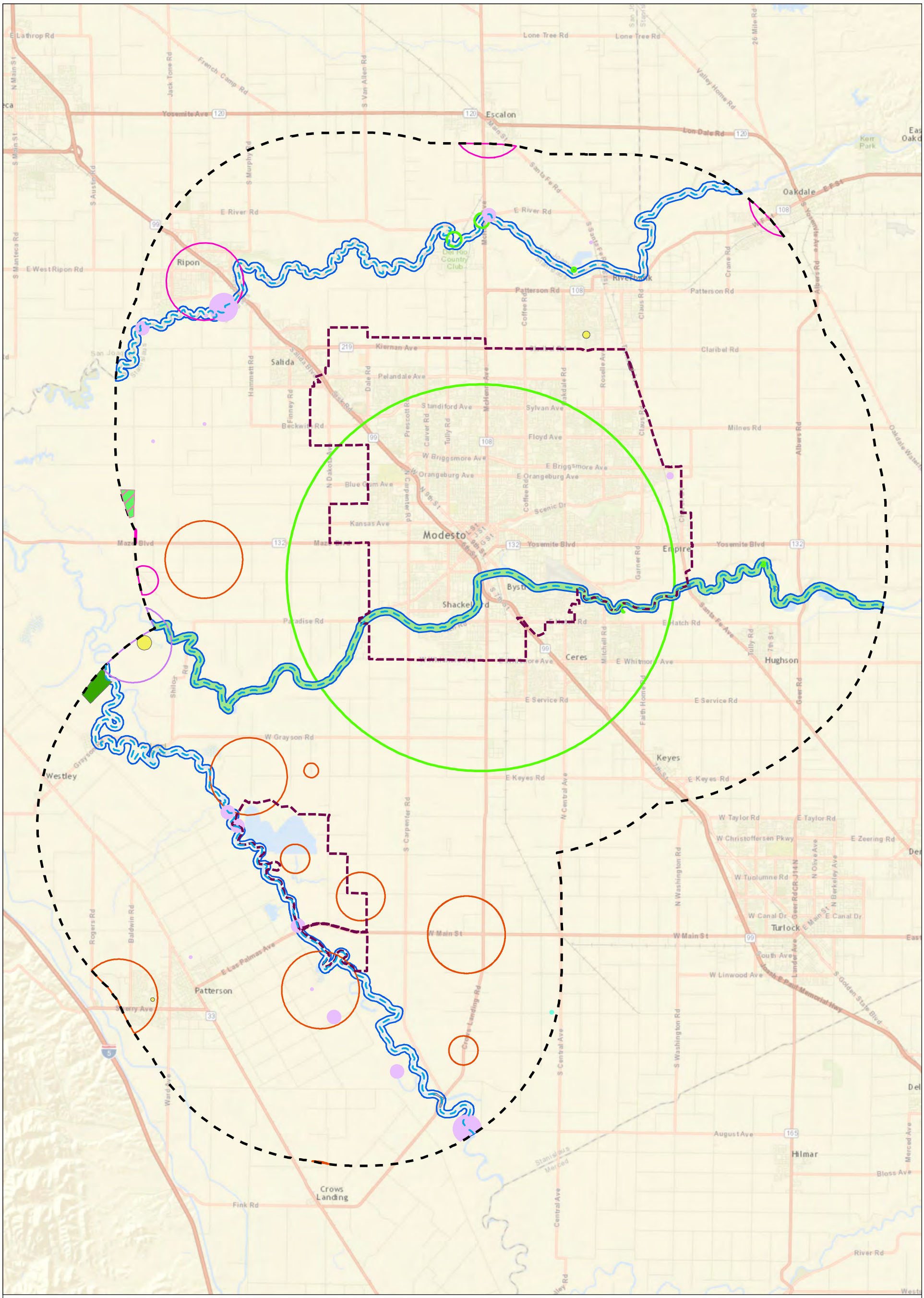


Figure 7-2
Special-Status Animal Species and Critical Habitat within 5 miles of the Proposed Program

City of Modesto
Wastewater Master Plan EIR

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Table 7-1. Special-Status Plant and Animal Species Known to Occur Within the Vicinity of the Study Area

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
PLANTS							
Astragalus tener var. *tener*	alkali milk-vetch	-	-	1B.2	Alkali playa, valley and foothill grassland, vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 0-168 meters. Blooms March through June	**Possible.** Potentially suitable habitat exists in grassland, and vernal pools in the study area.	**Not expected.** Marginally suitable habitat exists in the River Trunk Realignment Project in grassland.
Atriplex cordulata var. *cordulata*	heartscale	-	-	1B.2	Chenopod scrub, valley and foothill grassland, meadows and seeps. Alkaline flats and scalds in the Central Valley, sandy soils. 3-275 meters. Blooms April through October.	**Possible.** Potentially suitable habitat exists in alkaline grassland in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Atriplex coronata var. *coronata*	crownscale	-	-	4.2	Chenopod scrub, valley and foothill grassland, vernal pools. Valley and foothill grasslands, vernal pools. 1-590 meters. Blooms March through October.	**Possible.** Potentially suitable habitat exists in grassland and vernal pools in the study area.	**Possible.** Potentially suitable habitat exists in the River Trunk Realignment Project.
Atriplex minuscula	lesser saltscale	-	-	1B.1	Chenopod scrub, playas, valley and foothill grassland. In alkali sink and grassland in sandy, alkaline soils. 0-225 meters. Blooms May through October.	**Possible.** Potentially suitable habitat exists in alkaline grassland in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Atriplex persistens	vernal pool smallscale	-	-	1B.2	Vernal pools. Alkaline vernal pools. 3-115 meters. Blooms June through October.	**Possible.** Potentially suitable habitat exists in vernal pools in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Atriplex subtilis	subtle orache	-	-	1B.2	Valley and foothill grassland. Alkaline soils. 20-100 meters. Blooms June through September.	**Possible.** Potentially suitable habitat exists in alkaline grassland in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Blepharizonia plumosa	big tarplant	-	-	1B.1	Valley and foothill grassland. Dry hills and plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. 30-505 meters. Blooms July through October.	**Possible.** Potentially suitable habitat exists grassland in the study area.	**Possible.** Potentially suitable habitat exists in the River Trunk Realignment Project.
California macrophylla	round-leaved filaree	-	-	1B.2	Cismontane woodland, valley and foothill grassland. Clay soils. 15-1200 meters. Blooms March through May.	**Possible.** Potentially suitable habitat exists in grassland in the study area.	**Possible.** Potentially suitable habitat exists in the River Trunk Realignment Project.
Caulanthus lemmonii	Lemmon's jewelflower	-	-	1B.2	Pinyon and juniper woodland, valley and foothill grassland. 75-1585 meters. Blooms February through May.	**None.** The study area is not within the elevation range of this species.	**None.** The study area is not within the elevation range of this species.
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	-	-	4.2	Valley and foothill grasslands, vernal pools. Chaparral, cismontane woodland, coastal scrub. 0-100 meters. Blooms May through October.	**Possible.** Potentially suitable habitat exists in grassland and vernal pools in the study area.	**Possible.** Potentially suitable habitat exists in the River Trunk Realignment Project.
Clarkia breweri	Brewer's clarkia	-	-	4.2	Chaparral, cismontane woodland, coastal scrub. 215 – 1,115 meters. Blooms April through June.	**None.** The study area is not within the elevation range of this species.	**None.** The study area is not within the elevation range of this species.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Clarkia rostrata	beaked clarkia	-	-	1B.3	Cismontane woodland, valley and foothill grassland. North-facing slopes; sometimes on sandstone. 60-915 meters. Blooms April through May.	**None.** The study area is not within the elevation range of this species.	**None.** The study area is not within the elevation range of this species.
Eryngium racemosum	Delta button-celery	-	SE	1B.1	Riparian scrub. Seasonally inundated floodplain on clay. 1-335 meters. Blooms June through October.	**Possible.** Potentially suitable habitat exists along Dry Creek and the Tuolumne River.	**Possible.** Potentially suitable habitat exists in the River Trunk Realignment Project along Dry Creek.
Eschscholzia rhombipetala	diamond-petaled California poppy	-	-	1B.1	Valley and foothill grassland. Alkaline, clay slopes and flats. 30-625 meters. Blooms March through April.	**Possible.** Potentially suitable habitat exists in grassland in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Legenere limosa	legenere	-	-	1B.1	Vernal pools. In beds of vernal pools. 1-880 meters. Blooms April through June.	**Possible.** Potentially suitable habitat exists in vernal pools in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Monardella leucocephala	Merced monardella	-	-	1A	Valley and foothill grassland. Known from riverbeds, moist sandy depressions; requires moist subalkaline sands associated with low elevation grassland. 35-100 meters. Blooms May through August.	**Not expected.** This species is presumed extirpated and was last seen in Last seen in 1941.	**Not expected.** This species is presumed extirpated and was last seen in Last seen in 1941.
Neostapfia colusana	Colusa grass	FT	SE	1B.1	Vernal pools. Usually in the bottoms of large, or deep vernal pools; adobe soils. 5-125 meters. Blooms May through August.	**None.** Not within the current range for this species (USFWS 2017b).	**None.** Not within the current range for this species (USFWS 2017b).

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	FT	SE	1B.1	Vernal pools. 10-755 meters. Blooms April through September.	**None.** Not within the current range for this species (USFWS 2017c).	**None.** Not within the current range for this species (USFWS 2017c).
Puccinellia simplex	California alkali grass	-	-	1B.2	Meadows and seeps, chenopod scrub, valley and foothill grasslands, vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. 1-915 meters. Blooms March through May.	**Possible.** Potentially suitable habitat exists in alkaline grassland and vernal pools in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Sphenopholis obtusata	prairie wedge grass	-	-	2B.2	Cismontane woodland, meadows and seeps. Open moist sites, along rivers and springs, alkaline desert seeps. 300-2000 meters. Blooms April through July.	**None.** The study area is not within the elevation range of this species.	**None.** The study area is not within the elevation range of this species.
Tuctoria greenei	Greene's tuctoria	FE	SR	1B.1	Vernal pools. Vernal pools in open grasslands. 25-1325 meters. Blooms May through July.	**None.** Not within the current range for this species (USFWS 2017d).	**None.** Not within the current range for this species (USFWS 2017d).
FISH							
Hypomesus transpacificus	Delta smelt	FT	SE	-	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	**None.** The study area is outside the range of this species.	**None.** The study area is outside the range of this species

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Mylopharodon conocephalus	hardhead	-	SSC	-	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Also present in the Russian River. Clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Not found where exotic centrarchids predominate.	**Present.** A recent CNDDB occurrence is located within the study area within the Tuolumne River.	**Possible.** Potentially suitable habitat is present in Dry Creek.
Oncorhynchus mykiss irideus	steelhead - Central Valley DPS	FT	-	-	Populations in the Sacramento and San Joaquin rivers and their tributaries.	**Present.** A recent CNDDB occurrence is located within the study area within the Tuolumne River. This species may also stray into Dry Creek.	**Possible.** This species may stray into Dry Creek.
Oncorhynchus tshawytscha	Chinook salmon (Central Valley fall-late fall-run ESU)	-	SSC	-	Populations spawn in the Sacramento and San Joaquin rivers and tributaries. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and high dissolved oxygen.	**Present.** This species occurs in the Tuolumne River and my stray into Dry Creek.	**Possible.** This species may stray into Dry Creek.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Oncorhynchus tshawytscha	Chinook salmon (Central Valley spring-run ESU)	Non-essential experi-mental pop-ulation	See FGC 2080.2 to 2080.4.		All spring-run Chinook salmon, including those that have been released or propagated, naturally or artificially, within the experimental population area, which is defined as the San Joaquin River from Friant Dam downstream to its confluence with the Merced River (exclusive). Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	**Possible.** A nonessential experimental population has recently been reintroduced to the San Joaquin River (NMFS 2013). Individuals may potentially stray into the Tuolumne River or Dry Creek.	**Possible.** A nonessential experimental population has recently been reintroduced to the San Joaquin River (NMFS 2013). Individuals may potentially stray into Dry Creek.
Pogonichthys macrolepidotus	Sacramento splittail	-	SSC	-	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes. Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	**Possible.** Within the extant range for this species (UC Davis 2017).	**Possible.** Within the extant range for this species (UC Davis 2017).
INVERTEBRATES							
Branchinecta conservatio	Conservancy fairy shrimp	FE	-	-	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	**Not expected.** No known populations of this species are located within the study area (USFWS 2012a). Marginally suitable habitat exists in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Branchinecta lynchi	vernal pool fairy shrimp	FT	-	-	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Possible.** Potentially suitable habitat exists in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT	-	-	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	**Possible.** Potentially suitable habitat exists in the study area where elderberry bushes are present.	**Possible.** Potentially suitable habitat exists where elderberry bushes are present. An elderberry bush was identified in the vicinity of the Dry Creek crossing exit pit, and several elderberry bushes were identified along the Tuolumne River in the vicinity of the Shackelford Pump Station.
Lepidurus packardi	vernal pool tadpole shrimp	FE	-	-	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**Possible.** Potentially suitable habitat exists in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
AMPHIBIANS AND REPTILES							
Ambystoma californiense	California tiger salamander	FT	ST	-	Central Valley Distinct Population Segment federally listed as threatened. Santa Barbara and Sonoma counties Distinct Population Segment federally listed as endangered. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	**Not expected.** No known extant populations of this species in the study area (USFWS 2017e).	**None.** No suitable habitat is present within the River Trunk Realignment Project.
Anniella pulchra	northern California legless lizard	-	SSC	-	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	**Not expected.** Marginally suitable habitat exists in riparian areas in the study area.	**Not expected.** Marginally suitable habitat is present within the River Trunk Realignment Project.
Emys marmorata	western pond turtle	-	SSC	-	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	**Possible.** Potentially suitable habitat exists in the study area.	**Possible.** Potentially suitable habitat exists in Dry Creek.
Gambelia sila	blunt-nosed leopard lizard	FE	SE	-	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	**None.** The study area is outside the current range for this species.	**None.** The study area is outside the current range for this species.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Masticophis flagellum ruddocki	San Joaquin coachwhip	-	SSC	-	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	**Not expected.** The study area is outside the current range for this species (CDFW 2012).	**Not expected.** The study area is outside the current range for this species (CDFW 2012).
Rana draytonii	California red-legged frog	FT	SSC	-	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	**None.** This species is considered extirpated from the Central Valley (USFWS 2002).	**None.** This species is considered extirpated from the Central Valley (USFWS 2002).
Spea hammondii	western spadefoot	-	SSC	-	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	**Possible.** Potentially suitable habitat exists in the study area.	**None.** No suitable habitat is present within the River Trunk Realignment Project
Thamnophis gigas	giant garter snake	FT	ST	-	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**Not expected.** Potentially suitable habitat exists in the study area, but there have been no CNDDB occurrences within Stanislaus County.	**Not expected.** Marginally suitable habitat exists within Dry Creek.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
BIRDS							
Aquila chrysaetos	golden eagle	-	FP	-	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	**Present.** Species has been observed at the Jennings Plant (ebird.org 2017a). Flyover and foraging possible; no suitable nesting habitat.	**Possible.** Species has been observed at the Jennings Plant (ebird.org 2017a). Flyover and foraging possible; no suitable nesting habitat.
Agelaius tricolor	tricolored blackbird	-	SC, SSC	-	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	**Present.** CNDDB occurrences within the study area near the Jennings Plant.	**Not expected.** Marginally suitable habitat exists in the River Trunk Realignment Project.
Athene cunicularia	burrowing owl	-	SSC	-	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	**Possible.** Potentially suitable habitat exists in the study area.	**Not expected.** Marginally suitable habitat exists in the River Trunk Realignment Project. Disking of grassland habitat within the Project alignment makes occupation by this species unlikely.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Buteo swainsoni	Swainson's hawk	-	ST	-	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	**Present.** CNDDB occurrences within the study area near the Jennings Plant.	**Possible.** Potentially suitable foraging habitat is present in grassland habitat, and potentially suitable breeding habitat is present along Dry Creek and the Tuolumne River
Circus cyaneus	northern harrier	-	SSC	-	Coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Present.** Species has been observed at the Jennings Plant (ebird.org 2017a). Flood irrigated pastures provide potential nesting habitat.	**Not expected.** Marginally suitable habitat is present in the River Trunk Realignment Project.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT	SE	-	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**None.** The study area is not within the current range of this species (USFWS 2017f).	**None.** The study area is not within the current range of this species (USFWS 2017c).
Dendroica petechia	yellow warbler	-	SSC	-	Riparian plant associations. Prefers willows, cottonwoods, aspens, sycamores, and alders for nesting and foraging. Also nests in montane shrubbery in open conifer forests.	**Present.** Species has been observed along the Tuolumne River in the study area (eBird 2017b).	**Not expected.** Habitat along Dry Creek is marginally suitable for this species.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Elanus leucurus	white-tailed kite	-	FP	-	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Present.** Species has been observed at the Jennings Plant (eBird.org 2017a). Riparian areas and isolated mature trees in agricultural areas provide potential nesting habitat.	**Possible.** Potentially suitable nesting habitat is present in along Dry Creek**.**
Haliaeetus luecocephalus	bald eagle	FD	SE, FP	-	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**Present.** Species has been observed at the Jennings Plant (eBird.org 2017a). Flyover and foraging possible; no suitable nesting habitat.	**Possible.** Species has been observed at the Jennings Plant (eBird.org 2017a). Flyover and foraging possible; no suitable nesting habitat.
Icteria virens	yellow-breasted chat	-	SSC	-	Summer resident; inhabits riparian thickets of willow and other brushy tangles near watercourses. Nests in low, dense riparian, consisting of willow, blackberry, wild grape; forages and nests within 10 feet of ground.	**Possible.** Potentially suitable habitat exists in the study area.	**Not expected.** Habitat along Dry Creek is marginally suitable for this species.
Lanius ludovicianus	loggerhead shrike	-	SSC	-	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Present.** Species may nest in riparian areas.	**Possible.** Potentially suitable foraging habitat is present in grassland habitat, and potentially suitable breeding habitat is present along Dry Creek and the Tuolumne River.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Melospiza melodia	song sparrow ("Modesto" population)	-	SSC	-	Emergent freshwater marshes, riparian willow thickets. Riparian forests, vegetated irrigation canals and levees. Inhabits cattails, tules and other sedges; also known to frequent tangles bordering sloughs.	**Possible.** Potentially suitable habitat exists in the study area.	**Not expected.** The River Trunk Realignment Project is not within the range for this population.
Vireo bellii pusillus	least Bell's vireo	FE	SE	-	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, *Baccharis*, mesquite.	**Not expected.** Species has recently been observed in restored riparian habitat at the San Joaquin River National Wildlife Refuge approximately 7 miles west of the study area (Howell et al. 2010). Some riparian areas in the study Area provide marginal breeding habitat. Due to the species rarity in the Central Valley and habitat quality, it is not expected to breed in the study area**.**	**Not expected.** Habitat in Dry Creek and along the Tuolumne River is marginally suitable for this species.
MAMMALS							
Corynorhinus townsendii	Townsend's big-eared bat	-	SSC	-	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**Not expected.** Marginally suitable roosting habitat in existing buildings due to human presence.	**Not expected.** Marginally suitable roosting habitat exists in the River Trunk Realignment Project.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Eumops perotis californicus	western mastiff bat	-	SSC	-	Many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	**Not expected.** Marginally suitable roosting habitat exists in the study area.	**Not expected.** Marginally suitable roosting habitat exists in the River Trunk Realignment Project.
Lasiurus blossevillii	western red bat	-	SSC	-	Roosts primarily in trees, 2-40 feet above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	**Possible.** Roosting habitat is present in riparian habitats. In the Central Valley, this species is strongly associated with riparian areas, especially with mature cottonwoods (*Populus* spp.) and sycamores (*Platanus racemosa*) (Pierson et al. 2006).	**Possible.** Roosting habitat is present in riparian habitats.
Neotoma fuscipes riparia	riparian (=San Joaquin Valley) woodrat	FE	SSC	-	Riparian areas along the San Joaquin, Stanislaus, and Tuolumne rivers. Need areas with mix of brush and trees. Need suitable nesting sites in trees, snags or logs.	**Not expected.** Known populations are limited to San Joaquin River National Wildlife Refuge and Caswell Memorial State Park (USFWS 2012b), which are approximately 7 and 5 miles west of the study area, respectively.	**Not expected.** Known populations are limited to San Joaquin River National Wildlife Refuge and Caswell Memorial State Park (USFWS 2012b), which are approximately 7 and 5 miles west of the study area, respectively.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area	Potential to Occur in the River Trunk Realignment Project
Sylvilagus bachmani riparius	riparian brush rabbit	FE	SE	-	Riparian areas on the San Joaquin River in northern Stanislaus County. Dense thickets of wild rose, willows, and blackberries.	**Not expected.** The study area is not within the known range of this species (USFWS 2017g). Existing populations are limited to Caswell Memorial State Park and a region in the south Delta near Lathrop (Kelly et al. 2011).	**Not expected.** The study area is not within the known range of this species (USFWS 2017g). Existing populations are limited to Caswell Memorial State Park and a region in the south Delta near Lathrop (Kelly et al. 2011).
Taxidea taxus	American badger	-	SSC	-	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**Possible.** Potentially suitable habitat exists in riparian areas in the study area, and marginally suitable habitat exists in grasslands.	**Possible.** Potentially suitable habitat exists in the Dry Creek riparian corridor. Marginally suitable to no habitat present in open-cut portions of the River Trunk Realignment.
Vulpes macrotis mutica	San Joaquin kit fox	FE	ST	-	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**Not expected.** The study area is not within the known current range of this species and the study Area provides marginally suitable habitat (USFWS 2017h).	**Not expected.** The study area is not within the known current range of this species (USFWS 2017h).

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*** List of Abbreviations for Federal and State Species-Status:**

FE = Federally endangered
FT = Federally threatened
FD = Federally delisted

SE = State endangered
ST = State threatened
SC (Endangered) = State candidate for listing as endangered
SSC = State species of special concern

1A = plants presumed extirpated in California and either rare or extinct elsewhere.
1B = plants are considered rare, threatened, or endangered in California and elsewhere.
2B = plants are rare, threatened, or endangered in California, but more common elsewhere.
4 = plants of limited distribution - a watch list

Threat Ranks:

0.1-Seriously threatened in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat)
0.2-Moderately threatened in California (20–80 percent of occurrences threatened/moderate degree and immediacy of threat)
0.3-Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

CDFW (2017) used as the source for habitat descriptions and species status. Based on this information, qualified Horizon biologists determined the potential to occur.

7.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on biological resources if it would:

- 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 CDFW or USFWS;
- 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;
- Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

7.4.3 ENVIRONMENTAL IMPACTS

Impact BIO-1: Impacts on Special-Status Plants (Less than Significant with Mitigation)

Sutter and Jennings Plant Components

No special-status plants are likely to occur within these Program components. Therefore, impacts would be **less than significant**.

Outfall Pipelines and Collection System Components

Collection system components wholly within developed areas (such as paved streets) are not anticipated to have impacts on special-status plants. Special-status plants may occur in the vicinity of these Program components in habitats such as grassland, wetlands, vernal pools, and valley and foothill riparian (Table 7-1). Impacts to special-status plants such as alkali milk-vetch (*Astragalus tener* var. *tener*), heartscale (*Atriplex cordulata* var. *cordulata*), crownscale (*Atriplex coronata* var. *coronata*), lesser saltscale (*Atriplex minuscula*), vernal pool smallscale (*Atriplex persistens*), subtle orache (*Atriplex subtilis*), big tarplant (*Blepharizonia plumosa*), round-leaved filaree (*California macrophylla*), Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*), Delta button-celery (*Eryngium racemosum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), legenere (*Legenere limosa*), and California alkali grass (*Puccinellia simplex*) could include removal of individuals, and indirect effects from sedimentation or changes to hydrology. Indirect effects from erosion or

sedimentation from Program components' construction could impact special-status plants in the vicinity of vernal pools, riparian areas, wetland areas, or grasslands. These indirect impacts could change the local hydrology which could alter the habitat for special status plants, and reduce habitat suitability to these plants. Program components constructed in grasslands could impact special-status species which grow in grasslands, if they are present in the project footprint. Impacts to special-status plants during construction of certain Program components would be minimized by using trenchless pipeline construction for crossings of the Tuolumne River and Dry Creek, where wetland and riparian habitat is located. The only collection system components that would cross wetland or riparian habitat are sewer rehabilitation components A-1 and A-2. A frac-out (described in Chapter 12, *Hydrology and Water Quality*) during trenchless pipeline construction could result in impacts to special-status plants such as removal of individuals or reduction in special-status plant habitat quality. These impacts would be significant.

As described in Chapter 11, *Hazards and Hazardous Materials*, many potential water quality impacts associated with the Proposed Program's construction activities would be minimized or avoided through compliance with the National Pollutant Discharge Elimination System (NPDES) General Construction Permit. All components with a footprint greater than one acre of disturbance area would be subject to this permit, which requires preparation and implementation of a stormwater pollution prevention plan (SWPPP). As described in Section 12.2 in Chapter 12, *Hydrology and Water Quality*, the SWPPP must, among other things, present a list of BMPs that would be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. The SWPPP also would include spill prevention and response procedures for any hazardous materials used during construction. For Program components whose construction would disturb less than one acre, the City of Modesto's Standard Specifications require that all projects less than one acre develop a Local SWPPP or Erosion Control Plan and implement stormwater BMPs during construction. Implementation of BMPs to prevent erosion and potential discharge of sediment from construction sites, would avoid indirect impacts to plants from erosion or sedimentation during Program activities.

Several mitigation measures are proposed to avoid, reduce, or compensate for impacts to special-status plants. Implementation of Mitigation Measure HYD/WQ-1 would reduce impacts on special-status plants from a frac-out. Mitigation Measure BIO-1 would minimize the area of disturbance to habitat for special-status plants. Where disturbance within special-status plant habitat cannot be avoided, Mitigation Measure BIO-2 would identify the extent to which special-status plants are present and could be adversely affected by the project. For special-status plants found to be present, Mitigation Measure BIO-3 would require monitoring to confirm avoidance of identified special-status plant populations, and compensatory mitigation should special-status plants be adversely affected. Implementation of these measures would reduce this impact to **less than significant with mitigation.**

River Trunk Realignment Project

The footprint of the River Trunk Realignment Project supports grassland habitat that is suitable for crownscale, big tarplant, round-leaved filaree, and Parry's rough tarplant. Wetland and riparian areas associated with Dry Creek support habitat suitable for Delta button-celery. Impacts to these special-status plant species could include removal of individuals, and indirect effects from sedimentation or changes to hydrology. These impacts would be significant.

Impacts to Delta button celery would be minimized by using trenchless pipeline construction for the Dry Creek crossings where suitable habitat exists. As described above, preparation of a SWPPP would be required for this project. Implementation of SWPPP BMPs to prevent erosion and potential discharge of sediment from construction sites, would avoid indirect impacts to plants from erosion or sedimentation during construction of this project.

Implementation of Mitigation Measure HYD/WQ-1 would reduce impacts on Delta button celery from a frac-out. Mitigation Measure BIO-1 would identify the extent to which special-status plants are present and could be affected by the project component. Where special-status plants may be directly or indirectly affected, Mitigation Measure BIO-2 would identify and implement avoidance-related measures for the project component's design and/or construction. For special-status plants found to be present, Mitigation Measure BIO-3 would require monitoring to confirm avoidance of identified special-status plant populations, and compensatory mitigation should special-status plants be adversely affected.

Overall Conclusion

Considering the WWMP components as a whole, while no special-status plants are likely to be present at the Sutter or Jennings Plants, some special-status plants may occur in the vicinity of other Proposed Program components particularly in grassland, wetlands, vernal pools, and valley and foothill riparian habitats. Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, and HYD/WQ-1 would minimize adverse effects on special-status species. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation**.

Mitigation Measure BIO-1: Perform Focused Surveys for Special-status Plant Species.

Applies to Outfall Pipelines, Collection System Components, and River Trunk Realignment Project

Prior to implementation of construction activities at a site with grasslands, valley and foothill riparian, wetlands, or vernal pools, a qualified botanist will perform floristic surveys for special-status plant species.

Floristic surveys shall occur during the appropriate blooming period(s) for all special-status plant species with the potential to occur at the component site as determined by the botanist. If special-status plants may be directly or indirectly affected, then Mitigation Measure BIO-2 shall be implemented.

Mitigation Measure BIO-2: Avoid, Minimize, and Compensate for Impacts on Special-status Plant Species.

Applies to Outfall Pipelines, Collection System Components, and River Trunk Realignment Project

If special-status plants are detected, the City shall implement the following measures to avoid, minimize, and compensate for impacts on special-status plant species:

- The component shall be redesigned or modified to avoid direct and indirect impacts on special-status plant species, if feasible. Any special-status plant species occurrences near a Program site will be protected by environmentally-

sensitive area fencing (orange construction barrier fencing) installed around special-status plant species populations. The environmentally-sensitive area fencing will be installed at least 200 feet from the edge of the population where feasible, and where not feasible, the buffer will be large enough to adequately protect populations from program activities. Where special-status plant populations are located in wetlands, silt fencing also will be installed. The location of the fencing will be marked in the field with stakes and flagging, and shown on the construction drawings. The construction specifications will contain clear language that prohibits construction-related activities, vehicle operation, material and equipment storage, and other surface disturbing activities within the fenced environmentally-sensitive area.

- If avoidance is not feasible, the Program proponent will consult with either CDFW or USFWS, or both, depending upon which has jurisdiction, to determine whether transplantation of special-status plant species is feasible. If the agencies concur that it is a feasible mitigation measure, the botanist will develop and implement a Rare Plant Relocation, Management, and Protection Plan (Rare Plant Plan) in coordination with the appropriate agencies. The Rare Plant Plan will include the following components: relocation methods that will minimize the potential loss of plants from relocation, management plans and success criteria by which the mitigation can be measured for success, and regular monitoring to ensure that the plants are successfully transplanted. Success criteria shall require that at least 75% of the plants survive. The Rare Plant Plan will include specific, measurable triggers for adaptive management actions that will be necessary to ensure survival.

- The Rare Plant Plan will specify annual monitoring of the mitigation site for at least five years after planting, and will assess factors such as population size and density, recruitment, and individual plant health and vigor. Monitoring will also assess whether the mitigation requires adaptive management actions, such as collection and sowing of additional seed, tillage/disturbance within existing populations to induce establishment, installation of container plants, and control of exotic invasive vegetation (such as yellow star thistle) to ensure successful plant establishment and survival. The site will be evaluated at the end of the 5-year monitoring period to determine whether the mitigation has met the success criteria identified in the Rare Plant Plan. If success criteria are not met at that time, then mitigation activities and monitoring will continue until success criteria are met.

- As part of the Rare Plant Plan, the program proponent, in conjunction with a qualified restoration ecologist and/or botanist and the consulting agency, if any, will identify a suitable on- or off-site location for mitigation, and appropriate methods for seed collection, propagation, relocation, maintenance, and monitoring. Mitigation sites will be located within the range of the affected plant and contain suitable habitat sites. For annual plant species, the seed crop from the individuals to be lost will be collected and then sown on appropriate habitat located on the mitigation site. The individuals will not be removed until seeds have been collected. For perennial plant species, both the seed and the plants themselves will be salvaged and relocated to the mitigation site. The individuals will not be removed until seeds have been collected. Seed from the populations

that will be affected may be collected and propagated at a native plant nursery prior to planting in order to increase the potential for establishment and survival.

Impact BIO-2: Impacts on Vernal Pool Branchiopods and Western Spadefoot (Less than Significant with Mitigation)

All Program-level Components

Vernal pool branchiopods with the potential to occur in the study area include vernal pool fairy shrimp and vernal pool tadpole shrimp (*Lepidurus packardi*). These species could potentially occur within vernal pools located in the study area. Western spadefoot (*Spea hammondii*) also has the potential to occur in the study area and uses vernal pools as breeding habitat.

Grasslands and pastures within the study area have the potential to support vernal pool habitats. Proposed Program improvements that are not located in grasslands and pastures are not anticipated to have impacts on vernal pool habitat or inhabitants. If construction of Program components occurs in the microwatershed of vernal pools, such activity could result in sedimentation and alteration of hydrology and drainage patterns, which could impact habitat for vernal pool branchiopods and breeding habitat for western spadefoot. As described in Chapter 11, *Hazards and Hazardous Materials*, many water quality impacts associated with Proposed Program construction activities would be minimized or avoided through compliance with the NPDES General Construction Permit. All components with a footprint greater than one acre of disturbance area would be subject to this permit, which requires preparation and implementation of a SWPPP. As described in Section 12.2 in Chapter 12, *Hydrology and Water Quality*, the SWPPP must, among other things, present a list of BMPs that would be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Compliance with this permit and implementation of a SWPPP would reduce the potential for sediments and contaminants to enter pools or depressions where vernal pool branchiopods may occur and western spadefoot may breed, but construction impacts of individual Program components could nevertheless be significant. Implementation of Mitigation Measures BIO-3 and BIO-4 would reduce these impacts to **less than significant with mitigation**.

River Trunk Realignment Project

There is no habitat for vernal pool branchiopods within the vicinity of the River Truck Realignment Project; thus there would be **no impact**.

Overall Conclusion

Considering the WWMP components as a whole, no vernal pool branchiopods exist within the vicinity of the River Trunk Realignment Project, vernal pools are present in other locations throughout the study area and have potential to support vernal pool branchiopods. In the event that construction of program-level components occur in the microwatershed of vernal pools, impacts on vernal pool branchiopods and western spadefoot could occur. Implementation of Mitigation Measures BIO-3 and BIO-4 would minimize potential adverse effects. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation**.

Mitigation Measure BIO-3: Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat.

Applies to all Program-level components located in grasslands or pastures.

Prior to implementation of proposed CIPs in areas that could contain habitat for vernal pool branchiopods, the City shall retain a qualified biologist to conduct surveys to determine whether vernal pools or seasonal wetlands will be directly or indirectly affected by construction activities. If potential habitat for special-status invertebrate species is found, the City shall avoid any habitats that may support special-status species by establishing a buffer zone for each resource. The sizes of buffer zones shall be determined in consultation with the USFWS.

Mitigation Measure BIO-4: Minimize and Compensate for Impacts on Branchiopods, Western Spadefoot, and Their Habitat.

Applies to all Program-level components located in grasslands or pastures.

If direct or indirect impacts to habitat with the potential to support vernal pool branchiopods or potential western spadefoot breeding habitat cannot be avoided the City shall implement the following measures:

- After construction, restore surface topography and drainage to pre-construction conditions; and
- Provide off-site compensation for permanent, temporary, and indirect impacts at ratios determined through consultation with USFWS and CDFW. The performance standard shall be no net loss in acreage or habitat quality for vernal pool branchiopods and no net loss in breeding habitat quality or acreage for western spadefoot, as determined through consultation with USFWS and CDFW.

Impact BIO-3: Impacts on Valley Elderberry Longhorn Beetle (Less than Significant with Mitigation)

All Program-level Components

Valley elderberry longhorn beetle (VELB) is a federally-threated species, which is dependent on its host plant, elderberry. Elderberry shrubs may occur in riparian areas and along canals, or occasionally in non-riparian areas. Impacts of Proposed Program components located where elderberry shrubs are growing could include removal of elderberry shrubs, or ground disturbance within the rooting zone of these shrubs. If these shrubs were occupied by VELB, shrub removal or mortality could result in adverse effects on VELB. This would be considered a significant impact. Trimming of elderberry shrubs could result in injury or death of eggs, larva, or adults depending on the timing and extent of the trimming, a significant impact. No adverse impacts to the VELB would occur if trimming does not remove stems/branches that are ≥1 inch in diameter and is conducted between November and February (USFWS 2017i).

Implementation of **Mitigation Measures BIO-5 through BIO-7** would reduce impacts to VELB and its habitat to **less than significant with mitigation**.

River Trunk Realignment Project

During the reconnaissance survey, a blue elderberry shrub was observed near the exit pit for trenchless pipeline construction on the west side of Dry Creek. VELB exit holes were not observed on this shrub. Ground disturbance for this pit would be approximately 10 feet from the dripline of this shrub. Individual elderberry shrubs also have the potential to occur in riparian habitat along Dry Creek, but impacts to these shrubs and VELB would be avoided by the use of trenchless pipeline construction techniques.

Several blue elderberry shrubs were observed along the Tuolumne River in the vicinity of the Shackelford Pump Station. Ground disturbance for construction of the pump station would be approximately 40 feet from the dripline of these shrubs.

Impacts on VELB and its habitat would be significant. Implementation of Mitigation Measures BIO-5 through BIO-7 would reduce impacts to VELB and its habitat to **less than significant with mitigation.**

Overall Conclusion

The Proposed Program has could affect elderberry shrubs which provide habitat for VELB. If the shrubs are occupied and affected during construction, adverse effects on this federally-listed species could occur. Implementation of Mitigation Measures BIO-5 through BIO-7 would minimize adverse effects. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation**.

Mitigation Measure BIO-5: Avoid Impacts on VELB Habitat.

Applies to all Program-level Components and River Trunk Realignment Project

The City and/or its contractor(s) shall avoid riparian habitat and/or elderberry shrubs whenever possible. If an individual CIP is not within a riparian area, is located on an existing site or other developed area, or within the public right of way, any impacts to the VELB would not be expected to be substantial and therefore would not require mitigation. For proposed improvements that may potentially impact VELB habitat, following USFWS guidance, the Program sites and a 165-foot-wide buffer surrounding such sites will be surveyed and mapped by a qualified biologist for the presence of elderberry shrubs. If elderberry shrubs are present, to the extent feasible, the Program shall adhere to avoidance measures outlined in USFWS' Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*) (USFWS 2017f). This shall include the following avoidance measures:

- If elderberry shrubs are located in non-riparian area, a qualified biologist shall evaluate the shrubs for exit holes. If exit holes are present, the shrubs are considered suitable habitat and likely occupied. If exit holes are not present, the biologist shall evaluate whether known VELB occurrences are located within 2,625 feet of the CIP, whether the project site is near suitable riparian habitat, and any surrounding barriers to VELB dispersal.

- The City shall fence and flag all areas to be avoided during construction activities including all established elderberry shrubs within 165 feet of ground disturbing construction that shall not be impacted by construction activities.

- No open-cut construction or other ground disturbance shall occur within 20 feet of the dripline of elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level.

- A qualified biologist shall provide training for all contractors, work crews, and any onsite personnel on the status of the VELB, its host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for noncompliance.

- A qualified biologist shall monitor the work area at project-appropriate intervals to assure that all avoidance and minimization measures are implemented. The amount and duration of monitoring shall depend on the project specifics and should be discussed with USFWS.

- As much as feasible, all activities that could occur within 165 feet of an elderberry shrub, shall be conducted outside of the flight season of the VELB (March - July).

- If required, trimming of elderberry shrubs shall occur between November and February and shall avoid the removal of any branches or stems that are ≥ 1 inch in diameter.

- Herbicides shall not be used within the drip-line of the shrub. Insecticides shall not be used within 98 feet of an elderberry shrub. All chemicals shall be applied using a backpack sprayer or similar direct application method.

- Mechanical weed removal within the drip-line of the shrub shall be limited to the season when VELB adults are not active (August-February) and shall avoid damaging the elderberry.

- Erosion control shall be implemented and the affected area shall be re-vegetated with appropriate native plants.

If elderberry shrubs cannot be avoided, implement Mitigation Measure BIO-6.

Mitigation Measure BIO-6: Implement VELB Compensatory Mitigation, if Necessary.

Applies to all Program-level Components and River Trunk Realignment Project

The City shall implement the following measures. If feasible, any shrub that would be adversely impacted by the project shall be transplanted to a USFWS-approved location per Mitigation Measure BIO-7**.**

Impacts to VELB habitat shall be mitigated through purchase of compensatory mitigation credits from a USFWS-approved mitigation bank, or through on- or off-site mitigation. If on- or off-site mitigation is planned, a Compensatory Mitigation Proposal shall be developed and shall be subject to approval by USFWS.

Mitigation ratios shall be based on impacts to VELB habitat, as well as impacts to individual shrubs. One credit (unit) = 1,800 square feet. For habitat, the total amount of permanent disturbance in square feet should be calculated, the appropriate ratio

applied, and the total number divided by 1,800. Impacts to riparian habitat shall be mitigated at a 3:1 (acre(s) of credits: acre(s) of disturbance) ratio. For disturbance to elderberry shrubs in non-riparian habitat, a 1:1 ratio shall be used.

Impacts to individual shrubs in riparian areas may be replaced by the purchase of 2 credits at a USFWS-approved bank for each shrub impacted regardless of the presence of exit holes. Impacts to individual shrubs in non-riparian areas shall be replaced through a purchase of 1 credit at a USFWS-approved bank for each shrub that shall be impacted if exit holes have been found in any shrub on or within 165 feet of the project area.

Mitigation Measure BIO-7: Transplant Elderberry Shrubs if Avoidance Is Not Feasible.

Applies to all Program-level components and River Trunk Realignment Project

The City shall implement the following measures. If an elderberry shrub cannot be avoided or if indirect effects shall result in the death of stems or the entire shrub, then in addition to Mitigation Measure BIO-6, the shrub shall be transplanted.

Elderberry shrubs shall be transplanted as close as possible to their original location. Elderberry shrubs may be relocated adjacent to the project footprint if: 1) the planting location is suitable for elderberry growth and reproduction; and 2) the City is able to protect the shrub and ensure that the shrub becomes reestablished. If these criteria cannot be met, the shrub may be transplanted to an appropriate USFWS-approved mitigation site. Any elderberry shrub that is unlikely to survive transplanting because of poor condition or location, or a shrub that would be extremely difficult to move because of access problems, may not be appropriate for transplanting. The transplanting guidelines below shall be followed:

- A qualified biologist shall be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures.
- Exit-hole surveys shall be completed immediately before transplanting. The number of exit holes found, GPS location of the plant to be relocated, and the GPS location of where the plant is transplanted shall be reported to the Service and to the CNDDB.
- Elderberry shrubs shall be transplanted when the shrubs are dormant (November through the first two weeks in February) and after they have lost their leaves.
- Transplanting shall follow the most current version of the ANSI A300 (Part 6) guidelines for transplanting (www.tcia.org).

Impact BIO-4: Impacts on Special-status Fishes (Less than Significant with Mitigation)

Habitat in the study area for special-status fish species is limited to the Tuolumne River and Dry Creek. Special-status fish that are known to occur in the Tuolumne River include Chinook

salmon (Central Valley fall- and late fall-run ESU), Central Valley steelhead, Sacramento splittail, and hardhead. These species may also be present in Dry Creek.

Adult steelhead and Chinook salmon migrate through the Tuolumne River to reach spawning habitat upstream. Juvenile salmonids pass through the study area on their way out to the Pacific Ocean. Sacramento splittail may be present in this portion of the Tuolumne River in wet years. Hardhead are also known be present.

Sutter and Jennings Plant Components

Construction of proposed components at the Sutter and Jennings Plants would not occur in suitable habitat for special-status fishes. However, impacts to water quality due to construction of components near the Tuolumne River and the San Joaquin River could adversely affect special-status fishes. As discussed in Chapter 9, *Geology, Soils, and Seismicity,* construction of proposed components would include grading, excavation, trenching, or other construction-related activities that could loosen soils and increase the risk of erosion or sediment transport. Increases in sedimentation and turbidity have been shown to adversely affect fish physiology, behavior, and habitat. The effects of turbidity on fish include gill trauma, avoidance of habitat, changes in forage ability, increased predation risk, and reduced territoriality. The deposition of excessive fine sediment on the stream bottom could eliminate habitat for aquatic insects (a food source for fish); reduce density, biomass, numbers, and diversity of aquatic insects and aquatic vegetation; and reduce the quality of spawning habitat for fish. Potential impacts to special-status fish from water quality include reduction in habitat quality, injury, or mortality. These impacts would be considered significant.

As discussed in Chapter 12, *Hydrology and Water Quality*, water quality impacts of Program activities would be avoided or minimized through implementation of BMPs and compliance with the NPDES General Construction Permit and SWPPP requirements for Program components with a disturbance footprint greater than one acre. The City of Modesto's Standard Specifications require that all projects less than one acre develop a Local SWPPP or Erosion Control Plan and implement stormwater BMPs during construction. Implementing these requirements would prevent substantial stormwater- and erosion-related water quality impacts.

Construction activities that take place near these rivers could result in discharges of hazardous materials if adequate precautions are not taken, a significant impact. As described in Chapter 11, *Hazards and Hazardous Materials*, the City would comply with all local, state, and federal regulations concerning hazardous materials handling and containment during construction of Program components. This includes standards for any secondary containment and countermeasures for hazardous materials used in construction and operation, and spill response procedures in case of an accidental release. Implementation of these requirements would prevent substantial hazardous materials-related water quality impacts from occurring during construction activities. This impact would be **less than significant**.

Outfall Pipelines, Collection System Components A-1 and A-2, and River Trunk Realignment Project

Construction-related impacts to special-status fish and their habitat would be minimized by using trenchless construction techniques for the new pipelines crossing the Tuolumne River and Dry Creek, as well as rehabilitation of an existing pipelines crossing the Tuolumne River

and another crossing Dry Creek (Components A-1 and A-2.). Impacts to special-status fish and their habitat may result from a frac-out of drilling fluids. Drilling fluids typically consist of bentonite, which is non-toxic to aquatic life. However, a frac-out may result in a temporary increase in turbidity or sedimentation that can adversely affect aquatic organisms by covering spawning and feeding areas, and clogging fish gills. These impacts are considered significant. Mitigation Measure HYD/WQ-1 would be implemented to reduce impacts in the event of a frac-out. With implementation of Mitigation Measure HYD/WQ-1, this impact would be **less than significant with mitigation**.

Trenchless construction under the Tuolumne River and Dry Creek is unlikely to result in any noise or vibration impacts on fish. Vibration from the drilling machinery is minimal and because the tunneling operation occurs below the river, it would be attenuated to an imperceptible level before it reaches the river bottom. No perceptible noise or vibration is likely to translate into the water. There would be no impacts from noise or vibration from drilling machinery on special-status fishes.

Construction activities of program-level components could result in water quality impacts which could adversely affect special-status fish. For example, temporary increases in sediment discharges and increased turbidity, and in the event of an accidental spill, hazardous materials could adversely affect water quality. These impacts would be significant. Such impacts would be avoided or minimized through implementation of BMPs and compliance with the NPDES General Construction Permit, SWPPP, and Local SWPPP requirements. With implementation of Mitigation Measure HYD/WQ-1, impacts would be **less than significant with mitigation**.

Other Collection System Components

Aside from Components A-1 and A-2, no other WWMP components would occur near waterways where potential adverse effects on special-status fish species could occur. Therefore, construction of other collection system improvements would result in **no impact** on special-status fish.

Overall Conclusion

WWMP components near the Tuolumne River and Dry Creek could adversely affect special-status fish species due to construction-related effects on water quality (e.g., increased sedimentation, turbidity, and hazardous materials in the event of an accidental spill). Implementation of Mitigation Measure HYD/WQ-1 would minimize adverse effects on water quality and reduce adverse effects on special-status fish. In conclusion, implementation of this mitigation measure would reduce the Proposed Program's overall impact to **less than significant with mitigation**.

Impact BIO-5: Impacts on Western Pond Turtle (Less than Significant with Mitigation)

Outfall Pipelines, Collection System Components, and River Trunk Realignment Project

Potentially suitable habitat for western pond turtle occurs in the Tuolumne River and Dry Creek. Irrigation ditches with emergent vegetation provide marginally suitable habitat because they generally lack basking sites, the banks are very steep, and they are not perennially inundated. Canals do not provide suitable habitat.

Impacts to western pond turtle would be minimized by using trenchless pipeline construction where this species is most likely to occur, in the Tuolumne River and Dry Creek. The only collection system components that would cross the Tuolumne River and Dry Creek are Sewer Rehabilitation Components A-1 and A-2. The majority of collection system components would occur in urban portions of Modesto where habitat for western pond turtle is not present. Western pond turtle may also occur in upland areas. Construction activities that directly impact western pond turtle or their nests could result in significant impacts to this species.

The River Trunk Realignment Project crosses Dry Creek and the Tuolumne River, where there is suitable habitat for western pond turtle. The Dry Creek crossing would be a trenchless crossing, which would minimize impacts to western pond turtle. The west side of the pipeline connection for the crossing of the Tuolumne River is close to habitat for western pond turtle. Construction activities that directly impact western pond turtle or their nests in the vicinity of the Tuolumne River crossing could result in significant impacts to this species.

Mitigation Measure BIO-8 would avoid impacts to suitable habitat for this species to the extent feasible. Where disturbance of suitable habitat is unavoidable, the mitigation measure would require that impacts be minimized through pre-construction surveys, establishment of buffers, and monitoring. With implementation of this mitigation measure, impacts would be **less than significant with mitigation**.

Sutter and Jennings Plant Components

Wastewater treatment ponds provide potentially suitable habitat for this species (Rosenberg et al. 2009). Activities such as dredging in facultative ponds at the Jennings Plant could impact this species. Irrigation ditches with emergent vegetation provide marginally suitable habitat because they generally lack basking sites, the banks are very steep, and they are not perennially inundated.

Construction activities that directly impact western pond turtle or their nests could result in significant impacts to this species. Implementation of Mitigation Measure BIO-8 would reduce these impacts to **less than significant with mitigation.**

Overall Conclusion

While most collection system components would not occur near waterways, this species can occur in upland areas and in irrigation ditches. Construction activities in the vicinity of Tuolumne River or Dry Creek have higher potential to adversely affect western pond turtle or their nests. Implementation of Mitigation Measure BIO-8 would minimize adverse effects. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Mitigation Measure BIO-8: Conduct Preconstruction Surveys for and Minimize Impacts on Western Pond Turtle.

Applies to all Program-level components adjacent to rivers and creeks and the River Trunk Realignment Project

Preconstruction surveys for western pond turtles in suitable aquatic and upland habitat will be conducted by a qualified biologist 2 weeks before and 24 hours before the start of construction activities in streams, irrigation canals, ponds, and sloughs

where suitable habitat exists. If a western pond turtle is located within the construction area, it will be relocated out of this area (with authorization from the CDFW), and exclusion fence will be installed to prevent the movement of turtles back into the construction area. Additionally, the following minimization measures will be implemented.

- The project proponent will minimize grading and construction activities along the banks of streams, irrigation canals, and sloughs and within 1,000 feet of these areas between October 15 and April 15 in order to reduce potential mortality to hibernating western pond turtles.
- If a western pond turtle becomes trapped during construction activities within the waterway, the turtle will be removed from the work area and placed downstream from the project site (with authorization from CDFW).
- The construction area will be clearly defined, using orange barrier fencing, in order to minimize disturbance to riparian vegetation and western pond turtle habitat.
- If nesting areas for western pond turtles are identified in the study area during preconstruction surveys, a buffer of 300 feet will be established between the nesting site and the construction area. Buffers will be indicated by temporary fencing if construction begins before the nesting period ends (egg laying to emergence of hatchlings normally extends from April to November).

Impact BIO-6: Impacts on Burrowing Owl (Less than Significant with Mitigation)

All Program-level Components

Burrowing owls could occur within grasslands, agricultural habitats and canal and railroad right of ways where burrows are present. Collection system improvements, such as pipelines SO-2, SO-4, L-5, W-1, D-2, N-6, N-8, and N-9, and lift station LS#67 are located within agricultural lands. Collection system improvements such as EM-2, C-1, L-1, L-3, SO-1, SO-3, and N-5 and the third outfall pipeline are located in close proximity to agricultural lands. Rehabilitation pipeline B-1 is located within disturbed grassland and collection system improvements N-1 and N-2 are located near disturbed grassland habitat. If this species is present in the vicinity of Proposed Program-level components, construction activities could disturb burrowing owls through noise, visual distraction, or direct impacts to occupied habitat. These impacts would be considered significant. Implementation of Mitigation Measure BIO-9 would reduce impacts to this species. Where disturbance is unavoidable, impacts to burrowing owls would be minimized through establishing buffers around active burrows. If active burrows cannot be avoided, passive relocation techniques may be used. If relocation occurs, then compensation would be provided to offset impacts. With implementation of this mitigation measure, impacts would be **less than significant with mitigation**.

River Trunk Realignment Project

No evidence of burrowing owl was observed during reconnaissance surveys conducted in June 2017. Grassland habitat between Dry Creek and the River Trunk Pump Station site is

marginally suitable for burrowing owl. The majority of this habitat has been disked, eliminating the burrow that this species depends upon for habitat. Burrowing owls are not likely to occur where ground-disturbing activities would occur during construction of River Trunk Realignment Project. Therefore, impacts would be **less than significant**.

Overall Conclusion

While the River Trunk Realignment Project would be unlikely to have adverse effects on burrowing owl, construction activities associated with some program-level components could occur in grassland or agricultural habitats where burrowing owl may be present. If present, implementation of Mitigation Measure BIO-9 would minimize adverse effects on this species. In conclusion, implementation of this mitigation measure would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Mitigation Measure BIO-9: Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas If Necessary.

Applies to all Program-level components

Pre-construction surveys shall be conducted by a qualified biologist in all areas of suitable burrowing owl habitat within 250 feet of construction activity. Surveys shall be conducted within 14 days before the start of construction activity. If no work occurs for a period of 2 or more weeks during the nesting season, surveys must be performed before work is resumed. If no burrowing owls or signs of burrowing owls are detected during the survey, no further mitigation shall be required. If breeding or resident burrowing owls are located on or within 250 feet of the proposed construction site, the following measures shall be implemented.

If burrowing owls are detected, disturbance to burrows shall be avoided during the nesting season (February 1 through August 31). Buffers shall be established around occupied burrows in accordance with guidance provided in the Staff Report on Burrowing Owl Mitigation (CDFG 2012), and at the discretion of a qualified wildlife biologist. Buffers around occupied burrows shall be a minimum of 656 feet (200 meters) during the breeding season, and 160 feet (100 meters) during the non-breeding season. Buffer distances shall be subject to the approval of CDFW.

If occupied burrows cannot be avoided, passive owl relocation techniques may be implemented outside of the nesting season (February 1 through August 31). Owls would be excluded from burrows within 160 feet of construction by installing one-way doors in burrow entrances. The work area shall be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities. Where possible burrows shall be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

If occupied burrows are relocated, the City shall enhance or create burrows in adjacent habitat at a 1:1 ratio (burrows destroyed to burrows enhanced or created) one week prior to implementation of passive relocation techniques. If burrowing owl habitat enhancement or creation takes place, the City shall develop and implement a monitoring and management plan to assess the effectiveness of the mitigation. The plan shall be subject to the approval of CDFW.

Impact BIO-7: Impacts on Golden Eagle and Bald Eagle (Less than Significant)

Golden eagle and bald eagle are State Fully Protected species. CDFW cannot authorize take of these species. Golden eagles have been observed at the Jennings Plant (eBird 2017a), and are commonly observed in the canyons/foothills to the west of the study area. In central California, golden eagles nest primarily in large trees and cliffs within open grasslands and oak savanna, and occasionally in oak woodland and open shrublands (Hunt et al. 1999). The study area provides marginal foraging habitat and nesting is unlikely.

Bald eagles have been observed in canyons/foothills to the west of the study area and at Jennings Plant (eBird.org 2017a). In California, the majority of bald eagles nest in conifer trees near reservoirs (Jackman and Jenkins 2004). Typically, bald eagles forage near open water (rivers, lakes, reservoirs) where fish or waterfowl are abundant (USFWS 2007). The Tuolumne River, San Joaquin River, and possibly the Jennings Plant, provide potential foraging habitat. Large trees along the San Joaquin River and Tuolumne River are potential roost sites. Bald eagles are generally winter visitors in the Central Valley; nesting within the vicinity of the study area is unlikely. There are no published reports of nest sites on the San Joaquin Valley floor.

Impacts to non-breeding golden and bald eagles may include visual distractions, noise, and possibly temporary displacement from suitable foraging areas. Project activities are not likely to reduce fitness, affect breeding, result in "take" of these species, or result in any substantial adverse impacts to eagles. Therefore, impacts to golden and bald eagles would be **less than significant**.

Impact BIO-8: Impacts on Raptors, Including Special-status Species (Less than Significant with Mitigation)

Numerous raptors are known to nest and forage in habitats in the study area. Non-listed raptors commonly observed in the vicinity of the study area include red-tailed hawk, American kestrel, red-shouldered hawk, and merlin (*Falco columbarius*), among others. Special-status raptors (excluding burrowing owls, golden eagle, and bald eagle) known to occur in the vicinity of the study area include Swainson's hawk, white-tailed kite, and northern harrier (Table 7-1). These species have been observed in the study area and are known to nest locally. Riparian trees along the Tuolumne River and Dry Creek provide potential nesting habitat for Swainson's hawk and white-tailed kite; isolated mature trees in adjacent fields may also be used for nesting. These raptors commonly forage in agricultural fields. Northern harriers nest on the ground in open areas, and may nest in agricultural fields. Program components in the vicinity of suitable nesting habitat for Swainson's Hawk and white-tailed kite include the third outfall, sewer rehabilitation components C-1, CT-1, B-1, RT-9, RT-10, treatment plant components, and the River Trunk Realignment Project.

Construction in the vicinity of raptor nest sites could disturb nesting raptors through generation of noise, visual distraction, or direct impacts to occupied nests (e.g., tree removal or ground disturbance). Impacts to Swainson's hawk and white-tailed kite would be minimized by using trenchless construction techniques for crossing of the Tuolumne River and Dry Creek, where nesting is most likely to occur. However, special-status raptors could nest in relatively close proximity to trenchless construction operations, and in other portions of the Program area. For the River Trunk Realignment Project, special-status species such as Swainson's hawk and white-tailed kite could nest in riparian habitat adjacent to the entry and

exit pits for the trenchless crossing of Dry Creek. Noise from construction equipment could disturb nesting raptors in these areas, if present. Thus, there would be the potential for disturbance of nesting raptors. Impacts that result in nest abandonment, nest failure, or reduced health or vigor of nestlings are considered significant.

Horizon biologists have conducted protocol surveys for Swainson's hawk in Stanislaus County annually since 2012. The surveys have documented nest sites and successful fledging of juveniles from nests located adjacent to busy roads, railroad tracks, residences, industrial sites, commercial businesses, and various agricultural operations. Swainson's hawks observed during numerous surveys appear to be tolerant of human activity. Bechard et al. 2010 report that Swainson's hawk are generally tolerant of regular, ongoing human activities around nest sites in agricultural and urban landscapes, but may abandon nest in response to loud, irregular, unpredictable activities. It is possible that construction equipment, worker vehicles, and increased human presence during construction of proposed CIPs may cause physiological stress resulting in nest abandonment or behavior modification that may indirectly lead to nesting failure or mortality of Swainson's hawk chicks. Direct mortality or injury from proposed construction activities is unlikely.

Construction of program-level components such as those planned at the Jennings Plant (e.g., new sludge drying beds) could result in the loss of suitable foraging habitat for Swainson's hawk. This impact would be considered significant.

Construction of the River Trunk Realignment Project would result in temporary disturbance of foraging habitat for Swainson's hawk in the grassland to the west of the Dry Creek Crossing. It would also result in permanent loss of approximately 0.3 acre of marginally suitable foraging habitat in the footprint of the Shackelford pump station. This impact would be considered significant.

Implementation of Mitigation Measure BIO-10 (Avoid, Minimize, or Compensate for Impacts on Raptors, including Special-status Species), which would require preconstruction surveys for nesting raptors and establishment of no-disturbance buffers, and Mitigation Measure BIO-11 (Compensate for Loss of Raptor Foraging Habitat), which would require mitigation for the loss of suitable foraging habitat, would reduce this impact to **less than significant with mitigation.** Implementation of Mitigation Measure BIO-11 for the River Trunk Realignment Project would result in provision of 0.3 to 0.6 acre of Swainson's hawk habitat management lands, the amount depending upon percentage of active management of the lands (see Mitigation Measure BIO-11 for details). Alternatively, 0.3 acre of Swainson's hawk mitigation credit may be purchased from a CDFW-approved Swainson's hawk foraging habitat mitigation bank that covers the Proposed Program area,

Mitigation Measure BIO-10: Avoid and Minimize Impacts on Raptors, including Special-status Species.

Applies to all Program-level components and River Trunk Realignment Project

The City shall implement the following measures. If ground and vegetation disturbing activities occur between February 1 and August 31, the City shall conduct a nesting raptor survey, with a focus on Swainson's hawk and white-tailed kite, in accordance with Recommended Timing and Methodology for Swainson's Hawk Nesting Survey's in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000, or current CDFW guidance). Surveys shall cover a minimum of a 0.5-mile radius

around potentially suitable nesting habitat for Swainson's hawk and white-tailed kite. Agricultural lands within 500 feet of ground disturbing construction activities shall be surveyed for northern harrier nests.

If nesting raptors are detected, the City shall establish a 500-foot no-disturbance buffer around the nest. No construction activities shall be initiated within the buffer until fledglings are fully mobile and no longer reliant upon the nest or parental care for survival.

Mitigation Measure BIO-11: Compensate for Loss of Raptor Foraging Habitat.

Applies to all Program-level components and River Trunk Realignment Project

The City shall implement the following measures. To mitigate for the loss of potential Swainson's Hawk foraging habitat, the City shall provide off-site habitat management lands, as described in the CDFW protocol for the mitigation of impacts on Swainson's hawks in the Central Valley (CDFG 1994), or by purchasing credits at a CDFW-approved Swainson's hawk foraging habitat mitigation bank that covers the study area, such as the Dutchman Creek Conservation Bank.

The City shall determine the final acreage of off-site management lands or mitigation bank credits to be provided based on the CDFW protocol (CDFG 1994). For the purposes of this mitigation measure, all program-level components are assumed to be within 1 mile of an active Swainson's hawk nest tree. Mitigation credits would follow the same ratio guidelines as off-site management lands. The City shall compensate for losses as follows:

- 1 acre of habitat management land for each acre of development authorized (1:1 ratio), at least 10% of which shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90% protected by a conservation easement acceptable to CDFW on agricultural lands or other suitable habitats that provide foraging habitat for Swainson's hawk; or

- 0.5 acre of habitat management land for each acre of development authorized (0.5:1 ratio), all of which shall be met by fee title acquisition or a conservation easement acceptable to CDFW that allows for the active management of the habitat for prey production on the habitat management lands.

The City shall provide for the long-term management of the habitat management lands by funding a management endowment (the interest on which shall be used for managing the habitat management lands). If mitigation credits are purchased, long term management would be the responsibility of the mitigation bank.

Impact BIO-9: Impacts on Special-status Passerine Species and Birds Protected under the MBTA (Less than Significant with Mitigation)

Sutter and Jennings Plant Components

Special-status passerines that may nest in the vicinity of the Sutter and Jennings Plants include tricolored blackbird (*Agelaius tricolor*), loggerhead shrike (*Lanius ludovicianus*),

yellow-breasted chat (*Icteria virens*) and yellow warbler (*Dendroica petechia*). Various birds, such as red-winged blackbird (*Agelaius phoeniceus*), cliff swallow (*Petrochelidon pyrrhonota*), and mourning dove (*Zenaida macroura*), protected by the MBTA could also occur in the vicinity of proposed components at the Sutter and Jennings Plant.

Construction could disturb nesting passerines through generation of noise, visual distraction, or direct impacts to occupied nests (e.g., vegetation removal or ground disturbance). Nest failure or removal of a nest are considered significant impacts.

Implementation of Mitigation Measure BIO-12 would minimize impacts to passerines by conducting pre-construction surveys during the nesting season and establishing buffers around active nests. With implementation of this mitigation measure, impacts would be **less than significant with mitigation**.

Outfall Pipelines, Collection System Components, and River Trunk Realignment Project

Portions of the proposed outfall pipeline alignments, collection system components, and the River Trunk Realignment Project cross sensitive habitat in the Tuolumne River and Dry Creek where nesting of special-status passerines are most likely to occur. The only collection system components that would cross these habitats are Sewer Rehabilitation Components A-1 and A-2. Impacts would be minimized by using trenchless construction techniques for activities crossing these habitats. However, construction could still disturb nesting passerines or other birds protected by the MBTA through generation of noise, visual distraction, or direct impacts to occupied nests (e.g., vegetation removal or ground disturbance). Reconnaissance surveys for the River Trunk Realignment Project identified swallow nests on the 9th Street Bridge, and other birds protected by the MBTA may nest in proximity to the project site. Additionally, nesting birds protected by the MBTA could occur in the vicinity of proposed outfall pipeline alignments, collection system components. Nest failure or removal of a nest are considered significant impacts. Implementation of Mitigation Measure BIO-12 would minimize impacts to passerines by conducting pre-construction surveys during the nesting season and establishing buffers around active nests. With implementation of this mitigation measure, impacts would be **less than significant with mitigation**.

Overall Conclusion

Construction activities that take place at the Sutter and Jennings Plants, Tuolumne River and Dry Creek could affect habitat where special-status passerines are likely to be present. Implementation of Mitigation Measure BIO-12 would minimize adverse effects by conducting pre-construction surveys during nesting season and establishing buffers around active nests. In conclusion, implementation of this mitigation measure would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Mitigation Measure BIO-12: Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas If Necessary.

Applies to all Program-level components and River Trunk Realignment Project

The City shall implement the following measures. If construction activities occur during the breeding season (February 15–August 31), a pre-construction survey shall be conducted by a qualified biologist in all areas of suitable nesting habitat within 500 feet of construction activity. Surveys shall be conducted within 14 days before the

start of construction activity. If no work occurs for a period of 2 or more weeks during the nesting season, surveys must be performed before work is resumed. If the survey indicates that no active nests are found, no further mitigation shall be required.

If active nests are identified, appropriate no-disturbance buffers around nests shall be established. No-disturbance buffers around special-status passerine nests shall be 500 feet. No disturbance buffers for non-listed birds protected under the MBTA and Fish and Game Code sections 3503 and 3513 will be established by a qualified biologist familiar with the life history and reproductive strategies of the nesting species. The buffer widths will be based on species' sensitivity to disturbance (as documented in peer-reviewed literature), planned construction activities, and baseline level of human activity. The buffers will be clearly marked in the field with flagging or fencing. No work shall commence within the buffer until the young have fledged or the nest is deemed inactive.

Impact BIO-10: Impacts on Special-status Mammals (Less than Significant)

Special-status mammals with the potential to occur in the vicinity of the proposed outfall pipeline components and collection system component sites include western red bat (*Lasiurus blossevillii*) and American badger (*Taxidea taxus*). Breeding of western red bats are strongly associated with Central Valley riparian habitat, especially mature stands of cottonwoods (*Populus* spp.) and sycamores (*Platanus* racemosa) (Pierson et al. 2006), and may roost in trees along the Tuolumne River and Dry Creek. The only collection system components that would cross these habitats are Sewer Rehabilitation Components A-1 and A-2. It riparian trees would be removed for construction of these two components. Non-riparian trees in the vicinity of proposed collection system components are generally located in areas with a relatively high level of human activity. The proximity to human activity makes it unlikely that these trees would be used as special-status bat habitat. The Tuolumne River floodplain provides potential foraging and dispersal habitat for badgers. Impacts to western red bat and American badger would be minimized by using trenchless construction techniques in the riparian areas where these species may occur. For these reasons, impacts to special-status mammals would be less than significant.

Special-status mammals are unlikely to occur in the vicinity of Sutter and Jennings Plant components. These wastewater treatment plants are within the range of Townsend's big-eared bat (*Corynorhinus townsendii*), and this bat is known to roost in buildings and other structures. However, this species is very sensitive to human disturbance and would not be likely to occur within structures at either treatment plant. Impacts to special-status mammals would be less than significant.

In the vicinity of the River Trunk Realignment Project, the Dry Creek riparian area provides potential foraging and dispersal habitat for badgers. Impacts to western red bat and American badger would be minimized by using trenchless construction techniques in the riparian areas where these species may occur. Removal of suitable special-status bat roosting habitat is unlikely for this project. Due to avoidance of suitable habitat for special-status mammals, impacts on these species would be unlikely.

For the reasons described in the paragraphs above, the Proposed Program as a whole would have **less-than-significant** impacts on special-status mammals.

Impact BIO-11: Impacts on Riparian Habitat and Other Sensitive Natural Communities (Less than Significant with Mitigation)

Outfall Pipelines, Collection System Components, and River Trunk Realignment Project

Portions of the proposed outfall pipeline components, collection system components, and River Trunk Realignment Project would traverse riparian habitat and associated wetlands. The proposed outfall pipeline components and Sewer Rehabilitation Component A-2 would cross riparian habitat in the Tuolumne River and Sewer Rehabilitation Component A-1 would cross Dry Creek. The River Trunk Realignment Project would cross riparian habitat associated with Dry Creek. Impacts to riparian habitat would be avoided by the use of trenchless construction techniques in riparian habitat. If a frac-out were to occur beneath riparian habitat, direct impacts on this habitat could occur.

Additionally, vernal pool habitat may be present in areas where outfall pipelines and collection system components would be constructed in grasslands and pastures. Construction-related impacts on vernal pool habitats could include sedimentation or alteration in drainage patterns. These impacts are considered significant. SWPPP and Local SWPPP requirements would reduce sedimentation. Implementation of Mitigation Measure HYD/WQ-1, which would require preparation of a frac-out Contingency Plan; and Mitigation Measures BIO-3 and BIO-4, which would require avoidance and/minimization of impacts on vernal pools, would reduce this impact to **less than significant with mitigation**.

Sutter and Jennings Plant Components

Proposed components at the Jennings and Sutter Plants would generally take place in urban/developed habitats, and would not occur in sensitive natural communities. This impact would be to **less than significant**.

Overall Conclusion

Considering the WWMP components as a whole, while proposed construction activities at the Jennings and Sutter Plants would not affect sensitive natural communities, construction of other components would traverse riparian habitat and could result in adverse effects to this natural community in the event of a frac-out. Effects on vernal pool habitat could also occur due to construction of some program-level components. These impacts would be significant. SWPPP and Local SWPPP requirements would reduce adverse effects. Implementation of Mitigation Measures HYD/WQ-1 would minimize adverse effects. In conclusion, implementation of Mitigation Measures BIO-3 and BIO-4 would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Impact BIO-12: Impacts on Federally Protected Wetlands (Less than Significant with Mitigation)

Collection System Components (except A-1 and A-2), Stormwater/Sanitary Sewer Disconnection, and Other City-wide Projects

The study area contains wetlands and waters that are likely to be regulated by the USACE and USEPA under Section 404 the CWA. In the study area, the Tuolumne River is considered Traditional Navigable Waters of the U.S., as is the San Joaquin River adjacent to the Jennings Plant. Other wetlands and waters with a "significant nexus" to the Tuolumne or San Joaquin River would also be considered jurisdictional waters of the U.S. Wetlands and waters would

be preliminarily identified. Drainages excavated wholly in uplands and draining only uplands are not likely to be jurisdictional features.

Program components located in or adjacent to wetlands and waters could cause significant impacts to wetlands or waters through temporary or permanent fill, and erosion or sedimentation. Implementation of SWPPP and Local SWPPP requirements would reduce sedimentation, Mitigation Measure BIO-13, which would avoid and minimize impacts to wetlands to the maximum extent practicable; and Mitigation Measure BIO-14, which requires regulatory permits for work in wetlands and waters and compensatory mitigation for unavoidable impacts to wetlands and waters, would reduce this impact to **less than significant with mitigation**.

Sutter and Jennings Plant Components

Wetlands within the spray fields associated with the Jennings Plant, if any, as well as treatment ponds associated with the Sutter Plant and the Jennings Plant are also not likely to be considered jurisdictional because they are artificially irrigated areas, which would revert to upland if the irrigation ceased, and artificial ponds created by excavating dry land used exclusively for such wastewater treatment. Impacts to these features, such as dredging in facultative ponds would be considered **less than significant**.

Outfall Pipelines and Components A-1 and A-2

These Program components and the River Trunk Realignment Project would avoid impacts on wetlands and waters through the use of trenchless pipeline construction for crossings of Dry Creek and the Tuolumne River. If a frac-out were to occur beneath wetlands, significant direct impacts could occur. Implementation of Mitigation Measure HYD/WQ-1, which requires preparation of a Frac-out Contingency Plan would reduce impacts to wetlands and waters. Other significant impacts to wetlands and waters could occur through temporary or permanent fill, and erosion or sedimentation. Implementation of SWPPP and Local SWPPP requirements, would reduce erosion and sedimentation impacts. Implementation of Mitigation Measures **BIO-13 (Avoid and Minimize Impacts on Federally Protected Wetlands)**, and **BIO-14 (Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State)** would reduce this impact to **less than significant with mitigation**.

River Trunk Realignment Project

The River Trunk Realignment Project would avoid impacts on wetlands and waters through the use of trenchless pipeline construction for the crossing of Dry Creek. This would completely avoid fill in federally-protected wetlands. If a frac-out were to occur beneath wetlands, significant direct impacts could occur. Implementation of Mitigation Measure HYD/WQ-1, which requires preparation of a Frac-out Contingency Plan would reduce the potential for impacts to wetlands and waters. The crossing of the Tuolumne River would be accomplished by connecting into existing siphons. Implementation of Mitigation Measures HYD/WQ-1, BIO-13 and BIO-14, and by complying with SWPPP requirements in the NPDES Construction General Permit, would reduce this impact to **less than significant with mitigation**.

Overall Conclusion

Although activities at the Sutter and Jennings Plants would not likely impact wetlands or waters of the U.S., other program-level components could result in such impacts including those that would take place near Dry Creek and the Tuolumne River. Implementation of SWPPP and Local SWPPP requirements, would reduce erosion and sedimentation impacts. Implementation of Mitigation Measures HYD/WQ-1, BIO-13, and BIO-15 would minimize adverse effects. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Mitigation Measure BIO-13: Avoid and Minimize Impacts on Federally Protected Wetlands.

Applies to Outfall Pipelines, Collection System Components, and River Trunk Realignment Project.

The City shall implement the following measures. To the extent feasible, proposed construction activities shall avoid federally protected wetlands.

If complete avoidance of wetlands is not possible, a jurisdictional wetland delineation shall be conducted for the project site, which will be used during implementation of Mitigation Measure BIO-14. For all activities greater than one acre of disturbance, a SWPPP shall be implemented to reduce the potential for sediment and contaminants to enter wetlands and waters, and for all activities less than one acre of disturbance, a Local SWPPP shall be implemented. After construction, surface topography and drainage shall be restored to pre-construction conditions. Where appropriate, revegetation shall be implemented with site-adapted native plant species.

Mitigation Measure BIO-14: Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State.

Applies to Outfall Pipelines, Collection System Components, and River Trunk Realignment Project.

The City shall implement the following measures. Work within areas defined as waters of the U.S. and State that includes placement of fill will require a CWA Section 404 permit and Section 401 Water Quality Certification. All work proposed in jurisdictional waters of the U.S. shall be authorized under these permits, and the work shall comply with the general and regional conditions of the permits. In areas where disturbance to jurisdictional waters or wetlands occurs, the City shall implement mitigation consistent with the terms of a CWA Nationwide Permit and/or the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (73 Fed. Reg. S19594). Compensatory mitigation may include creation, reestablishment, or enhancement of wetlands in the study area or at an off-site location. Compensatory mitigation may also include purchase of credits at an approved mitigation bank or contribution to an approved in-lieu fee program.

Impact BIO-13: Impacts on Wildlife Movement, Established Wildlife Corridors, or the Use of Native Wildlife Nursery Sites (Less than Significant with Mitigation)

Sutter and Jennings Plant Components and Collection System Components (except A-1 and A-2)

The majority of Sutter and Jennings Plant components and Collection System Components (except Components A-1 and A-2, addressed below) would be constructed in previously developed areas or agricultural lands that do not function as a significant movement corridor for fish and wildlife. Some wildlife breeding does occur in agricultural lands and wetlands, as described in Section 7.3.3. At the Jennings Plant, the new DAF Effluent Pipeline to Irrigation Forebay would be constructed within approximately 1,250 feet of the San Joaquin River, but this component is on the opposite side of the levee for the river and is unlikely to cause significant impacts on wildlife movement or breeding.

Impacts on breeding wildlife would be minimized by conducting pre-construction surveys during the breeding season (through implementation of Mitigation Measures BIO-9, BIO-10, and BIO-12). Open-cut pipeline construction, such as for Jennings Plant pipelines, would create temporary barriers to wildlife movement in agricultural lands and ruderal habitat and result in a significant impact. Impacts of open-cuts on wildlife movement would be minimized by implementation of **Mitigation Measure BIO-15 (Install Temporary Trench Plates over Open Trenches)**, which requires that trenches be covered at the end of each work day. Some mature trees which provide suitable nesting habitat for raptors may be removed during construction, but outside of the raptor nesting season. In addition, impacts to breeding wildlife would be minimized by conducting pre-construction surveys during the breeding season and implementing appropriate measures, such as no-work buffer areas if necessary, to minimize impacts on breeding wildlife (see Mitigation Measures BIO-8, BIO-9, BIO-11, and BIO-12). These Program Components would not create any permanent barriers to wildlife movement or permanently disrupt breeding sites. With implementation of the above mitigation measures, impacts would be **less than significant with mitigation**.

Outfall Pipelines, Components A-1 and A-2, and River Trunk Realignment Project

As described in Section 7.3.3, several fish and wildlife species utilize the Tuolumne River, and to a lesser degree Dry Creek, and adjacent riparian habitat as breeding sites and a migration corridor. Additionally, wildlife breeding does occur in agricultural lands and non-riparian wetlands. Impacts to wildlife migration and breeding in these riverine and riparian areas would be avoided by the use of trenchless construction methods.

In addition, impacts to breeding wildlife would be minimized by conducting pre-construction surveys during the breeding season (see Mitigation Measures BIO-8, BIO-9, BIO-11, and BIO-12). Open-cut pipeline construction would create temporary barriers to wildlife movement, a significant impact Impacts of open-cuts on wildlife movement would be minimized by implementation of Mitigation Measure BIO-15, which requires that trenches be covered at the end of each work day. Some mature trees which provide suitable nesting habitat for raptors may be removed during construction, but outside of the raptor nesting season. These Program Components and the River Trunk Realignment Project would not create any permanent barriers to wildlife movement or permanently disrupt breeding sites. With

implementation of the above mitigation measures, impacts would be **less than significant with mitigation**.

Overall Conclusion

Construction of most WWMP components would occur in developed areas or agricultural lands that do not function as wildlife movement corridors for fish and wildlife but open-cut pipeline construction could temporarily create barriers to wildlife movement. Implementation of Mitigation Measures BIO-8, BIO-9, BIO-10, BIO-11, BIO-12, and BIO-15 would minimize adverse effects. In conclusion, implementation of these mitigation measures would reduce the Proposed Program's overall impact to **less than significant with mitigation.**

Mitigation Measure BIO-15: Install Temporary Trench Plates over Open Trenches.

Applies to all Program-level Components and River Trunk Realignment Project

The City shall implement the following measure. During open-cut construction of pipelines, the City shall install temporary trench plates over open trenches at the end of each work day.

Impact BIO-14: Conflict with Local Ordinances or Policies Protecting Biological Resources (Less than Significant with Mitigation)

Implementation of Mitigation Measures BIO-1 through BIO-15 would ensure that the Proposed Program would be consistent with all local ordinances and policies protecting biological resources, reducing impacts to a level that is **less than significant with mitigation**.

Chapter 8
CULTURAL, PALEONTOLOGICAL, AND TRIBAL CULTURAL RESOURCES

8.1 Overview

This chapter describes the regulatory setting, the study area's cultural resources setting, and impacts of the Proposed Program related to cultural and paleontological resources. Cultural resources include prehistoric and historic-era archaeological sites; tribal cultural resources (TCRs) or traditional cultural properties (TCPs); and historic-era buildings, structures, landscapes, districts, and linear features. Prehistoric archaeological sites are places where Native Americans lived or carried out activities during the prehistoric period, which is generally defined as before the early 1800s in the study area. Historic-era archaeological sites reflect the activities of people after initial exploration and settlement in the region during the early 1800s. Native American sites can also reflect the historic era. Prehistoric and historic-era sites may contain artifacts, cultural features, subsistence remains, and/or human burials. TCRs are sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe. TCPs can include TCRs, but they also encompass resources that are culturally important to any community.

Paleontological resources are the fossil remains of prehistoric flora and fauna, or traces of evidence of the existence of prehistoric flora and fauna. This chapter addresses the occurrence of paleontological resources within the Program area and the impact that construction activities and operation of the Proposed Program will have on scientifically important fossil remains, as identified in the State CEQA Guidelines. The analysis presented in this chapter conforms to the Society of Vertebrate Paleontology criteria.

The purpose of this chapter is to describe the regulatory setting associated with cultural resources (including TCRs), and paleontological resources, the affected environment for these resources, Program impacts on cultural and paleontological resources, and mitigation measures that would reduce these impacts.

The following key data sources support this chapter:

- Records search from the North Central Information Center of the California Historical Resources System at California State University, Sacramento;
- Files search from the California Native American Heritage Commission (NAHC); and
- The City of Modesto, City of Ceres, and Stanislaus County general plans.

8.2 Regulatory Setting

8.2.1 Federal Laws, Regulations, and Policies

National Historic Preservation Act and Implementing Regulations

The River Trunk Realignment Project would require a permit from USACE under Section 404 of the CWA. Other future program-level components may also require a permit from USACE under Section 404 of the CWA as well. Projects that require federal permits, receive federal funding, or are located on federal lands must comply with 54 USC 306108, formally and more commonly known as Section 106 of the National Historic Preservation Act (NHPA). To comply with Section 106, a federal agency must "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places." The implementing regulations for Section 106 are found in 36 CFR Part 800, as amended (2004).

The implementing regulations of the NHPA require that cultural resources be evaluated for their eligibility to be listed in the National Register of Historic Places (NRHP) if they cannot be avoided by an undertaking or project. To determine if a site, district, structure, object, and/or building is significant, the NRHP Criteria for Evaluation are applied. Pursuant to 36 CFR Part 60.4, a resource is significant and considered a historic property when it:

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

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

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

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

In addition, 36 CFR Part 60.4 requires that, to be considered significant and historic, a resource must also exhibit the quality of significance in American history, architecture, archaeology, engineering, or culture and must possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Other "criteria considerations" need to be applied to religious properties, properties that are less than 50 years old, a resource no longer situated in its original location, a birthplace or grave of a historical figure, a cemetery, a reconstructed building, and commemorative properties. These types of properties are typically not eligible for NRHP inclusion unless the criteria for evaluation and criteria considerations are met.

For archaeological sites evaluated under criterion D, "integrity" requires that the site remain sufficiently intact to convey the expected information to address specific important research questions.

TCPs are locations of cultural value that are historic properties. A place of cultural value is eligible as a TCP "because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990, rev. 1998). A TCP must be a tangible property, meaning that it must be a place with a referenced location, and it must have been continually a part of the community's cultural practices and beliefs for the past 50 years or more.

Federal law does not address TCRs as those resources are defined in the California Public Resources Code (Pub. Res. Code). However, TCRs are a category of TCP and would be addressed in the same manner as TCPs under federal law.

Note that, typically, USACE consultation is specifically limited to those Program and Project areas under USACE jurisdiction (i.e., activities to be conducted within Waters of the U.S.).

8.2.2 State Laws, Regulations, and Policies

CEQA and State CEQA Guidelines

Section 21083.2 of CEQA requires that the lead agency determine whether a project may have a significant effect on unique archaeological resources. A unique archaeological resource is defined in CEQA as an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it:

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

Special limitations on measures to avoid, conserve, preserve, or mitigate significant effects on unique archaeological resources are also provided under Public Resources Code Section 21083.2. These limitations do not apply if an archaeological site is also a CEQA-defined "historical resource," as defined below (State CEQA Guidelines Secion15064.5[c]).

Section 15064.5 of the State CEQA Guidelines notes that, "a project with an effect 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." Substantial adverse changes include physical changes to the historical resource or to its immediate surroundings, such that the significance of the historical resource would be materially impaired. Lead agencies must identify potentially feasible measures to mitigate significant adverse changes in the significance of a historical resource before they approve such projects. "Historical resources" are those that are:

- listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (Pub. Res. Code Section 5024.1[k]);

- included in a local register of historic resources (Pub. Res. Code Section 5020.1) or identified as significant in an historic resource survey meeting the requirements of Pub. Res. Code Section 5024.1(g); or

- determined by a lead agency to be historically significant.

State CEQA Guidelines Section 15064.5 also prescribes the processes and procedures found under California Health and Safety Code Section 7050.5 and Pub. Res. Code Section 5097.95 for addressing the existence of, or probable likelihood of, Native American human remains, as well as the unexpected discovery of any human remains within the project site. This includes consultation with the appropriate Native American tribes.

State CEQA Guidelines Section 15126.4 provides further guidance about minimizing effects to historical resources through the application of mitigation measures. Mitigation measures must be legally binding and fully enforceable.

The lead agency having jurisdiction over a project is also responsible to ensure that paleontological resources are protected in compliance with State CEQA Guidelines and other applicable statutes.

Assembly Bill No. 52, which was approved in September 2014 and which went into effect on January 1, 2015, requires that lead agencies consult with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of a proposed project, if so requested by the tribe. The bill, chaptered in State CEQA Guidelines Section 21084.2, also specifies that a project with an effect that may cause a substantial adverse change in the significance of a TCR is a project that may have a significant effect on the environment.

Defined in Pub. Res. Code Section 21074 (a, b, and c), TCRs are:

(A.1) Sites, features, places, cultural landscapes, sacred places and objects with cultural value to a California Native American tribe that are either of the following:

a. Included or determined to be eligible for inclusion in the CRHR; or

b. Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(A.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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(B) A cultural landscape that meets the criteria of subdivision (a) is a TCR to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; and

(C) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique

archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms to the criteria of subdivision (a).

AB 52 establishes a consultation process between California Native American tribes and lead agencies. A lead agency must notify a tribe of proposed CEQA projects if the tribe has submitted a request to a lead agency to be so notified. The lead agency then provides the tribe with formal notice of CEQA projects, and the tribe must request formal consultation within 30 days of receiving notice. As part of formal AB 52 consultation, measures for TCRs must be developed in consultation with the affected California Native American tribe pursuant to Pub. Res. Code Section 21080.3.2. Pub. Res. Code Section 21084.3 identifies mitigation measures that include avoidance and preservation of TCRs; treating TCRs with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource; conservation easements; and protecting the resource.

California Register of Historical Resources

Pub. Res. Code Section 5024.1 establishes the CRHR. The register lists all California properties considered to be significant historical resources. The CRHR includes all properties listed as or determined to be eligible for listing in the NRHP, including properties evaluated under Section 106 of the NHPA. The criteria for listing are similar to those of the NRHP. Criteria for listing in the CRHR include resources that:

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

2) Are associated with the lives of persons important in our past;

3) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or

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

The regulations set forth the criteria for eligibility as well as guidelines for assessing historical integrity and resources that have special considerations.

8.2.3 Local Laws, Regulations, and Policies

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (City of Modesto 2019a) contains a progressive and extensive list of policies related to archaeological and cultural resources under Chapter VII, Environmental Resources, Open Spaces and Conservation. As is often the case with general plans that involve historic urban centers, many of the City of Modesto's policies focus on the preservation of buildings that reflect the history and historic character of the city. Because the Proposed Program will not directly impact the buildings in Modesto's historic district, those policies will not be presented here in detail. It is sufficient to note that projects involving the demolition or alteration of buildings aged 50 years or older will require evaluation for NRHP and CRHR eligibility, if the buildings haven't previously been evaluated, by a professional historian or architectural historian prior to project approval. This requirement is also applicable when construction is proposed within 100 feet of a building

that is older than 50 years. Other policies identify measures to mitigate damage to historically significant buildings, which generally defer to the U.S. Secretary of the Interior's *Standards for the Treatment of Historic Properties*, and guidelines provided by the State Historic Preservation Officer.

A number of policies address potential impacts to archaeological resources for projects that involve ground disturbance. Those policies that are the most pertinent to the Proposed Program are listed below.

Policies in the Downtown Area and Baseline Developed Area

Policy VII-F.2[h]. When proposed development lies within an archaeological resource study area (shown on Figure V-7-1 in the Master EIR), analyze the area to determine whether it has a high potential to have been used by Native Americans or contain prehistoric deposits. Resources to be utilized include archival research through the Central California Information Center at CSU Stanislaus, preliminary surface field reconnaissance, consultations with the Native American Heritage Commission (NAHC) and individuals and organizations identified by the NAHC. Any archaeological resources discovered shall be recorded and mapped. Require an evaluation of the significance of any such resources only when proposed development might affect the resources.

Policy VII-F.2[i]. If land designated or proposed to be designated for development is discovered through archival research, consultation or by chance, to contain a sacred or traditional place, consult with the NAHC and the appropriate Native American groups and individuals for the purpose of determining the level of confidentiality required to protect the cultural place and for the purpose of developing treatment with appropriate dignity of the cultural place in any corresponding management plan. Avoid and preserve sacred sites whenever feasible.

Policy VII-F.2[j]. Consistent with AB 52 of 2016, conduct consultations with the Native American Heritage Commission and the appropriate Native American Tribes for the purpose of determining the level of confidentiality required to protect identified cultural place(s), if any, and for the purpose of developing treatment with appropriate dignity of said cultural place(s) in any corresponding management plan. Avoid and preserve sacred sites whenever feasible.

Policy VII-F.2[k]. For any project that involves earth-disturbing activities within the archaeological resource study area, or on a site determined to be archaeologically or culturally sensitive by City staff through consultation with Native American tribes or bands and a qualified archaeologist, require the project applicant to implement the following mitigation measures, at a minimum:

(1) Where excavation or construction would occur outside of areas where development has occurred, or where excavation / construction would occur at depths greater than existing foundations, roads, and/or trenches in the immediate vicinity, evaluate the site via a qualified archaeologist retained by the project applicant. Said evaluation would include at minimum a records search, a Phase I pedestrian survey, and preparation of an archaeological report containing the results of this cultural resources inventory identification effort for submittal to the Central California Information Center. If a Phase II

archaeological evaluation is recommended, complete a report of the survey and any excavations with recommendations prior to project approval;

(2) In the event of the discovery of a burial, human bone, or suspected human bone, immediately halt all excavation or grading in the vicinity of the find and protect the area of the find. The project applicant shall immediately notify the Modesto Police Department and County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are identified, also retain a Native American monitor at the applicant's expense;

(3) A qualified archaeological monitor will be present and will have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate the significance of any Native American archaeological resources discovered on the property; and,

(4) Relinquish ownership of all Native American human remains and/or artifacts that are found within the project area, to the appropriate Native American Most Likely Descendent (MLD), as assigned by the Native American Heritage Commission, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.

(5) If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Policy VII-F.2[l]. Whenever possible, avoid disturbing or damaging archaeological resources. Preservation in place to maintain the relationship between the artifacts and the archaeological context is the preferred manner of mitigating impacts to archaeological sites. Preservation may be accomplished by:

(1) Planning construction to avoid archaeological sites;

(2) Incorporating sites within parks, green space, or other open space;

(3) Covering the sites with a layer of chemically stable soil; and/or,

(4) Deeding the site into a permanent conservation easement.

When in-place mitigation is not feasible, data recovery through excavation may be necessary. A data recovery plan, which makes provisions for adequately recovering the scientifically consequential information about the site, shall be prepared and adopted prior to any excavation being undertaken. Such studies must be deposited with the Central California Information Center in Turlock, California. Special rules apply to any archaeological sites known to contain human remains (Health and Safety Code Section 7050.5; Guidelines Section 15126.4(b)).

Data recovery shall not be required if the lead agency determines that testing or studies already completed have adequately recovered the necessary data, provided that the data have already been documented in another EIR and are available for review at the California Historical Resource Regional Information Center (Guidelines Section 15126.4(b)).

Policy VII-F.2[m]. Allow reasonable time for the qualified archaeologist to notify the proper authorities for a more detailed inspection and examination of the exposed cultural resources. During this time, excavation and construction would not be allowed in the immediate vicinity of the find; however, those activities could continue in other areas of the project site.

Policy VII-F.2[n]. If any find is determined to be significant by the qualified archaeologist, representatives of the construction contractor and the City, the qualified archaeologist, and a representative of the Native American community (if the discovery is an aboriginal burial) will meet to determine the appropriate course of action.

Policy VII-F.2[o]. All cultural materials recovered as part of a monitoring program are subject to scientific analysis, professional museum curation, and a report prepared according to current professional standards.

Policies in the Planned Urbanizing Area

Policy VII-F.3[a]. Any project subject to CEQA that involves substantial earth-disturbing activities should require consultation by the applicant for the purposes of determining archaeological and cultural resources impacts and creating appropriate mitigation to address such impacts.

Policy VII-F.3[b]. Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be subject to archaeological and Native American monitoring during all ground-disturbing activities.

Policy VII-F.3[c]. Any project that involves earth-disturbing activities within previously undisturbed soils in an area determined to be archaeologically or culturally sensitive by the City of Modesto through consultation with Native American tribes or bands and a qualified archaeologist should be required to carry out the following mitigation measures, at a minimum:

(1) If prehistoric archaeological remains are discovered during project construction (inadvertent discoveries), all work in the area of the find shall cease, and a

qualified archaeologist should be retained by the project sponsor to investigate the find, and make recommendations as to treatment and mitigation. In the event of the discovery of a burial, human bone, or suspected human bone all excavation or grading in the vicinity of the find should halt immediately and the area of the find should be protected and the project applicant immediately should notify the County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5, including California Public Resources Code Section 5097.98, if applicable. If human remains are identified, the project sponsor should also retain a Native American monitor;

(2) A qualified archaeological monitor should be present and should have the authority to stop and redirect grading activities, in consultation with the Native Americans and their designated monitors, to evaluate the significance of any Native American archaeological resources discovered on the property;

(3) Native American monitors from the appropriate Native American Tribes, as determined by the NAHC should be allowed to monitor all groundbreaking activities, including all archaeological testing and data recovery excavations that are likely to affect Native American resources, as determined by a qualified archaeologist. The project proponent should be responsible for compensating Native American monitors. If human remains are discovered, the NAHC should assign a Most Likely Descendent (MLD); and,

(4) The landowner agrees to relinquish ownership of all Native American human remains and associated burial artifacts that are found within the project area, to the appropriate Native American MLD, as assigned by the NAHC, for proper treatment and disposition. The MLD will decide whether or not standard archaeological analysis will be allowed on human remains and associated artifacts from burials.

(5) If paleontological resources are discovered during earth-moving activities, the construction crew shall immediately cease work in the vicinity of the find, and the City's Planning Manager shall be notified. A qualified paleontologist shall evaluate the resource and prepare a proposed mitigation plan in accordance with Society of Vertebrate Paleontology guidelines. The proposed mitigation plan may include a field survey of additional construction areas, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations determined by the lead agency to be necessary and feasible shall be implemented before construction activities can resume at the site where the paleontological resources were discovered.

These and other policies require proactive consultation by project proponents with Native American tribes for any projects that may impact culturally sensitive sites.

Furthermore, through the Modesto General Plan Update Final Master EIR (20019b), the City of Modesto has adopted Policies VII.F-2[h] through VII.F-3[c] to reduce a project's impacts to archaeological and/or historic resources to a less-than-significant level except where a significant historic building would be demolished. These policies largely reflect those found in the State CEQA Guidelines (Pub. Res. Code 15126.4[b]), including the treatment of human

remains (Health and Safety Code Section 7050.5). The policies also outline procedures for address the unanticipated discovery of archaeological materials and human remains during construction.

Landmark Preservation Ordinance

The City of Modesto passed a Landmark Preservation ordinance in 1988 after many of the historic downtown buildings were demolished (City of Modesto 2017). The ordinance recognizes the cultural and economic benefits of preserving the City's historic landmarks. In addition to establishing a Modesto Landmark Preservation Committee, in response to the ordinance the City commissioned a survey of historic resources and developed a list of Designated Landmark Preservation Sites. The ordinance also provides guidance for review of permit applications for proposed alterations, relocations, demolition or new construction on properties that are listed on the Designated Landmark list.

City of Ceres General Plan

Policies in the Ceres *General Plan 2035* (2018) seek to develop a systematic and comprehensive historic preservation program to ensure that Ceres' historically and architecturally significant resources are preserved, as well as to identify and preserve any archaeological resources that may be disturbed by development activities. The following goals and policies are relevant to the Proposed Program:

Goal 4.H. Preserve and maintain sites, structures and landscapes that serve as significant, visible reminders of the city's social, architectural and agricultural history.

> **Policy 4.H.2. Reuse of Historic Buildings.** Encourage the preservation, maintenance, and adaptive reuse of existing historic buildings in the Planning Area in order to prevent demolition and disrepair.

> **Policy 4.H.3. Preservation of Historic Buildings.** Identify and preserve buildings of local historic importance Downtown and in surrounding areas through inclusion on the local historic resources register and the Historic Building Code.

Goal 4.I. Protect and preserve archaeological and paleontological resources in the Planning Area.

> **Policy 4.I.1. Archaeological Sites.** Refer development proposals that may adversely affect archaeological sites to the California Archaeological Inventory at California State University, Stanislaus. Do not knowingly approve any public or private project that may adversely affect an archaeological site without first consulting the California Archaeological Inventory, conducting a site evaluation as may be indicated, and attempting to mitigate any adverse impacts according to the recommendations of a qualified archaeologist. City implementation of this policy shall be guided by Appendix K of the CEQA Guidelines.

> **Policy 4.I.2. Archaeological Resource Management.** Establish a procedure for the management of archaeological materials found on-site during a development, including the following provisions:

- If significant resources are known or suspected to be present on a site, require that a qualified archaeologist conduct monitoring of building demolition and/or construction grading activities.

- If materials are found on-site during construction activities, require that work be halted until a qualified archaeologist evaluates the find and makes a recommendation for the preservation in place or recovery of the resource.

Policy 4.I.3. Preservation in Place. Seek to preserve discovered archaeological resources in place in order to maintain the relationship between the artifacts and their archaeological context, where feasible. Preservation can be achieved through measures such as planning construction to avoid archaeological sites, incorporating sites within open space areas, capping the site prior to construction, and permanently protecting the site using a conservation easement.

Policy 4.I.4. Paleontological Resources. Establish a procedure for the management of paleontological materials found on-site during a development, including the following provisions:

- If materials are found on-site during grading, require that work be halted until a qualified professional evaluates the find to determine if it represents a significant paleontological resource.

- If the resource is determined to be significant, the paleontologist shall supervise removal of the material and determine the most appropriate archival storage of the material.

- Appropriate materials shall be prepared, catalogued, and archived at the applicant's expense and shall be retained within Stanislaus County if feasible.

Goal 4.J. Protect Ceres' Native American Heritage.

Policy 4.J.1. Native American Outreach. Conduct outreach to local Native American tribal contacts to identify potential opportunities to highlight the area's Native American history

Policy 4.J.2. Coordination with Native American Tribes. Proactively coordinate with the local Native American tribes in the review and protection of any tribal cultural resources discovered at development sites.

Policy 4.J.3. Tribal Cultural Resources. Avoid the disturbance of tribal cultural resources and, where possible, seek to preserve resources in place, exploring opportunities for permanent protection of the resources where feasible. Treat tribal cultural resources with respect.

Policy 4.J.4. Native American Consultation. Conduct project specific Native American consultation early in the development review process to ensure adequate data recovery and mitigation for adverse impacts to significant Native

American sites. Ensure that City staff and local developers are aware of their responsibilities to facilitate Native American consultation under SB 18 and AB 52.

Stanislaus County General Plan

The Stanislaus County General Plan (Stanislaus County 2016) has the following goal and policy pertaining to cultural resources listed in its Conservation and Open Space chapter.

Goal Eight. Preserve areas of national, state, regional, a local historical importance.

> **Policy Twenty-four.** The County will support the preservation of Stanislaus County's cultural legacy of archeological, historical, and paleontological resources for future generations.

8.3 Environmental Setting

8.3.1 Prehistory

Very little archaeological work has been conducted in the Modesto area or in the San Joaquin Valley in general; therefore, the archaeology of the study area is understood within the prehistoric context developed for the Central Valley as a whole. Since the early 1930s, various schemes have been set forth by researchers to organize the archaeological data of California into a chronological framework. As reported by Moratto (1984), the Central Valley sequence established by Lillard, Heizer, and Fenenga in 1939 is particularly notable. Based on archaeological investigations in the lower Sacramento Valley, Lillard and colleagues divided human prehistory into three broad cultural horizons: Early, Middle, and Late. This chronology was first known as the Delta sequence and later became the basis of Richard Beardsley's Central California Taxonomic System (CCTS). The system relies on the identification of characteristics such as burial patterns, shell bead types, stone tools, and the types of locations where the sites tend to occur. These traits and characteristics are used to identify an archaeological resource as belonging to a specific time period.

The CCTS has continued to undergo significant refinement but remains the framework within which California archaeologists explain cultural change. The general system is still widely used by archaeologists, but it has been expanded and revised to include economic and technological strategies, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods. The current chronology (Rosenthal et al. 2010:150) for central California archaeology includes:

- Paleo-Indian: 11,550–8550 B.C.
- Lower Archaic: 8550–5550 B.C.
- Middle Archaic: 5550–550 B.C.
- Upper Archaic: 550 B.C. to 1100 A.D.
- Emergent: 1100 A.D. to Historic

The Paleo-Indian Period (11,550–8,550 B.C.) is generally characterized by big-game hunters occupying broad geographic areas. Archaeological deposits from the Paleo-Indian period are rarely found in the Central Valley, however, and those that have been identified have largely been discovered at the south end of the San Joaquin Valley near Tulare Lake. Post-depositional processes, mainly glacial outwash occurring at the end of the Pleistocene Epoch,

either destroyed or deeply buried much of the existing evidence of human activity in the region from this period. As result, little is known about Paleo-Indian lifeways in the region (Moratto 2004).

Similar to the preceding period, the Lower Archaic Period (8550–5550 B.C.) is presumed to reflect a mobile population that continued to hunt big game. Few localities in the Central Valley are associated with this period, and those that have been found are largely isolated artifacts consisting of large wide-stemmed and leaf-shaped projectile points, along with flaked stone crescents. Only two sites with associated deposits of faunal and shell remains have been identified for the Lower Archaic Period, one at Buena Vista Lake in the southern San Joaquin Valley (Rosenthal et al. 2010:151-152) and one in Sacramento (Tremaine 2008). Some sites in the Sierra Nevada foothills from this period, however, indicate the use of milling equipment (hand stones and milling stones) to process seeds and nuts.

The Middle Archaic Period (5550–550 B.C.) indicates a shift to a more settled way of life that is reflected by substantial, though often deeply buried, archaeological sites with artifacts that are more elaborate in design, imply a more diverse subsistence regime, and indicate interregional trade. Sites are often situated along the major rivers and streams within the Central Valley, emphasizing a focus on riverine and marsh habitats. The Windmiller Tradition or Pattern, which was first identified in sites around the Sacramento–San Joaquin River Delta, is often considered representative of this period. Characteristic artifacts from this period include a variety of fish hooks and spears; large stemmed and leaf-shaped projectile points of obsidian and chert; shaped charmstones of alabaster, steatite, or marble; and a variety of *Haliotis* and *Olivella* shell ornaments and beads, respectively. Mortars and pestles, associated with acorn preparation, became commonplace by the middle of the period. The presence of ventrally and dorsally extended burials with a western orientation is particularly indicative of the Windmiller Pattern.

Increased sedentism and technological specialization are evidenced during the Upper Archaic Period (550 B.C. to 1100 A.D.), as populations exploited more diverse resources and established trade relationships. Mortars and pestles became the primary ground stone implements, suggesting that acorns had become a more important dietary staple. Regional diversity in artifact styles, such as *Haliotis* shell ornaments, bone tools, and ground charmstones or plummets, became more pronounced; burial postures also varied.

Archaeological sites from the Emergent Period (A.D. 1100 to the historic period) indicate increased social complexity and the development of large, central villages with resident political leaders and specialized activity sites. Enhanced regional diversity in terms of artifact styles, housing, and interment methods is evident in the archeological record. Artifacts associated with the period include the bow and arrow, small corner-notched projectile points, and a variety of shell and stone beads and ornaments.

8.3.2 Ethnography

The Modesto area lies within the ancestral territory of the Northern Valley Yokuts. “Yokuts” is a term applied to a large and diverse group of people inhabiting the San Joaquin Valley and Sierra Nevada foothills of central California. The Northern Valley Yokuts inhabited a 40- to 60-mile-wide area straddling the San Joaquin River, south of the Mokelumne River, east of the Diablo Range, and north of the sharp bend that the San Joaquin River takes to the east-northeast near Mendota in Fresno County. The Southern Valley Yokuts inhabited the San

Joaquin Valley south of the bend in the river. Although they were divided geographically and ecologically, the two groups have a common linguistic heritage (Wallace 1978:462).

The Northern Valley tribes closely resembled the Yokuts groups to the south, although there were some cultural differences. The northerners had greater access to salmon and acorns, two important dietary resources, and some of their religious practices reflected the influences of groups to their north, such as the Miwok. While inhumation was the usual practice in the southern valley, the Northern Valley Yokuts either cremated their dead or buried them in a flexed position (Wallace 1978:464, 468). A chief headed the tribal villages, which averaged around 300 people. Family houses were round or oval, sunken, with a conically shaped pole frame, and covered with tule mats. Each village also had a lodge for dances and other community functions, as well as a sweathouse (Wallace 1978:462-464).

The Northern Valley Yokuts built their riverside villages on elevated areas along the water's edge to avoid the spring floods, which were a result of heavy Sierra Nevada snow melts. Living beside rivers and streams provided plentiful river perch, Sacramento pike, salmon, and sturgeon. Hunting provided waterfowl such as geese and ducks, as well as terrestrial animals such as antelope, elk, and brown bear, although by all indications, fish constituted most of their diet. The surrounding woodland, grasslands, and marshes provided acorns, tule root, and seeds.

The Northern Valley Yokuts used bone harpoon tips for fishing, stone sinkers for nets, chert projectile points for hunting, mortars and pestles, scrapers, knives, and bone awl tools to procure and process food. Marine shells, procured from coastal tribes, were used for necklaces and other adornments, and marine shell beads sometimes accompanied the deceased. The Yokuts used tule reed rafts to navigate the waterways for fishing and fowling. They also manufactured intricate baskets for a variety of purposes, including storing, cooking, eating, winnowing, hopper mortars, the transport of food materials, and ritual. Very little is known of the Northern Valley Yokuts' clothing, but drawings of their tattoos show that they served not only as a decoration but also as a form of identity (Wallace 1978:464).

Initially, the Diablo Range served as a natural barrier against heavy recruitment of Native Californians by the Spanish, who established missions along the coast. By the early 19th century, however, Spanish and (later) Mexican missionaries began to explore the inner valleys in search of potential neophytes. The Yokuts resisted recruitment and California Indians from a variety of tribes sought refuge among the Yokuts after fleeing the missions. Introduced diseases, destruction of traditional resources from cattle grazing, and forced relocation took a heavy toll on the Northern Yokuts. Despite decades of hardship, many individuals who can trace their ancestry to the Northern Valley Yokuts continue to live and thrive in the Central Valley and throughout California and the United States.

8.3.3 History

The historic era began in Stanislaus County when the first Spanish expedition entered the San Joaquin Valley in 1806 under the leadership of Gabriel Moraga. Traveling north and northwest through the region in search of possible mission sites, Moraga's party explored along what came to be known as the Stanislaus River. Moraga visited the area again in 1808 and 1810 (Kyle et al. 2002:516-517).

After Mexico gained its independence from Spain in 1822, two additional expedition forces entered the area; however, the purposes of their campaigns were no longer exploratory. Soldiers were sent into the Central Valley to recover stolen animals and punish hostile Indians in order to reduce the attacks upon coastal towns, missions, and ranchos.

Americans also began to enter the region during the Mexican period. In 1827 and 1828, Jedediah Smith entered the San Joaquin Valley through the Tejon Pass and trapped beavers along the San Joaquin, Kings, and other rivers and streams that flowed from the Sierra. Smith was followed by fellow trappers such as Peter Ogden, Ewing Young, Kit Carson, and Joseph Walker.

The first permanent European settlement may have occurred in Stanislaus County when two land grants were issued by the Mexican government in 1843. The first was the *Rancho El Pescadero* on the west side of the San Joaquin River near the border of what would eventually become San Joaquin County. The second was the *Rancheria del Rio de Estanislao* located north of the Stanislaus River bordering Tuolumne County. Two additional land grants were issued the following year. These were the *Rancho del Puerto* and *Rancho Orestimba*, both of which were on the west side of Tuolumne County near Rancho Pescadero (eReferenceDesk 2017).

The City of Modesto came into being in 1870 when the Central Pacific Railroad announced that the location would be the end point of the next extension of the rail line as it progressed south through the Central Valley (Kyle et al. 2002:521). By the time the tracks were completed in November of that year, a viable town had already been established by entrepreneurs (City of Modesto 2016). Modesto residents were among California's first irrigation advocates, and by 1904 a system of canals had been constructed to allow more productive agriculture. During the 19th century, grain-growing was Stanislaus County's dominant agricultural activity. Stock-raising, dairy farming, fruit and nut orchards, and vegetable farming all became more important over time. When Prohibition ended in 1933, the Gallo brothers came to Modesto, bringing the wine business to the area on an industrial scale. In the 21st century, almonds and walnuts are the most lucrative local crops, although fruit, vegetables, livestock, and other agricultural products remain important. Modesto is still the most important town in the region and is the Stanislaus County seat.

8.3.4 Paleontology

The standard guidelines for assessment and mitigation of adverse impacts on paleontological resources set forth by the Society of Vertebrate Paleontology (2010) have been used to establish three categories of sensitivity. These are High, Low, and Undetermined. Areas that consist of rock that is not of sedimentary origin and that have not been known to produce fossils are considered low sensitivity areas and monitoring is not required during project construction or operation. Additionally, when it can be demonstrated that the conditions of the unconsolidated sediments are such that fossils could not form in these sediments, and that any fossils found in the sediments could not be considered in situ, they would have minimal scientific value, and the area would be considered low sensitivity. When both low sensitivity conditions were present, it was considered that no significant paleontological resource was present and consequently no impact would occur.

Cultural Resources Studies

For the purposes of this DEIR, a focused cultural resources evaluation was conducted for the Proposed Program. All aspects of the cultural resources study were conducted in accordance

with the U.S. Secretary of the Interior's *Standards and Guidelines for Identification of Cultural Resources* (48 CFR Parts 44720–44723). The study included archival research, Native American outreach and consultation, a field study focused on the River Trunk Realignment Project, and the evaluation of identified cultural resources to determine their eligibility for listing on the NRHP and CRHR.

Archival Research

A records search for the River Trunk Realignment Project study area (River Trunk study area) was conducted by the Central California Information Center (CCIC) of the California Historical Resources Information System at California State University, Stanislaus, before initiating the field study. The purpose of the records search was to determine if the River Trunk study area had previously been surveyed for cultural resources, and to identify any previously recorded cultural resources in, or within ¼ mile of, the study area. The CCIC archival research (Records Search File No. 10317N) included review of the California Inventory of Historic Resources, local historical inventories, historical literature, and historical maps including USGS topographic maps, General Land Office maps, and Rancho Plat Maps.

The records search indicated that 11 previous studies had included portions of the River Trunk study area; one overview also included the study area. These studies are listed in **Table 8-1**; another 21 studies had been conducted within the ¼ mile search area. All of the studies listed were conducted in the study area east of 7th Street.

Table 8-1. Previously Conducted Cultural Studies within the Proposed River Trunk Realignment Project Study Area

CCIC Report No. (ST-)	Author	Date	Title
035	L. K. Napton	1981	Seven California Counties: An Archaeological Overview, Alpine, Calaveras, Mariposa, Merced, San Joaquin, Stanislaus, and Tuolumne Counties, California, Parts 1 & 2.
1435	W. Hill	1992	Historic Architecture Survey Report: Track Consolidation and Realignment, Modesto, California
1836	Harmon, R. M., J. C. Bard, D. M. Garaventa, S. J. Rossa, and J. Yelding-Sloan	1992	Negative Archaeological Survey Report; Modesto Track Consolidation Corridor Lathrop, San Joaquin County and Modesto, Stanislaus County, California.
2759	Hatoff, B., B. Voss, S. Waechter, S. Wee, and V. Bente	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project.
2801	Marvin, J., and S. Davis-King	1996	Historic Property Survey Report (Positive) for the Seventh Street Bridge Project, City of Modesto, Stanislaus County, California.
3995	Nelson, W. J.	2000	Cultural Resources Survey for the Level (3) Communications Long Haul Fiber Optics Project; Segment WS04: Sacramento to Bakersfield.

CCIC Report No. (ST-)	Author	Date	Title
4592	Gatlin, J. P., General Attorney	2000	Before the Surface Transportation Board: Docket No. AB-33 (Sub-No. 145X), Union Pacific Railroad Co.--Abandonment Exemption--in Stanislaus Co., CA (Tidewater Subdivision Near Modesto, California), Combined Environmental and Historic Report.
4816	William Self Associates	2001	Cultural Resources Assessment Report, Tuolumne River Regional Park Master Plan EIR, Stanislaus County,
6345	SWCA Environmental Consultants	2006	Cultural Resources Final Report of Monitoring and Findings for the QWest Network Construction Project, State of California.
6352	EDAW, Inc.	2005	TRRP Gateway Precise Plan, Modesto, Ceres, Stanislaus County, California, Initial Study
7537	Kuzak, C.	2011	Historic Property Survey Report, 10-STA-99, P.M. 0.0/24.7, 2576 E-FIS1000020344, Stanislaus County, California.
7775	Helton, C. and Cardenas, G.	2011	Cultural Resources Monitoring and Mitigation Plan, Almond 2 Power Plant, Turlock Irrigation District.

Source: *Information obtained from the CCIC in 2017.*

The records search identified five previously recorded cultural resources within the River Trunk study area (**Table 8-2**). Two of these resources, the Tidewater-Southern Railroad wooden trestle bridge over the Tuolumne River (P-50-1811) and the Tidewater-Southern Railroad line, no longer exist. One of the resources, the Seventh Street Bridge (P-50-514), has been determined eligible for listing in the NRHP. The remaining resources have been determined not eligible for listing in the NRHP.

Table 8-2. Previously Recorded Cultural Resources within the Proposed River Trunk Realignment Project Study Area

Resource No. (P-50-X)	Resource Trinomial (CA-STA-X)	Recorded by	Date Recorded	Resource Information
0001	350H	various	1999-2007	Southern Pacific Railroad line; multiple sections recorded. Determined not eligible for the NRHP.
0083	425H	various	1992	Tidewater-Southern Railroad line; multiple sections recorded. Section in project area removed.
0514		J. Snyder W. Hill	1991 1992	Southern Pacific Railroad Tuolumne River Bridge; Bridge #113.75. Originally constructed 1897; significantly rebuilt 1944-45. Determined not eligible for the NRHP.
0617		Office of Historic Preservation L. Martin	1986 2000	Seventh Street Bridge; Lion Bridge; Bridge #38C-23; City of Modesto Designated Landmark Preservation Site #14. Constructed 1916. Determined eligible for listing in the NRHP.
1811		J. Snyder	1991	Tidewater-Southern Railroad Bridge; constructed 1914. Burnt down 2001.

Source: *Information obtained from the CCIC in 2017.*

Another six previously recorded resources within 0.25 mile of the River Trunk alignment were identified. All of the resources are from the historic era, and include office and industrial buildings, features (e.g., a pump station and a water tower), and one scatter of historic artifacts.

The list of City of Modesto Designated Landmarks provided by the CCIC includes 59 resources, many of which are residences and buildings, but cemeteries and heritage trees, among other features, are also included. A vast majority are in the Modesto downtown core area. The Seventh Street Bridge is listed as Designated Landmark Preservation Site #14, and the Dryden Golf Course is listed as #52. The Directory of Historic Places in the Historic Property Data File for Stanislaus County[1], compiled by the Office of Historic Preservation and obtained from the CCIC, lists a large number of resources in the Program area. While most of these are in Modesto, some are also situated in Ceres. These range from residences and buildings to water and transportation infrastructure, along with other features. A vast majority are assigned the California Historical Resources Code of 52D (identified as a contributor to a district that is eligible for local listing or designation) or 6Y (determined ineligible for listing on the NRHP)

[1] The Directory of Historic Places is compiled by the Office of Historic Preservation and consists of a listing of all resources that have been evaluated for the NRHP and CRHR, by county. Each resource is assigned a status code so that its eligibility status can be determined (e.g., individually eligible for the NRHP or CRHR; eligible as a contributing element to a district; determined significant by a local government; not eligible under any listing) at a glance. The list also identifies those resources that may need reevaluation.

Historic USGS topographic maps and historic aerials were examined in addition to the record search materials. USGS maps from 1915/1916 indicate that the area around the railroad yards between 7th and 9th streets were already well-developed by that era, and that much of the town west of present-day Highway 99 and south of Tuolumne Avenue to South Avenue was laid out, but not developed. South of South Avenue to the Tuolumne River, acreage within the River Trunk Realignment Project footprint contained just a scattering of homes. By the 1940s (USGS 1939, 1941), much of the area within the River Trunk Realignment Project vicinity was well developed. The most significant modification was the construction of Highway 99 as a freeway through town by the early 1970s.

Information about cultural resources within the larger study area was available in the Modesto General Plan Update Final Master EIR (City of Modesto 2019b) and the Stanislaus County General Plan EIR (ICF 2016). The City of Modesto EIR noted that archaeological surveys have been sporadic throughout the area and have largely been conducted as part of urban development. Nevertheless, prehistoric and historic-era sites have been previously recorded primarily along waterways (Dry Creek, Stanislaus and Tuolumne rivers) and on adjacent terraces, which are considered particularly sensitive for archaeological remains. The Stanislaus County EIR provided information largely based on the Directory of Historic Places for Stanislaus County.

Soils information presented in Chapter 9, *Geology*, *Soils, and Seismicity*, and geoarchaeological data (Rosenthal et al. 2004) indicates that the soils within the Program area (Dinuba loamy sand, Hanford sandy loam, Madera sandy loam, Modesto clay loam, San Joaquin sandy loam, and Tujunga loamy sand) date from the late Pleistocene through the Holocene Epoch and have depths of up to 80 inches. These soils are largely considered to have low sensitivity ratings for buried archaeological remains, although the Hanford series is considered to be moderately sensitive and the Tujunga is rated as highly sensitive for buried archaeological remains (Rosenthal et al. 2004). Proximity to the Tuolumne and San Joaquin Rivers, and Dry Creek increases the potential for buried resources within the Program area and River Trunk Realignment Project.

Field Investigation

A field review of the River Trunk Realignment Project footprint was conducted by qualified archaeologists from Horizon Water and Environment on June 15, 2017. The field investigation consisted of two approaches. A pedestrian survey was conducted in areas where open trenching or bore pit excavation is proposed and the ground surface is undeveloped or where native ground surface is visible. The cursory inspection was conducted in areas where the ground surface is developed or paved and no native ground surface is visible. **Figure 8-1** shows both the areas subject to pedestrian survey and those areas subject to cursory survey. The pedestrian component consisted of walking the proposed alignment or areas of proposed excavation using 10-meter transects. Any exposures of subsurface were more closely inspected and trowel exposures were also applied to the surface in areas that were heavily vegetated or grassy. The cursory inspection was conducted by car and any areas that were undeveloped were more closely inspected.

Approximately 1 mile of the River Trunk Realignment Project was subject to intensive pedestrian survey. These areas included the east end of the pipeline from the Gallo property west to the River Trunk Pump Station and to Highway 99; from Neece Drive, east across the Dryden Golf Course to the Tuolumne River; and Shackelford Pump Station. The proposed

location of the River Trunk Pump Station is currently a fully developed oil and gas storage facility and, therefore, was not subject to pedestrian survey. Other areas subject to cursory survey were paved streets in the City of Modesto, including Tuolumne Boulevard, Colorado Avenue, Neece Drive, and Pelton Avenue. The Sutter Plant is also fully developed and was not surveyed. The survey is fully described in *An Archaeological Assessment of the River Trunk Realignment Project, Modesto, Stanislaus County, California* (Horizon 2017) (**Appendix D**).

Study Results

The record search identified three extant cultural resources within the River Trunk study area: the Southern Pacific Railroad line, the Southern Pacific Railroad Tuolumne River Bridge, and the Seventh Street Bridge (Lion Bridge). All three are built environment resources and the new River Trunk pipeline will either be bored underneath the resources (the railroad tracks) or pass below the resources (the bridges), and are not in the direct path of the proposed River Trunk Realignment Project pipeline. Archival research also revealed that two resources are listed as City of Modesto Designated Landmark Preservation Sites: the Seventh Street Bridge (#14) and the Dryden Golf Course (#52). No archaeological resources were identified within the River Trunk Realignment Project footprint, either during archival research or during the pedestrian field survey.

Archival research indicates that there are many previously recorded cultural resources, of which a majority are of the built environment, within the Program area. Most of the City of Modesto landmarks are clustered in the downtown core area and in the neighborhoods directly to the north. A large number of resources listed on the Directory of Historic Places in the Historic Property Data File for Stanislaus County are also within the Program area.

Native American Coordination

The City of Modesto notified Native American tribes with a traditional and cultural affiliation with the region about the Proposed Program on June 8, 2016, pursuant to the requirements of Pub. Res. Code 21080.3.1 (also known as AB 52).

The City has received letters of interest from two Native American tribes pursuant to Pub. Res. Code Section 21080.3.1(b)(1) for all proposed City CEQA projects: the Northern Valley Yokuts and the Ione Band of Miwok Indians. However, after examining the map of the Ione Band's indigenous territory that accompanied their letter, it was determined that the Proposed Program is outside of the tribe's area of interest. A request to the NAHC for a list of tribes with a traditional and cultural association with the Proposed Program resulted in the identification of two tribes. In addition to the Northern Valley Yokuts, the NAHC listed the Southern Sierra Miwok Nation. The City notified these tribes about the Program in a letter dated June 8, 2016. A notification letter was also sent to the Tule River Indian Tribe, as there had been consultation with that tribe in the past. The City did not receive requests for formal consultation under Pub. Res. Code Section 21080.3.1(b)(2) from any of those contacted, and none of the tribes expressed concerns about potential significant resources within the study area. Follow-up phone calls were made to the Tule River Indian Tribe but did not receive a response. All correspondence with tribes related to Pub. Res. Code Section 21080.3.1, including the Tribes' letters of interest to the City, is provided in Appendix F.

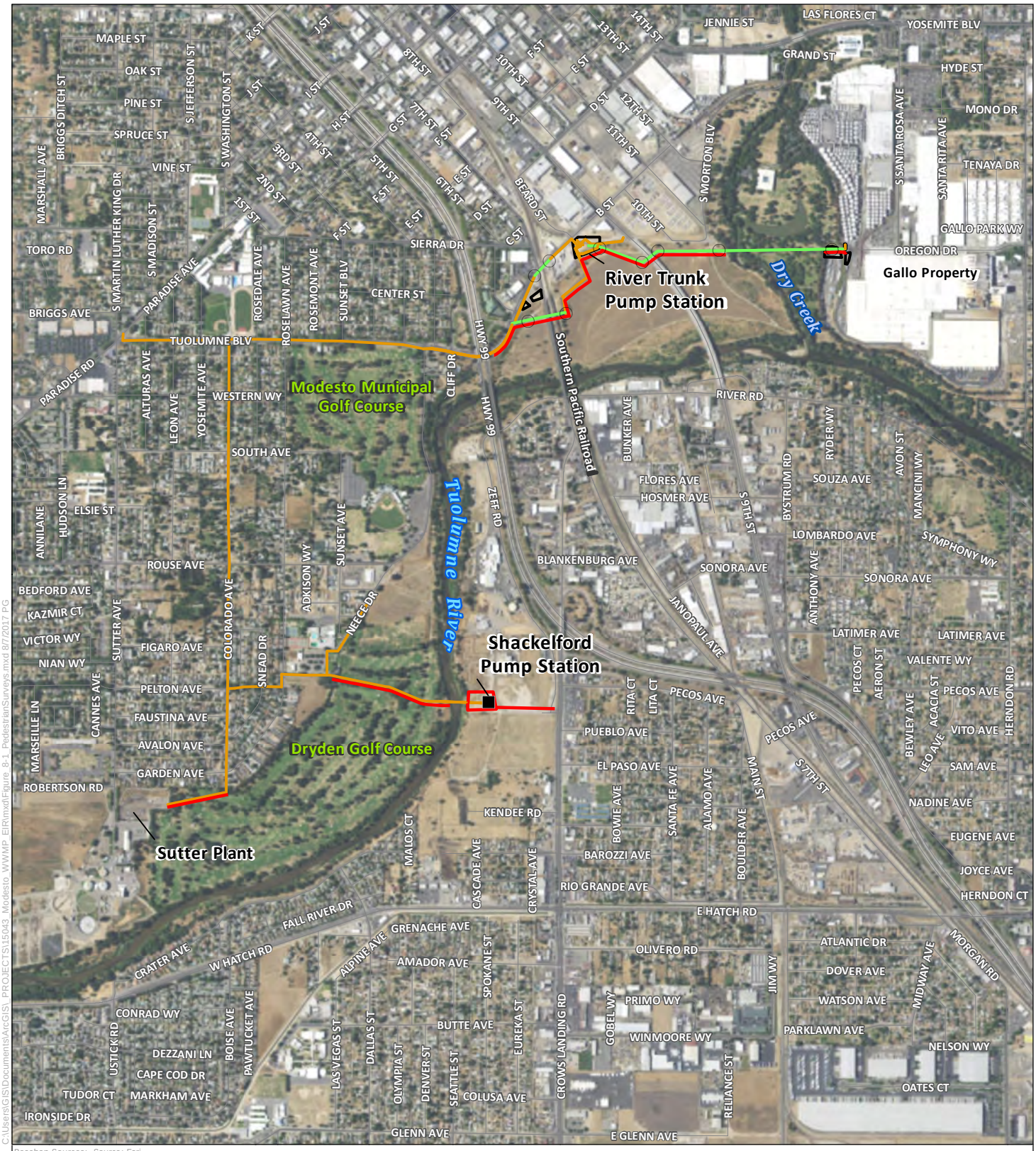
Paleontological Resources

A desktop study conducted to assess the sensitivity of the Program area, including the River Trunk study area, for paleontological resources. The study area is predominantly underlain by Pleistocene-aged alluvial fan deposits of the Modesto Formation (California Geological Survey 1991). The Modesto Formation is composed primarily of unconsolidated, unweathered, coarse sand and sandy silt along the upper portions of the unit. The older, deeper portions of this unit shift to more consolidated, slightly weathered, well-sorted silt and fine sand, silty sand, and sandy silt. The Modesto Formation is overlain by Holocene alluvium, particularly along watercourses within the study area. The Holocene soils can have depths of 6.5 feet.

The Modesto Formation has yielded a wide variety of fossils within Stanislaus County, including extinct land mammals such as ground sloths, mammoths, camels, and bison, among others. Fossils of petrified wood, clam shells, fishes, birds, and amphibians have also been uncovered (California Energy Commission 2017).

Tribal Cultural Resources

No TCRs have been identified within the Program study area.



Basemap Sources: Source: Esri, DigitalGlobe, GeoEye, Earthstar

N

0 0.25 0.5
Miles

Pipeline Constrction Type

- Open Cut
- Trenchless
- Pedestrian Survey
- Trenchless Pits
- Work Areas

Figure 8-1
River Trunk Realignment Project Pedestrian Survey

City of Modesto
Wastewater Master Plan EIR

Horizon WATER and ENVIRONMENT

C:\Users\GIS\Documents\ArcGIS_PROJECTS\15043_Modesto_WWMP_EIR\mxd\Figure_8-1_PedestrianSurveys.mxd 8/7/2017 PG

8.4 Impact Analysis

8.4.1 Methodology

The following impact analysis was conducted based on records search, review of previous investigations and historic maps, Native American consultation, and field work completed in June 2017. In conjunction with prehistoric and historic overviews, previous investigations and historic maps provided background information for assessing cultural sensitivity and identifying the types of sites likely to be located within the River Trunk Realignment Project footprint. The City of Modesto Urban Area General Plan (2008a) provided city-wide data that supported the analysis of program-level impacts. The Stanislaus County General Plan EIR (ICF 2016) and 2015 General Plan (Stanislaus County 2016) provided relevant information for the study area located within the county.

Consultation with tribes who have a traditional and cultural affiliation with the Proposed Project area followed the protocols outlined under Pub. Res. Code Sections 21080.3.1, 21080.3.2, and 21082.3, and guidelines provided the NAHC (n.d.), and the Governor's Office of Planning and Research (2017; n.d.). Because tribes notified pursuant to Pub. Res. Code Sections 21080.3.1 declined consultation on the Program, the City determined that no TCRs exist within the study area.

8.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on cultural, paleontological and tribal resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- Disturb any human remains, including those interred outside of dedicated cemeteries; or
- Cause a substantial adverse change in the significance of a TCR, defined in Pub. Res. 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:
  - Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Pub. Res. Code Section 5020.1(k), or
  - 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 Pub. Res. Code Section 5024.1. In applying the criteria set forth in

subdivision (c) of Pub. Res. Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

CEQA does not establish specific criteria for determining significance of paleontological resources.

8.4.3 Environmental Impacts

Impact CR-1: Impacts on Known Historic, Archaeological, or Tribal Resources (Less than Significant)

All Program-level Components

The Proposed Program would occur partially within Modesto's incorporated limits and partially outside its incorporated limits, within the jurisdiction of the County but within the City's wastewater service area. Program-related activities would also take place within the City of Ceres. The County and the City of Ceres do not maintain policies or requirements related to cultural resources that are more restrictive or otherwise incompatible with those of the City of Modesto. All proposed improvements, including those in Empire, the Beard Industrial Park District, and unincorporated "islands" within the County would implement existing City of Modesto Urban Area General Plan policies related to the investigation and mitigation of historical and archaeological impacts, as necessary.

The Proposed Program does not propose demolition or modification of existing structures. Based on the Program information available, the Proposed Program does not appear to propose work in proximity to any of the historic resources listed in the City of Ceres. Therefore, it is unlikely that the proposed program would adversely affect known, listed historic resources, and the Engineer's Report evaluated in this EIR would have a **less-than-significant** impact on historic resources in Ceres. However, some construction work may occur adjacent to resources listed on the City of Modesto Designated Landmark Preservation Sites list or on the Directory of Historic Places in the Historic Property Data File for Stanislaus County, and some resources may be eligible for the NRHP/CRHR.

All site-specific improvements proposed as part of the Proposed Program would be required to adhere to federal (if applicable), state, and local policies pertaining to the survey and impact analysis of historic resources. Accordingly, if CIP improvements propose to demolish or modify existing structures, or if they propose work within 100 feet of structures, those structures would need to be evaluated for their significance and for any project-related impacts and mitigation. Adherence to City of Modesto Urban Area General Plan Section VII-F policies 2-h, 2-i, 2-j, 2-k, 2-l, 2-m, 2-n, 2-o, 3-a, 3-b, and 3-c (presented above) would ensure that proposed CIP improvements would avoid significant impacts on known historic, archaeological, and tribal resources, and that any unforeseen significant impacts would be reduced to less-than-significant levels.

It also should be noted that if WWMP components were to use federal funds and proposed the demolition or modification of existing structures, such improvements would be subject to historic property review and consultation with the SHPO under Section 106 of the NHPA. Any impacts identified during that review would be mitigated fully by site-specific measures developed in consultation with the SHPO.

River Trunk Realignment Project

The cultural resources study identified four extant cultural resources in or adjacent to the footprint of the River Trunk Realignment Project: the Southern Pacific Railroad line, the Southern Pacific Railroad Tuolumne River Bridge, the Seventh Street Bridge (Lion Bridge), and the Dryden Golf Course. All are built environment resources. The Seventh Street Bridge has been determined eligible for the NRHP and is a City of Modesto Designated Landmark, and the Dryden Golf Course is also listed as a City Designated Landmark. The Southern Pacific Railroad line and the Southern Pacific Railroad Tuolumne River Bridge, have been determined not eligible for the NRHP, and neither resource is included as a Designated Landmark by the City.

The new River Trunk pipeline will be bored underneath the railroad tracks and Southern Pacific Railroad Tuolumne River Bridge, and trenched below the elevated Seventh Street Bridge. As a result, construction will not impact those resources. Although the Dryden Golf Course is listed as a City of Modesto Designated Landmark, the trenching methods used to install pipelines across the golf course would cause a temporary disturbance to the resource, similar in nature (if not scale) to the installation and maintenance of the irrigation system at the site. As a result, there would be **no impact** on known historic properties/historical resources from construction of the River Trunk Realignment Project.

Overall Conclusion

Considering the WWMP components as a whole, the River Trunk Realignment Project would not impact historic properties/historical resources, and all site-specific improvements proposed as part of the Proposed Program would be required to adhere to federal (if applicable), state, and local policies pertaining to the survey and impact analysis of historic resources. Adherence to City of Modesto Urban Area General Plan Section VII-F policies 2-h, 2-i, 2-j, 2-k, 2-l, 2-m, 2-n, 2-o, 3-a, 3-b, and 3-c (presented above) would ensure that proposed CIP improvements would avoid significant impacts on known historic, archaeological, and tribal resources, and that any unforeseen significant impacts would be reduced to less-than-significant levels. Mitigation is not necessary and this impact would be **less than significant.**

Impact CR-2: Impacts on Previously Undiscovered Archaeological Resources (Less than Significant with Mitigation)

All Program-level Components

Individual CIP improvements implemented pursuant to the Proposed Program would entail extensive excavation work to install certain components. Construction grading and earthmoving activities could disturb previously undiscovered archaeological deposits or buried historic resources. Proposed pipelines, storage tanks, and groundwater wells to be located within riverbeds and otherwise adjacent to natural channels are particularly susceptible to encountering Native American artifacts. The City has adopted guidelines to aid project compliance with requirements for archaeological resources analysis, and subsequent projects would be required to adhere to these guidelines.

Projects proposing earthwork within archaeological resource study areas must adhere to City of Modesto Urban Area General Plan Section VII-F Policy 2-k (presented above), which requires preconstruction archaeological investigations on the site and implementation of avoidance measures, if necessary. Improvements proposing earthwork in the Planned

Urbanizing Area must also adhere to City of Modesto Urban Area General Plan Section VII-F Policy 2-kas well as Policies 3-a, 3-b, and 3-c (also presented above), which require the applicant (City in this case) to consult with Native American tribes and that a qualified archaeologist evaluate the site to determine its archaeological and cultural sensitivity, and if so, implement avoidance and minimization measures.

All proposed improvements must adhere to City of Modesto Urban Area General Plan Section VII-F Policies 2-k, 2-l, 2-m, 2-n, 2-o, and 3-c (presented above), which outline mitigation procedures that would prevent impacts on the unearthed resources and require on-site activity to cease until an archaeological site investigation is performed, in the event that resources are uncovered during construction. Construction specifications for individual projects must stipulate the relevant procedures that are to be followed in the event that cultural resources are encountered during the construction process. Adherence to existing City policies regarding archaeological investigation, construction requirements, and proper mitigation for any resources discovered on the site, as well as to **Mitigation Measures CR-1**, below, would ensure that specific improvements would result in impacts on archaeological resources that meet CEQA's definition of historic resources or unique archaeological resources that are **less than significant with mitigation**.

River Trunk Realignment Project

A pedestrian survey of the River Trunk Realignment Project footprint did not identify any archaeological resources; however, archaeological remains could be buried with no surface manifestation or in areas that were not surveyed because they were paved and there was no ground surface visibility (i.e., city streets, parking lots, etc.). Although archaeological materials were not observed on the ground surface at the locations of proposed launch and receiving pits for borings under Dry Creek for the River Trunk Realignment Project, the banks of this waterway are known to be sensitive for archaeological remains. The locations of the proposed launch and receiving pits for the outfall pipeline crossings under the Tuolumne River are also known to be sensitive for archaeological resources, and thus could affect archaeological remains that are present. Installation of new or replacement sewer lines, construction of pump or lift stations, or excavations for borings, for example, could uncover buried archaeological deposits. Various locations along Tuolumne Boulevard, Colorado Avenue, and within the Dryden Golf Course are underlain by patches of Tujunga loamy sand, which is sensitive for buried archaeological remains. Should a previously undiscovered resource be found during construction and be determined eligible for inclusion in the CRHR, and should project construction activities render the resource ineligible for inclusion in the CRHR, the impact would be significant. Implementation of existing City policies regarding archaeological investigation, construction requirements, and proper mitigation for any resources discovered, as well as **Mitigation Measure CR-1,** would reduce any impacts on CRHR-eligible archaeological sites accidentally uncovered during construction to a level that is less than significant with mitigation.

Outfall Pipelines

In addition, construction of the new third outfall pipeline and the new Tuolumne River pipeline crossings would involve trenchless pipeline construction methods in which excavation would be required for the launch and receiving pits for the pipeline borings to the north and south of the Tuolumne River. Implementation of Mitigation Measures CR-1 would reduce any impacts on CRHR-eligible archaeological sites accidentally uncovered during construction to a level that is less than significant with mitigation.

Overall Conclusion

Various WWMP components, including the River Trunk Realignment Project, could affect archaeological remains during construction. Implementation of Mitigation Measure CR-1 would ensure that work is suspended in the event that archaeological resources are encountered during construction. With implementation of this mitigation measure, the Proposed Program's overall impact would be **less than significant with mitigation.**

Mitigation Measure CR-1: Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work.

Applies to all Program-level components and the River Trunk Realignment Project

Before initiation of ground-disturbing activities, the City or its designee shall arrange for construction crews to receive information about the kinds of archaeological materials that could be present at the River Trunk Realignment Project site and other CIP sites, and the protocols to be followed should any such materials be uncovered during construction. The training shall include information about the laws pertaining to treatment of cultural resources and emphasize the requirement for confidentiality. The informational materials shall be prepared by a qualified archaeologist, and a qualified archaeologist shall conduct the initial training at the beginning of each project. Subsequent trainings should occur as new personnel work on each project; it is incumbent on the City to ensure that the contractor conveys this information to new employees. This could occur during daily safety meetings by the construction supervisor, or more formal training by a qualified archaeologist.

Impact CR-3: Disturb Any Human Remains, Including those Interred Outside of Dedicated Cemeteries (Less than Significant with Mitigation)

Based on the Program information for the proposed infrastructure improvements, the Proposed Program does not appear to propose earthwork in proximity to any known cemeteries or Native American burial grounds. However, improvements implemented as part of the Proposed Program have the potential to disturb previously undiscovered human remains. All of the City of Modesto Urban Area General Plan policies identified above for Impact CR-2 also pertain to the discovery of human remains. Specifically, Policy VII-F.2[k](2) (presented above) cites California Health and Safety Code 7050.5, which requires the cessation of further excavation and disturbance in the event of a human remains discovery, and coordination with the County coroner and (if applicable) the Native American Heritage Commission (NAHC) regarding further action.

Adherence to Policy VII-F.2[k] and other relevant general plan policies and the California Health and Safety Code, as well as Mitigation Measures CR-1, would ensure that impacts on human remains as a result of constructing CIP improvements would be **less than significant with mitigation**.

Impact CR-4: Impacts on Paleontological Resources (Less than Significant with)

The study area is underlain by the Modesto Formation, which is considered a paleontologically-sensitive rock unit under the SVP guidelines (2010), as discussed earlier in this section. Records of vertebrate fossil localities throughout the San Joaquin Valley and all sediments referable to the Modesto Formation suggest there is a potential for uncovering

additional similar fossil remains during construction-related earthmoving activities, as part of implementation of the Proposed Program. Though the large majority of the study area has been developed, and any fossil remains have previously been removed, there are parcels within the study area that have not yet been developed, and the Proposed Program would require excavation activities in undisturbed sediments below existing development. As such, the potential for damage to unique, scientifically important fossils during construction-related activities at project sites does exist. For improvements located within the Downtown, Baseline Developed and the Planned Urbanizing areas identified in the City's General Plan, Policies VII-F.2[k](5) and VII-F.3[c](5) would apply. If paleontological resources are discovered during ground-disturbing activities, these policies would require that construction work cease in the vicinity of a find, ensure that a qualified paleontologist evaluates the resource, and that appropriate measures are taken to mitigate effects on paleontological resources if discovered.

Impact CR-5: Potential for a Substantial Adverse Impact on Tribal Cultural Resources (Less than Significant with Mitigation)

TCRs have not been identified within the Program study area. None of the tribes contacted under Pub. Res. Code Section 21080.3.1 have responded with concerns about the potential impact of the Program on TCRs; thus, the City, as the lead CEQA agency, has determined that no known TCRs exist within the study area.

Project grading and earthmoving activities could disturb previously undiscovered archaeological deposits or buried historic resources. Proposed pipelines, lift stations, and other wastewater infrastructure to be located within riverbeds and otherwise adjacent to natural channels are particularly susceptible to encountering Native American artifacts. The City has adopted guidelines to aid project compliance with requirements for archaeological resources analysis, and subsequent projects would be required to adhere to these guidelines.

Projects proposing earthwork within archaeological resource study areas must adhere to general plan Section VII-F Policy 2-k, which requires preconstruction archaeological investigations on the site and implementation of avoidance measures, if necessary. Projects proposing earthwork in the Planned Urbanizing Area must adhere to City of Modesto Urban Area General Plan Section VII-F Policy 2-k as well as Policies 3-a, 3-b, and 3-c , which require the applicant to consult with Native American tribes and that a qualified archaeologist evaluate the site to determine its archaeological and cultural sensitivity, and if so, implement avoidance and minimization measures.

All subsequent projects must adhere to other City of Modesto Urban Area General Plan Sections VII-F Policies listed above, including 2-l, 2-m, 2-n, and 2-o, which outline mitigation procedures that would prevent impacts on the unearthed resources and require on-site activity to cease until an archaeological site investigation is performed, in the event that resources are uncovered during construction. Construction specifications for individual projects must stipulate the relevant procedures that are to be followed in the event that cultural resources are encountered during the construction process. Adherence to existing City policies regarding archaeological investigations, construction requirements, and proper mitigation for any resources discovered on the site, as well as to Mitigation Measure CR-1, would ensure that specific projects implemented subsequent to the Proposed Program would result in **less-than significant with mitigation** impacts on archaeological resources that meet CEQA's definition of historic resources or unique archaeological resources.

Chapter 9
GEOLOGY, SOILS, AND SEISMICITY

9.1 Overview

This chapter identifies geologic, soils, and seismic conditions that could affect or be affected by the Proposed Program. The chapter describes the regulatory setting, affected environment, impacts, and proposed mitigation measures based on published geologic reports, maps and professional expertise. The discussion of impacts considers the consequences of the Proposed Program on geology, soils, and seismicity, and how geology, soils, and seismicity would affect the Proposed Program. This chapter also evaluates whether operation of individual Program components would expose people or structures to substantial geologic hazards.

9.2 Regulatory Setting

9.2.1 Federal Laws, Regulations, and Policies

Section 402 of the Clean Water Act – National Pollutant Discharge Elimination System

The CWA is discussed in detail in Chapter 12, *Hydrology and Water Quality*. Because Section 402 of the CWA is directly relevant to earthwork, additional information is provided here.

The 1987 amendments to the CWA added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES program. As described in Chapter 12, USEPA has delegated to SWRCB the authority for the NPDES program in California, where it is implemented by the state's nine RWQCBs. Under the NPDES Phase II Rule, any construction activity disturbing 1 acre or more must obtain coverage under the state's General Permit for Storm Water Discharges Associated with Construction Activity (General Permit). General Permit applicants are required to prepare a Notice of Intent stating that stormwater will be discharged from a construction site, and that a SWPPP describes the BMPs will be implemented to avoid adverse effects on receiving water quality as a result of construction activities, including earthwork.

National Earthquake Hazards Reduction Act

The National Earthquake Hazards Reduction Act of 1977 (Public Law 95-124) and creation of the National Earthquake Hazards Reduction Program (NEHRP) established a long-term earthquake risk reduction program to better understand, predict, and mitigate risks associated with seismic events. The following four federal agencies are responsible for coordinating activities under NEHRP: USGS; National Science Foundation (NSF); Federal Emergency Management Agency (FEMA); and National Institute of Standards and Technology. Since its inception, NEHRP has shifted its focus from earthquake prediction to hazard reduction. The current program objectives (NEHRP 2017) are as follows:

1. Develop effective measures to reduce earthquake hazards;
2. Reduce facilities and system vulnerabilities to earthquakes;
3. Improve earthquake hazards identification and risk assessment methods; and
4. Improve the understanding of earthquakes and their effects.

Implementation of NEHRP objectives is accomplished primarily through original research, publications, and recommendations and guidelines for state, regional, and local agencies in the development of plans and policies to promote safety and emergency planning.

9.2.2 State Laws, Regulations, and Policies

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act; Pub. Res. Code Section 2621 et seq.) was enacted in 1972 to reduce the risk to life and property from surface faulting in California. The Alquist-Priolo Act prohibits construction of most types of structures intended for human occupancy on the surface traces of active faults and strictly regulates construction in the corridors along active faults (earthquake fault zones). It also defines criteria for identifying active faults, giving legal weight to terms such as "active," and establishes a process for reviewing building proposals in and adjacent to earthquake fault zones.

Under the Alquist-Priolo Act, faults are zoned and construction along or across them is strictly regulated if they are "sufficiently active" and "well defined." A fault is considered sufficiently active if one or more of its segments or strands shows evidence of surface displacement during the Holocene (defined for purposes of the act as referring to approximately the last 11,000 years). A fault is considered well defined if its trace can be clearly identified by a trained geologist at the ground surface or in the shallow subsurface, using standard professional techniques, criteria, and judgment (Bryant and Hart 2007). Before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings would not be constructed across active faults.

Seismic Hazards Mapping Act

As with the Alquist-Priolo Act, the Seismic Hazards Mapping Act of 1990 (SHMA) (Pub. Res. Code Sections 2690–2699.6) is intended to reduce damage resulting from earthquakes. The Alquist-Priolo Act addresses surface fault rupture, including strong ground shaking, liquefaction, and seismically induced landslides, and SHMA provisions are similar in concept in that the State is charged with identifying and mapping areas of risk of strong ground shaking, liquefaction, landslides, and other corollary hazards, and cities and counties are required to regulate development within Seismic Hazard Zones.

Under SHMA, permit review is the primary mechanism by which development can be locally regulated. Specifically, cities and counties are prohibited from issuing development permits for sites within Seismic Hazard Zones until appropriate site-specific geologic and/or geotechnical investigations have been performed and measures to reduce potential damage have been incorporated into the development plans.

California Building Code and International Building Code

Title 24 of the CCR, also known as the California Building Standards Code (CBC), specifies standards for geologic and seismic hazards other than surface faulting. These codes are administered and updated by the California Building Standards Commission. CBC specifies criteria for open excavation, seismic design, and load-bearing capacity directly related to construction in California. CBC standards determine building strength based on regional seismic risks and recommended construction specifications to provide building strength above that risk.

9.2.3 Local Laws, Regulations, and Policies

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (City of Modesto 2019) identifies the Stanislaus and Tuolumne Rivers, and Dry Creek, as regional parks. The River Greenway Program, which guides development within the Stanislaus River, Tuolumne River, and Dry Creek Comprehensive Planning Districts, includes the following policies that are potentially relevant to the Proposed Program and analysis of geology, soils, and seismicity:

> **Policy VII-K [a].** Continue to use building codes as the primary tool for reducing seismic risk in structures. The current version of the California Building Code, as adopted by the City of Modesto, is intended to ensure that buildings resist major earthquakes of the intensity or severity of the strongest experience in California, without collapse, but with some structural as well as nonstructural damage. In most structures, it is expected that structural damage could be limited to repairable damage, even in a major earthquake.
>
> **Policy VII-K[b].** Require all new buildings in the City to be built under the seismic requirements of the current adopted California Building Code.
>
> **Policy VII-K[c].** Enforce provisions of the Alquist-Priolo Earthquake Fault Zoning Act.
>
> **Policy VII-N[a].** Any construction that occurs as a result of the General Plan must conform with the current UBC regulations, which address seismic safety of new structures and slope requirements. As appropriate, require a geotechnical analysis prior to tentative map approval in order to ascertain site-specific subsurface information necessary to estimate foundation conditions. These geotechnical studies should reference and make use of the most recent regional geologic maps available from the California Department of Conservation Division of Mines and Geology.
>
> **Policy VII-N[e].** Control construction-related fluvial erosion by a construction erosion control program filed with the City's Public Works Department and kept current throughout site development.
>
> **Policy VII-N[f].** Include "best management practices" in the erosion control program, as appropriate, given the specific circumstances of the site and/or project. Table V-9-2 in the Master Environmental Impact Report presents examples of best management practices.

Stanislaus County General Plan

The *Stanislaus County General Plan* guides land use and development in the unincorporated area of Stanislaus County (Stanislaus County 2016). Goals and policies in the general plan related to geology, soils, and seismicity include the following:

Conservation and Open Space Element

Goal Two. Conserve water resources and protect water quality in the County.

Policy Five. Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.

Policy Six. Preserve natural vegetation to protect waterways from bank erosion and siltation.

Goal Five. Reserve, as open space, lands subject to natural disaster in order to minimize loss of life and property of residents of Stanislaus County.

Policy Sixteen. Discourage development on lands that are subject to flooding, landslide, faulting, or any natural disaster to minimize loss of life and property.

Safety Element

Goal One. Prevent loss of life and reduce property damage as a result of natural disasters.

Policy Three. Development should not be allowed in areas that are particularly susceptible to seismic hazard.

Goal Two. Minimize the effects of hazardous conditions that might cause loss of life and property.

Policy Six. All new development shall be designed to reduce safety and health hazards.

Policy Fourteen. The County will continue to enforce state-mandated structural Health and Safety Codes, including but not limited to the California Building Code, the International Property Maintenance Code, the California Fire Code, the California Plumbing Code, California Electric Code, and Title 24, Parts 1-9.

Agricultural Element

Goal Three. Protect the natural resources that sustain our agricultural industry.

Policy 3.7. The County shall encourage the conservation of soil resources.

9.3 Environmental Setting

The study area is located in the Great Valley geomorphic province of central California, often referred to as the California Central Valley. This geomorphic province is characterized as an alluvial plain approximately 50 miles wide and 400 miles long (California Geologic Survey

[CGS] 2002). The study area is within the central portion of the province at the northern end of the San Joaquin Valley. The San Joaquin Valley is bounded by the Sierra Nevada to the east, the Tehachapi Mountains to the south, and the Coast Range (Diablo Range) to the west.

The study area is drained primarily by the Tuolumne River, a major tributary to the San Joaquin River. The study area is predominantly flat. Elevations within the City range from approximately 115 feet above msl in the northeast portion of the City to 45 feet msl along the Tuolumne River in West Modesto. Most variations in surface topography within the study area are relatively minor with more appreciable changes in grade directly adjacent to surface water features (e.g., Tuolumne River and Dry Creek).

9.3.1 Local Geology

Alluvial sediments have accumulated within the San Joaquin Basin almost persistently for the last 160 million years. Most sediments in the basin derive from the Sierra Nevada Mountains, transported and deposited by the alluvial fans draining the western flanks of that range. Some sediments originate from the Diablo Range on the western side of the basin.

The study area is predominantly underlain by Pleistocene-aged alluvial fan deposits of the Modesto Formation (USGS 1991). The Modesto Formation is composed primarily of unconsolidated, unweathered, coarse sand and sandy silt along the upper portions of the unit. The older, deeper portions of this unit shift to more consolidated, slightly weathered, well-sorted silt and fine sand, silty sand, and sandy silt.

Near active floodplain areas, younger (Holocene) alluvium (Dos Palos Alluvium) is present near the San Joaquin River and Jennings Plant. Holocene alluvium is also present near the Tuolumne River area where the Sutter Plant and southern portion of the River Trunk Realignment Project are located.

9.3.2 Soils

Soils consist of younger alluvial material overlying older alluvium. These alluvial fan soils are highly fertile and productive for agricultural uses. Soil associations mapped as occurring in the study area generally consist of: Hanford, Dinuba, Tujunga, or Modesto (NRCS 2016). Most soils range from moderate to deep (i.e., 36 to 80+ inches deep).

The most predominant soils in the study area consist of sandy loam to fine sandy loam of the Hanford, Dinuba, Tujunga associations. In general, these soils are considered moderately well to well drained, with a very low to medium runoff class (NRCS 2016). A west-southwest trending band of Modesto loam-clay loam traverses the area north of Dry Creek. This association is moderately well drained with a high runoff class (NRCS 2016). San Joaquin and Madera sandy loams underlie the northeastern portion of the study area. These soils are moderately drained with very high runoff and a hardpan layer approximately 20 to 40 inches below ground surface (bgs) (NRCS 2016).

Portions of the River Trunk Realignment Project alignment near Dry Creek and the Tuolumne River corridors likely traverse fine sandy loams. Along the proposed Third Outfall Pipeline alignment, underlying soils mostly include Dinuba sandy loam and Hanford sandy loam. Going southward, soils become slightly saline-alkali near the Jennings Plant.

Soil Erosion

Soil erosion is the process of removing soil particles from a land surface by wind, water, or gravity. Factors influencing the rate of erosion may include climatic conditions, soil composition and roughness, soil moisture, ground cover, and topography and slope. Most natural erosion occurs slowly. However, ground-disturbing construction activities may increase the rate of erosion by exposing bare soils to the effects of wind and/or water. Erosion also may occur along the Tuolumne River and Dry Creek corridors during storm events, resulting in locally significant bank failures if the bank integrity is comprised or not properly stabilized. In general, the erosion potentials of most soils in the study area are considered low to moderate, with the exception of the Dinuba sandy loam, which is highly susceptible to erosion by water and Modesto clay loam, which is susceptible to erosion by wind (NRCS 2016).

Expansive Soils

Expansive soils are predominantly composed of clays and can undergo substantial volume change in response to changes in moisture content. During wetting and drying cycles, expansive soils may shrink and swell, creating differential ground movements. In general, the expansion potentials of most soils in the study area are considered low to moderate, with the exception of Modesto clay loam (NRCS 2016).

9.3.3 Seismicity

California is subjected to enormous tectonic forces stemming from the lateral motion of the Pacific (west) and North American (east) plates moving in opposing directions. The shearing forces of the plate movement results in an extremely fractured boundary referred to as the "San Andreas Fault Zone." Many smaller active and historic fault zones are associated with the Pacific/North American tectonic movement as well.

The eastern portion of the San Joaquin Valley and study area lie in a region with limited faulting and relatively low seismic activity. Despite limited seismic activity, there have been several large earthquakes that resulted in ground shaking in the study area during the last 200 years. Potential seismic hazards resulting from a regional moderate-to-major earthquake include: fault ground rupture (surface faulting); ground shaking; liquefaction, subsidence, and differential settlement; and landslide, slope failure, and lateral spreading. Discussion of regional seismic faulting and hazards and their potential to occur in the study area is discussed below.

Alquist-Priolo Fault Zones and Ground Rupture

Horizontal and/or vertical surface or ground ruptures can occur during seismic events, typically along existing fault lines. Ground rupture that occurs along a fault trace (mapped location of the intersection(s) of a fault with the ground surface) is referred to as *fault rupture*. Some seismogenic faults (e.g., blind thrusts) do not extend to the ground surface and may not generate fault rupture even during major earthquakes. Other rupturing of the ground surface can occur as the result of slope failure or settlement caused by seismic shaking. Ground ruptures can result in damage to buildings, roads, and underground utilities. The potential for ground rupture depends on the proximity of faults, shaking severity, and local geologic conditions.

Fault areas considered to be of greatest risk are identified as Alquist-Priolo fault zones. No Alquist-Priolo designated fault zones or potentially active faults exist within or near the study area. Most seismic activity in this region stems from the San Andreas Fault Zone and associated fault systems west of the study area. Past evidence of recent fault displacement can be seen throughout the San Andreas Fault Zone and San Francisco Bay area. Active and potentially active faults near the Program study area are presented in **Table 9-1**.

Table 9-1. Regional Faults in Proximity to the Program Study Area

Fault	Approximate Distance from City's Wastewater Service Area	Last Known Major Displacement
San Joaquin Fault (potentially active)	12 miles west	11,700–700,000 years ago; without historical record
Vernalis (inactive)	10 miles west	Within last 1.6 million years; age undifferentiated
Ortigalita Fault Zone, Cottonwood Arm Section (potentially active)	27 miles southwest	11,700–700,000 years ago; without historical record
Foothills Fault System, Southern Reach Section (potentially active)	25 miles east	11,700–700,000 years ago; without historical record
Greenville Fault Zone (active)	28 miles west	1980, Magnitude (M) 5.8
Calaveras Fault Zone, Central Calaveras Section (active)	46 miles southwest	1979, M 5.7 2007, M 5.6
San Andreas Fault Zone, Santa Cruz Mountains Section (active)	55 miles southwest	1989, M 7.2 1906, M 7.9

Sources: CGS 2010; USGS 2016

Ground Shaking

Seismically induced ground shaking can cause substantial damage to structures. The severity of ground shaking experienced at a specific location depends on a variety of factors, such as the magnitude and duration of the seismic event, fault type associated with the event, distance from the epicenter, and physical properties of the underlying geology and soils. The Modified Mercalli Intensity Scale (MMI) of perceived intensity, shown in **Table 9-2**, is based on observed effects and is the current standard used throughout the United States. Less intense earthquakes are typically rated on the basis of individual accounts, whereas higher intensity events are rated based on observed structural damage.

Table 9-2. Modified Mercalli Intensity Scale

Intensity	Shaking	Description/Damage
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: USGS 1989

Although ground shaking in the Modesto area has historically been very minimal, ground shaking events periodically affect the region. In Stanislaus County, the level of seismic ground shaking decreases from "High" risk along the western border of the County and the foothills of the Diablo Range, to "Moderate" risk in the central part of the County, to "Low" risk in the eastern portion (CGS 2008). The study area lies within the central portion of the County and is considered "Moderate" to "Low" to risk for earthquake shaking potential. In addition, the expected (10 percent chance of occurring in the next 50 years) peak ground shaking (acceleration[1]) in the study area is relatively low at 0.247*g* (CGS 2008).

Differential Settling, Subsidence, and Liquefaction

Settlement of the ground surface can be caused by a number of geologic processes. Settlement is the lowering of the land surface elevation as a result of the compression, compaction, or

[1] Ground shaking is usually quantitatively expressed as the acceleration of movement relative to the acceleration of gravity (*g*).

consolidation of underlying soils, sediment, or rock. These processes are exasperated under increased loading (e.g., additional sediment deposition or construction of structures, including fills) or the withdrawal of groundwater. The processes cause a reduction in the volume of the materials. Compaction and compression generally occurs within unconsolidated granular soils or younger alluvial sediment over a relatively short timeframe. Consolidation usually occurs over a longer period (sometimes many years) in saturated finer grained material as pore water (i.e., water within the spaces between sediment grains) is forced out of the sediment structure under loading or groundwater pumping.

Surface settlement can be referred to as subsidence, a term generally used for settlement of large magnitude or affecting a large area. Subsidence can also occur following oxidation of buried organic material. Areas consisting of fine-grained sediments are more susceptible to ground subsidence. Although mining and extraction activities may also lead to subsidence, excessive pumping of groundwater is the predominant cause for this phenomenon. Historic land subsidence has occurred in large portions of the San Joaquin Valley, with more recent subsidence areas around El Nido and Tulare-Kettleman City (California Department of Water resources [DWR] 2014; DWR 2017a; DWR 2017b). In the Modesto area, the effects of subsidence have been subtler with surface elevations generally 0 to 5 feet lower as compared to 1949 elevations (DWR no date). However, more recent groundwater elevations from local wells within the study area generally show declines in groundwater elevations ranging from 0 to 50 feet below the historical spring low levels (DWR 2014). As such, and in consideration of other basin-wide factors, DWR has classified the San Joaquin Valley Groundwater Basin, Turlock Subbasin as having a low to medium overall potential for future land subsidence, the Modesto Subbasin as having a medium to high overall potential, and the Delta-Mendota Subbasin as having a high overall potential (DWR 2004; DWR 2006a; DWR 2006b; DWR 2017a). Please refer to Chapter 12, *Hydrology and Water Quality*, for further discussion on groundwater resources.

Ground settlement can cause the development of cracks or fissures in the ground surface. When ground settlement is non-uniform or uneven, differential settlement results, potentially inducing stress to structures.

Liquefaction can occur when water-saturated, loose sandy soils suddenly lose strength during seismic shaking. The primary factor that triggers liquefaction is moderate to strong ground shaking. The probability of liquefaction correlates directly with the intensity and duration of ground shaking (i.e., the stronger and/or longer the earthquake, the greater the chance of liquefaction). Additionally, physical properties may increase the susceptibility of soil to liquefaction. Saturated relatively clean/loose granular soils have a relatively high susceptibility for liquefaction while cohesive soils (even if saturated) have a low susceptibility. No specific liquefaction hazards have been identified in Stanislaus County (Bryant and Hart 2007). Although the study area is located in a seismically limited region, several proposed components would be located near the Tuolumne River and Dry Creek with the potential for the presence of a high water table and sandy, liquefiable soils. Therefore, impacts related to seismic-related ground failure, including liquefaction would be significant if not adequately addressed

Landslide, Slope Failure, and Lateral Spreading

Landslides or slope failure may occur in steeply sloped areas (15 percent slope or greater) following heavy rains, seismic events, or human activities (e.g., grading or excavation

activities). Similarly, horizontal displacement of gently sloping ground (5 percent or less slope) may occur along river banks or exposed embankments, a phenomenon known as lateral spreading. Saturated, loosely consolidated soils and precipitation events increase the likelihood that an earthquake will trigger landslides, slope failure, or lateral spreading.

Modesto and the surrounding area is relatively flat with little variation in topography. Some gradual slopes may be observed near river terraces and former sand dunes. Effects of landslides, slope failures, and lateral spreading are negligible in the Modesto area.

9.4 Impact Analysis

9.4.1 Methodology

The methods used to evaluate the environmental impacts of the Proposed Program on geology, soils, and seismicity involved a review and assessment of published maps, professional publications, and reports pertaining to the geology, soils, and seismicity within the Program vicinity. Information reviewed included USGS and CGS geologic maps (USGS 1991; CGS 2002), NRCS soils maps (NRCS 2016), California seismic hazard zone mapping (Bryant and Hart 2007; CGS 2008; CGS 2010; CGS 2002;), DWR groundwater basin information (DWR 2004; 2006a, 2006b; 2017a; 2017b), and USGS historic earthquake data (not cited). The impact analysis assumed the proposed program activities and Realignment project, would, as required, conform to the latest CBC standards, General Plan policies, local ordinances, and local permit requirements.

9.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on geology, soils, and seismicity if it would:

- 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;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - 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 off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

The first criterion and sub-criterion regarding rupture of a known earthquake fault are not included in the detailed EIR impact analysis because the Proposed Program is not located within a Alquist-Priolo designated hazard zone. The nearest known active fault (i.e., surface displacement in the last 10,000 years) is the Greenville Fault Zone, approximately 25 miles west (CGS 2010). The nearest potentially active fault (i.e., surface displacement in the last 1.6 million years) is the San Joaquin Fault, approximately 8 miles west of the study area (CGS 2010). Since there are no known faults in the in the Program area, there would be no impact from ground rupture of a known fault.

In addition, the criterion regarding use of septic tanks or alternative wastewater disposal systems is not included in the detailed EIR impact analysis as the Proposed Program does not involve construction of septic tanks or alternative wastewater disposal systems. Therefore, there would be no impact related to the suitability of soils to support septic tanks or alternative disposal systems.

9.4.3 Environmental Impacts

Impact GEO-1: Cause Damage to Facilities and Exposure of People to Hazards from Strong Seismic Events, Including Ground Shaking or Landslides (Less than Significant)

Due to the Proposed Program's significant distance to active faults and the underlying geologic and soil conditions, the Central Valley generally experiences infrequent, lower levels of ground shaking than many other regions of California. Recent seismic events associated with the San Andreas Fault Zone have resulted in light or moderate ground shaking in the study area. Little to no damage would occur to most newly constructed structures (e.g., lift stations and pump stations) in the Modesto area following ground shaking of this magnitude. Additionally, the City would be required to comply with CBC standards which would further minimize seismic-related impacts by ensuring that all structures are designed and constructed in compliance with California's seismic-related engineering standards. Any potential for foundational or structural damage associated with seismic ground shaking and adverse effects to structures or people would be minimal.

The floor of the Central Valley is relatively flat with only minor changes in topography. Some gradual slopes may be observed near river terraces and the banks of the Tuolumne River and Dry Creek. However, landslides are not likely to occur on or near any of the proposed component sites.

Based on the above, impacts related to seismic ground shaking and landslides would be **less than significant**.

Impact GEO-2: Result in Risk to Property and Life from Expansive Soils (Less than Significant)

Soils that contain a relatively high percentage of clay minerals have the potential to shrink and swell with changing moisture conditions. This uneven movement can fracture concrete

foundations and footings, resulting in potential damage or failure of infrastructure. In general, most of the study area, including the River Trunk Realignment Project area, contains sandy or loamy soils exhibiting low to moderate plasticity characteristics (NRCS 2016). In addition, development of Program facilities (e.g., pump stations and treatment plant facilities) and upgrades to existing wastewater collection and treatment facilities on expansive soils typically can be addressed through compliance with CBC standards by designing and building structures to a level of strength appropriate to regional seismic risks. However, the Proposed Program includes numerous components throughout central Stanislaus County, including areas with underlying soils exhibiting moderate to high expansive characteristics that may result in damage to infrastructure.

The City's Standard Specifications require under Section 11.05 that a comprehensive soils report be prepared for each project in the City. The report must be prepared by a licensed Geologist or Geotechnical Engineer and must include R-values of soil test samples, groundwater elevations, stripping and grading recommendations, and a determination of whether expansive soil is present. Section 11.08 of the City's Standard Specifications further requires that projects be graded/constructed in accordance with the recommendations in the soils report and any additional recommendations provided during construction by the project Geotechnical Engineer. These requirements would ensure that Proposed Program components would not be constructed on expansive soils such as to subject persons or property to substantial risks of harm. Therefore, this impact would be **less than significant.**

Impact GEO-3: Result in Substantial Soil Erosion or Loss of Topsoil (Less than Significant)

Construction-related activities would involve disturbance and exposure of soils, which could leave soils susceptible to erosion during precipitation or wind events. The Proposed Program would include grading, excavation, trenching, or other activities that could loosen soils and increase the risk of erosion or sediment transport. In addition, some components, such as the River Trunk Realignment Project and proposed third outfall pipeline, may involve removing, stockpiling, and transporting a substantial volume of topsoil. These impacts are considered significant. However, as discussed in Chapter 12, *Hydrology and Water Quality*, for Program components with a footprint greater than one acre, construction-related impacts on soil resources from all Proposed Program components, including the River Trunk Realignment Project, would be avoided or minimized through implementation of BMPs and compliance with the NPDES General Construction Permit and SWPPP requirements. For Program components that would result in disturbance of less than one acre, similar construction-related impacts on water quality due to erosion would be avoided and minimized by complying with the City of Modesto's Standard Specifications which require development of a Local SWPPP or Erosion Control Plan and implementation of stormwater BMPs. Therefore, by implementing VMPs pursuant to either the NPDES General Construction Permit or the City of Modesto's Standard Specifications, this impact would be considered **less than significant**.

Impact GEO-4: Result in Subsidence, Liquefaction, or Collapse Due to Seismic Activity or an Unstable Geologic Unit or Soil (Less than Significant)

Due to the physical composition of the soils, subsidence in the Modesto area has historically been minor with surface elevation loss of 0 to 5 feet (compared to 1949 elevations) despite significant observed subsidence in other portions of the San Joaquin Valley (DWR no date). The Proposed Program would not directly use groundwater as components would be limited

to sewer lines, pump and lift stations, treatment plant components, and related facilities. Groundwater could be encountered during excavation work, particularly during construction of the River Trunk Pump Station and pipeline construction activities including those involving trenchless methods. For such components, groundwater dewatering activities would likely be required during construction activities. However, dewatering would be minimal and temporary and the potential for localized collapse or subsidence as a result of Program construction activities or River Trunk Realignment Project construction activities would be less than significant.

Under certain conditions, some geologic units or soils can become unstable and lead to landslides, trench collapse, lateral spreading, and liquefaction, especially when construction activities result in exposed soils and/or steep slopes. Construction-related ground-disturbing or excavation activities could alter soil stability. Although most Program construction activities would generally occur in relatively flat areas not at risk from landslides and lateral spreading, excavation and trenching for structures and pipelines would temporarily create potentially unstable slopes. Construction of the River Trunk Pump Station would also require substantial excavation of at least 75 feet and would likely require dewatering and installation of a shoring system. Currently, the City is considering two different approaches for establishing a dry and stable work area for the River Trunk Pump Station: (1) designing the temporary shoring system to be part of the permanent pump station, or (2) design a temporary shoring system to create a dry and stable work area and construct permanent structural walls for the pump station separately (Carollo Engineers 2016). The U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) outlines specific Excavation and Trenching standards for building (29 CFR Section 1926.650) and utility trenching operations (29 CFR Section 1926.652). To reduce the risk of excavation-related accidents, the City and its contractor(s) would adhere to such OSHA standards.

Liquefaction may occur in water-saturated soils during moderate to large earthquakes. The potential for liquefaction to occur depends on soil composition, soil saturation levels, and intensity and duration of seismic ground shaking and can lead to severe damage in concrete foundations and infrastructure. Although the study area is located in a seismically limited region, several proposed components would be located near the Tuolumne River and Dry Creek with the potential for the presence of a high water table and sandy, liquefiable soils. Therefore, impacts related to seismic-related ground failure, including liquefaction would be significant if not adequately addressed. Adherence to current CBC standards would reduce these risks by designing and building structures to a level of strength appropriate to regional seismic risks. In addition, as described in Impact GEO-2, per Section 11.08 of the City's Standard Specifications, all WWMP components would be graded/constructed in accordance with the recommendations in a required soils report and any additional recommendations provided during construction by the project Geotechnical Engineer. Incorporating the findings and recommendations identified for the project into the final project designs, would reduce significant risks of subsidence, liquefaction, or collapse by ensuring new structures are designed and constructed in a manner that addresses underlying geologic conditions. In addition, the risks of landslides and lateral spreading in the study area would not be substantial. Thus, with adherence to the City's Standard Specifications, adverse effects from unstable geologic units would be **less than significant**.

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Chapter 10
GREENHOUSE GAS EMISSIONS AND ENERGY RESOURCES

10.1 OVERVIEW

This chapter describes the regulatory and environmental setting related to greenhouse gases (GHGs) and energy resources and then evaluates impacts related to the Proposed Program's forecasted GHG emissions. The impact evaluation begins by describing the methodology used to evaluate significance and the GHG significance criteria, and then presents the impact evaluation.

10.2 REGULATORY SETTING

10.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

At the federal level, USEPA has developed regulations to reduce GHG emissions from motor vehicles and has developed permitting and reporting requirements for large stationary emitters of GHGs. The following sections briefly describe the history and content of the regulatory programs developed to date by USEPA and the U.S. Supreme Court (Court).

The Court ruled for the first time in 2007 that GHG emissions are air pollutants covered under the federal Clean Air Act, in its decision *Massachusetts v. Environmental Protection Agency* (549 U.S. 497). The Court held that GHGs fit the definition of an air pollutant causing and contributing to air pollution, which reasonably may be anticipated to endanger public health or welfare. In 2009, the USEPA Administrator determined that existing and projected concentrations of GHGs threaten public health and welfare of present-day and future generations, and that combined emissions from motor vehicles contribute to GHG pollution. USEPA's endangerment finding covers emissions of six key GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These GHGs are discussed further in Section 10.3, "Environmental Setting."

GHG Emission Standards

On April 1, 2010, USEPA and the National Highway Traffic Safety Administration (NHTSA) established a program to reduce GHG emissions and improve fuel economy standards for new model year 2012–2016 cars and light trucks. On August 9, 2011, USEPA and the NHTSA announced standards to reduce GHG emissions and improve fuel efficiency for heavy-duty trucks and buses. On October 15, 2012, USEPA and NHTSA established a program to reduce GHG emissions and improve fuel economy standards for new cars and light trucks through 2025 (USEPA 2012). However, in August 2018, the USEPA and the NHTSA published a proposed rule for model years 2021-2026 of new cars and light trucks that would freeze mileage standard requirements at 2020 levels through 2026, and thus the mileage standard requirements may be subject to change from the standards established in 2012 (Center for Climate and Energy Solutions 2019). In August 2016, USEPA and the NHTSA jointly finalized

Phase 2 Heavy-Duty National Program standards to reduce GHG emissions and improve fuel efficiency of medium- and heavy-duty vehicles for model year 2018 and beyond (USEPA 2017a).

Clean Power Plan

In 2015, President Barack Obama and USEPA announced the Clean Power Plan, which is aimed at reducing carbon pollution from existing fossil fuel–fired electric generating units. The plan was designed to be flexible while implementing strict regulations to encourage the development of cleaner and lower-polluting American energy. On February 9, 2016, the Court stayed implementation of the Clean Power Plan pending judicial review. While awaiting action by the Court, USEPA was continuing to work with states that choose to find ways to reduce GHG emissions from power plants. However, in 2018, the USEPA proposed to repeal the Clean Power Plan and replace it with the proposed Affordable Clean Energy (ACE) rule (USEPA 2018). The ACE rule identifies a "best system of emission reduction", provides states with a list of "candidate technologies" that can be used to establish standards of performance, and updates EPA's New Source Review Permitting program to incentivize efficiency improvements at existing power plants (USEPA 2018). This regulation could influence the indirect GHG emissions associated with electricity use.

10.2.2 STATE LAWS, REGULATIONS, AND POLICIES

GHG Reduction Goals

In recent years, California has enacted a number of policies and plans to address GHG emissions and climate change. Efforts on a statewide level to regulate and reduce GHG emissions are detailed below but include establishing GHG emission goals, developing vehicle emission standards, and promoting sustainable land use and transportation planning. Most recently, the state's efforts to continuing GHG emission control and regulation progress include developing international partnerships.

AB 32, SB 32 and Executive Orders

In 2006, the California State Legislature enacted AB 32, the Global Warming Solutions Act, which set the overall goals for reducing California's GHG emissions to 1990 levels by 2020. EOs S-3-05 and B-16-2012 further extend this goal to 80 percent below 1990 levels by 2050. EO B-30-15 established an interim target to cut California's GHG emissions to 40 percent below 1990 levels by 2030.Senate Bill 32 codified the target of achieving 40 percent below 1990 levels by 2030.

CARB approved the First Update to the AB 32 Scoping Plan on May 22, 2014 (CARB 2014). This update defines climate change priorities for the next 5 years and also sets the groundwork to reach long-term goals set forth in EOs S-3-05 and B-16-2012. The update also highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals and evaluates how to align the State's longer term GHG reduction strategies with other state policy priorities for water, waste, natural resources, clean energy, transportation, and land use. CARB is updating the Scoping Plan to reflect progress since 2005, additional reduction measures, and plans for reductions beyond 2020.

CARB released and adopted a 2017 Scoping Plan Update (CARB 2018a) to reflect the 2030 target set by Executive Order B-30-15 and codified by SB 32 (CARB 2018a, CARB 2017). The

2017 Scoping Plan Update suggests several areas where measures for water and wastewater treatment could be considered. This includes improving the energy consumption for water pumping, treatment, heating; utilizing anaerobic digestion and wastewater treatment plant capacity to help process organic waste diverted from landfills; using biosolids for soil amendments; and incentivizing methane capture systems at wastewater treatment plants to produce renewable electricity, transportation fuel, or pipeline biomethane.

California has adopted several vehicle emission reduction and fuel efficiency regulations that are similar and consistent with the federal USEPA and NHTSA regulations. These California vehicle regulations were granted under a waiver request by the USEPA and would not necessarily be affected by changes in the federal policies. The current federal administration has suggested revoking California's waiver, and if the waiver is revoked the California standards may be subject to change.

GHG Reporting and Reduction Regulations

CARB has completed rulemaking to implement several GHG emission reduction regulations and continues to investigate the feasibility of implementing additional GHG emission reduction regulations. These include the low carbon fuel standard, which reduces GHG emissions associated with fuel usage, and the renewable portfolio standard (RPS), which requires electricity suppliers to increase the amount of electricity generated from renewable sources to 33 percent by 2020 and to 50 percent by 2030.

In January 2012, CARB approved the Advanced Clean Cars Program, a vehicle emission control program for model years 2017–2025. To further California's support of the national program to regulate emissions, CARB submitted a proposal that would allow automobile manufacturer compliance with USEPA's requirements to show compliance with California's requirements for the same model years. The final rulemaking package was filed on December 6, 2012, and the final rulemaking became effective December 31, 2012.

CBC Title 24 governs construction of buildings in California. Parts 6 and 11 of Title 24 are relevant for energy use and green building standards, which reduce the amount of indirect GHG emissions associated with buildings.

SB 1383 directed ARB to develop a Short-Lived Climate Pollutant (SLCP) reduction strategy with targets of reducing emissions of methane and hydrofluorocarbons 40 percent below 2013 levels by 2030 and black carbon emissions 50 percent below 2013 levels by 2030 (CARB 2017).

Wastewater treatment plants can assist with this goal by determining opportunities to support co-digestion of food-related waste streams at wastewater treatment plants and incentivizing methane capture systems at wastewater treatment plants to produce renewable electricity, transportation fuel, or pipeline biomethane. Both of these are considered under the Proposed Program.

California requires industrial sources with GHG emissions over 10,000 metric tons (MT) to annually report their GHG emissions under the Mandatory Reporting Rule. Wastewater treatment facilities may be required to report GHG emissions depending on their size and types of equipment used in the wastewater treatment process.

Climate Change Adaptation Policies

In 2009, California adopted a statewide Climate Adaptation Strategy that summarizes climate change impacts and recommends adaptation strategies across seven sectors: public health, biodiversity and habitat, oceans and coastal resources, water, agriculture, forestry, and transportation and energy. The California Natural Resources Agency (CNRA), in coordination with other state agencies, has updated the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009). The new Safeguarding California Plan and the Safeguarding California Plan: 2018 update augment previously identified strategies in light of advances in climate science and risk management options (California Natural Resources Agency 2014, 2018, and 2019). The Safeguarding California Plans highlights climate risks in multiple broad areas (e.g., energy, forests, transportation, public health, water, etc.) in California, discusses progress to date, and makes realistic sector-specific recommendations. For the Proposed Program, the Water and Public Health sectors are relevant.

California Integrated Energy Policy

Senate Bill 1389, passed in 2002, requires the California Energy Commission (CEC) to prepare an Integrated Energy Policy Report for the governor and legislature every two years (CEC 2018). The reports and report updates analyze data and provide policy recommendations on trends and issues concerning electricity and natural gas, transportation, energy efficiency, renewable energy, and public interest energy research (CEC 2018). The 2018 Integrated Energy Policy Report Update highlights California's innovative policies and the related clean energy economy (CEC 2018).

10.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

San Joaquin Valley Air Pollution Control District

The SJVAPCD's *Climate Change Action Plan*, adopted in 2008, directed the District Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change (SJVAPCD 2009a, 2017). On December 17, 2009, the SJVAPCD adopted *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* (Guidance) (SJVAPCD 2009b). The Guidance establishes a streamlined process that can be used to evaluate the significance of project-specific GHG emission impacts on global climate change, based on the use of best performance standards (BPS) (SJVAPCD 2009b); the streamlined evaluation process is designed to meet the reduction goals of AB 32. The SJVAPCD defines BPS as "the most effective achieved-in-practice means of reducing or limiting GHG emissions from a GHG emissions source." Types of BPS include equipment type, equipment design, operational and maintenance practices, measures that improve energy efficiency, and measures that reduce vehicle miles traveled (SJVAPCD 2009b). Potential BPS related to boilers or process heaters may be applicable to the Proposed Program. If BPS are not available, the SJVAPCD encourages users to demonstrate at least a 29-percent reduction from business as usual (BAU); however, the Guidance does not provide clear BPS or thresholds for the evaluation of construction-related effects under CEQA.

Stanislaus County Regional Transportation Plan / Sustainable Communities Strategy

Stanislaus County's *Regional Transportation Plan / Sustainable Communities Strategy, (RTP/SCS),* adopted in 2014, contains land-use and transportation goals and objectives for the County and addresses requirements, including those in SB 375, for reductions in GHG emissions from the transportation sector (StanCOG 2014). The WWMP is a tool to ensure implementation of appropriate water management policies for the land-use goals outlined in the RTP/SCS.

Stanislaus County Regional Sustainability Toolbox

Stanislaus County, in collaboration with the nine cities within the county, completed the Stanislaus Regional Sustainability Toolbox (RST) (Stanislaus County 2017). The RST includes multiple planning tools to achieve regional GHG reductions. The planning tools include an example climate action plan (CAP) with regional CAP strategies and low-impact development (LID) standards and specifications. Regional strategies from this model CAP related to water-related infrastructure projects like the Proposed Program include the following (ESA 2013):

Goal E.1: Increase Building and Equipment Efficiency Community-Wide

> **Strategy 1.7:** Industrial Equipment Energy Efficiency Promotion. Promote San Joaquin Valley Air Pollution Control District Best Performance Standards to increase energy efficiency in industrial equipment.

Stanislaus County General Plan

The *Stanislaus County General Plan's* Conservation and Open Space Element (2016) identifies water conservation-related goals and policies that would contribute to reduced GHG emissions by conserving water resources and reducing related energy use for water supply/distribution activities. The General Plan also contains the following goal, policies, and implementation measures for reducing air pollutant emissions that would also reduce GHG emissions:

Goal Six: Improve air quality.

> **Policy Nineteen:** The County will strive to accurately determine and fairly mitigate the local and regional air quality impacts of proposed projects.
>
> > **Implementation Measure 1.** Require all development proposals, where appropriate, to include reasonable air quality mitigation measures.
> >
> > **Implementation Measure 2.** Minimize case-by-case analysis of air quality impacts through the use of standard criteria for determining significant environmental effects, a uniform method of calculating project emissions, and standard mitigation methods to reduce air quality impacts.
>
> **Policy Twenty:** The County shall strive to reduce motor vehicle emissions by reducing vehicle trips and vehicle miles traveled and increasing average vehicle ridership.

City of Modesto General Plan

The *City of Modesto's General Plan* Chapter VII, Environmental Resources, Open Space and Conservation (2019) contains the following goals related to energy conservation may be relevant to the Proposed Project:

> **Policy I.2.a.** Require shade trees, where feasible and appropriate, in landscape plans for all new development proposals. Mature trees have lower water needs. Develop shade-tree specifications for development projects, including appropriate types of trees (size, deciduous or evergreen, absence or lower branches, etc), locations (e.g., distance from structures), density (i.e. within a subdivision or parking lot), and orientation (trees on the west side of a building generally provide the most benefit) for use in landscape plans.
>
> **Policy I.1.c.** Discourage removal of street trees unless they are badly diseased and have become a threat to public safety. If a tree must be removed, it should be replaced no later than the end of the next planting season with a large-canopy species.
>
> **Policy I.1.g.** Encourage the use of solar energy systems for residential, agricultural, parks, public buildings, and business purposes as provided in Government Code Section 65850.5.
>
> **Policy I.1.j.** Support the State of California's commitment to the "Renewable Portfolio Standard," which requires electrical utility providers to obtain one-third (33%) of their electricity from renewable energy sources by 2020.
>
> **Policy I.1.l.** Consider purchasing clean-fuel / alternative-fuel fleet vehicles.

City of Ceres General Plan

The *City of Ceres General Plan's* Chapter 54, Health and Safety (2018) contains the following goals and policies related to energy use and greenhouse gas emissions that may have direct or indirect beneficial effects on the generation of GHGs that may be relevant to the Proposed Project:

Goal 5.E: Reduce the community's GHG emissions to mitigate the rate and extent of climate change.

> **Policy 5.E.1. Green Building Code:** Continue to implement and enforce the Green Building Code to promote energy efficient building design and construction.
>
> **Policy 5.E.2. LEED Certification:** Encourage new development to participate in the Leadership in Energy and Environmental Design (LEED) certification program for the design, operation, and construction of high-performance energy efficient buildings.
>
> **Policy 5.E.4. Energy Efficient Design:** Reduce the need for artificial temperature control and lighting by establishing standards to encourage the following:
>
> - Passive cooling measures in new and existing development; and

- Design that incorporates windows that open to the outside in all habitable rooms to maximize the use of daylight and promote ventilation.

Policy 5.E.5 Energy Efficient Lighting. Establish standards to improve energy efficiency related to outdoor lighting by limiting unnecessary fixtures and utilizing low-energy fixtures.

Policy 5.E.7 Energy Efficient Municipal Operations. Demonstrate leadership by reducing the use of energy and fossil fuel consumption in municipal operations, increasing energy efficiency in transportation, waste management, building design and use, and the purchasing of goods and services.

10.3 ENVIRONMENTAL SETTING

Climate change results from the accumulation in the atmosphere of GHGs, which are produced primarily by the burning of fossil fuels for energy. Because GHGs (CO_2, methane, and N_2O) persist and mix in the atmosphere, emissions anywhere in the world affect the climate everywhere in the world. GHG emissions are typically reported in terms of carbon dioxide equivalents (CO_2e), which converts all GHGs to an equivalent basis taking into account their global warming potential (GWP) compared to CO_2. **Table 10-1** shows the six GHGs and their respective GWP.

Table 10-1. Greenhouse Gas Overview and Global Warming Potential

Greenhouse Gas	GWP over 100 years (in IPCC 2013/SAR)[(a)]	Description
Carbon Dioxide (CO_2)	1/1	Released into the atmosphere through burning of fossil fuels (coal, natural gas and oil), solid waste, trees, and wood products, and also because of certain chemical reactions; removed from the atmosphere when it is absorbed by plants and oceans; remains in the atmosphere for 50 to more than 100,000 years.
Methane (CH_4)	28/21	Emitted during the production and transport of coal, natural gas, and oil; methane emissions also result from livestock and other agricultural practices and from the decay of organic waste, notably in municipal solid waste landfills; remains in the atmosphere for about 10 years.
Nitrous Oxide (N_2O)	265/310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
Hydrofluoro-carbons (HFCs)	4-12,400/ 650–11,700	Typically used in refrigeration and air conditioning equipment, as well as in solvents; emissions are generated primarily from use in air conditioning systems in buildings and vehicles; remains in the atmosphere from 10 to 270 years.
Perfluoro-carbons (PFCs)	6,630-11,100/ 6,500–9,200	Emitted as by-products of industrial and manufacturing sources; remains in the atmosphere from 800 to 50,000 years.
Sulfur Hexa-fluoride (SF_6)	23,500/23,900	Used in electrical transmission and distribution; remains in the atmosphere approximately 3,200 years.

(a) As scientific understanding of the global warming potential (GWP) of various greenhouse gases (GHGs) improves over time, GWP values are updated in the Intergovernmental Panel on Climate Change (IPCC) scientific assessment reports. For regulatory consistency, however, the United Nations Framework Convention on Climate Change reporting guidelines (and international treaties) for national inventories continue to the use of GWP values to those published in the IPCC's 1996 Second Assessment Report (SAR). The table shows GWP values for 100 years from IPCC 2013 and SAR.

Sources: USEPA 2015; IPCC 2013; IPCC 1996

These six gases are the major GHGs that were recognized by the United Nations Framework Convention on Climate Change and other international climate change treaties including the Kyoto Accords which was the first international treaty to establish GHG emission reduction goals. Other GHGs were not recognized by the international treaties, chiefly because of the smaller role that they play in global climate change or the uncertainties surrounding their effects. One GHG not recognized by the international treaties is atmospheric water (H_2O) because no obvious correlation exists between H_2O and specific human activities. Water appears to act in a feedback manner; higher temperatures lead to higher H_2O concentrations, which in turn cause more global warming (Intergovernmental Panel on Climate Change [IPCC] 2003). Nitrogen trifluoride was not recognized in the initial Kyoto Accords, but was subsequently included by the United Nations Framework Convention on Climate Change and recognized in California as a GHG.

The most important GHG in human-induced global warming is CO_2. Although many gases have much higher GWP than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for about 82 percent of the GWP of all GHGs emitted by the United States (USEPA 2017b). Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions over time and, thus, substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 ppm, more than 35 percent higher than the pre-industrial concentrations of about 280 ppm (Forster et al. 2007, as cited in IPCC 2007). In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its long lifespan in the atmosphere (50,000–100,000 years).

Anthropogenic (human-caused) emissions of GHGs are widely accepted in the scientific community as contributing to global warming. Temperature increases associated with climate change are expected to adversely affect plant and animal species, cause ocean acidification and sea level rise, affect water supplies, affect agriculture, and harm public health.

Global climate change is already affecting ecosystems and societies throughout the world. Climate change adaptation refers to the efforts undertaken by societies and ecosystems to adjust to and prepare for current and future climate change, thereby reducing vulnerability to those changes. Human adaptation has occurred naturally over history; people move to more suitable living locations, adjust food sources, and more recently, change energy sources. Similarly, plant and animal species also adapt over time to changing conditions; they migrate or alter behaviors in accordance with changing climates, food sources, and predators.

Many national, as well as local and regional, governments are implementing adaptive practices to address changes in climate, as well as planning for expected future impacts from

climate change. Some examples of adaptations that are already in practice or under consideration include conserving water and minimizing runoff with climate-appropriate landscaping, capturing excess rainfall to minimize flooding and maintain a constant water supply through dry spells and droughts, protecting valuable resources and infrastructure from flood damage and sea level rise, and using water-efficient appliances.

In 2016, total California GHG emissions were 429.4 million metric tons of carbon dioxide equivalents (MMT CO_2e) (CARB 2018b). This represents a reduction in total GHG emissions from 2012, which had the first emissions increase since 2007. The 2012 increase was driven primarily by strong economic growth in the state, the unexpected closure of the San Onofre Nuclear Generating Station, and drought conditions that limited in-state hydropower generation. Overall GHG emissions reached a peak in 2004 and have since decreased by 13 percent. In 2016, the transportation sector of the California economy was the largest source of emissions, accounting for approximately 39 percent of the total emissions. On-road vehicles accounted for roughly 91 percent of emissions in the transportation sector.

10.3.1 ENERGY RESOURCES AND CONSUMPTION

MID provides electricity services to the City of Modesto through a network of over 1,800 miles of power lines throughout its service area (MID 2017a). MID also provides power to the Cities of Waterford, Salida, Mountain House, and parts of Ripon, Escalon, Oakdale and Riverbank. Approximately 23 percent of the power provided comes from solar and wind renewable sources, while the remaining 77 percent comes from a mixture of coal, large hydroelectric, natural gas, and unspecified sources of power. Turlock Irrigation District (TID) and PG&E also provide power in the Proposed Program area. **Table 10-2** provides a more detailed breakdown of MID's, TID's, and PG&E's energy resources. As mentioned in Section 10.2.2, California's RPS requires electricity suppliers to increase the amount of electricity generated from renewable sources to 33 percent by 2020 and to 50 percent by 2030, which will decrease the GHG intensity of the electricity the Proposed Program will utilize in the future.

Table 10-2. Summary of Energy Sources for the Modesto Irrigation District, Turlock Irrigation District, and PG&E

Energy Resources	Utility Power Mix (%)		
	MID (2016)	TID (2015)	PG&E (2015)
Eligible Renewable	23	21	30
Coal	19	10	0
Large Hydroelectric	10	14	6
Natural Gas	21	36	25
Nuclear	0	0	23
Unspecified Power*	27	19	17
Total	100	100	100

** "Unspecified sources of power" is defined as electricity from transactions that are not traceable to specific generation sources.*

Sources: MID 2017b, CEC 2017a, CEC 2017b

TID in conjunction with MID owns and operates the San Pedro Dam, providing up to 203 megawatts of hydroelectric power to customers throughout the City of Modesto. Out of the 203 megawatts produced by this dam, 139 megawatts go to TID and the remaining 64 go to MID (TID 2017).

10.4 IMPACT ANALYSIS

10.4.1 METHODOLOGY

Program-level Components

For WWMP program-level components, construction and operation-related GHG emissions and energy use impacts were evaluated qualitatively by considering the Proposed Program's potential sources of GHG emissions, including fossil-fueled or electric energy consuming equipment and vehicles, potential frequency and duration of emissions, and wastewater treatment process releases of biogenic emissions. Where specific construction or operation-related details were lacking, impacts were conservatively judged to be significant, and prescriptive mitigation measures were developed to minimize significant impacts.

River Trunk Realignment Project

For the River Trunk Realignment Project, construction and operational emissions were estimated using CalEEMod version 2016.3.1. CalEEMod is an emissions model that estimates GHG emissions for land use development projects. It contains reasonable default assumptions that can be replaced if site-specific information is available. CalEEMod incorporates both CARB's EMFAC for vehicles and current off-road in-use engine emissions modeled for construction equipment. Modeling for the River Trunk Realignment Project was based on the construction phasing information provided in Chapter 2, *Program Description*. Detailed CalEEMod output, including relevant input parameters, is contained in **Appendix B**, *Air Quality and Global Climate Change Impacts Evaluation Supporting Documentation*. In general, CalEEMod default numbers were used for construction phases and equipment, construction duration, and quantity of construction workers for each phase, with exceptions noted below and/or in Appendix B. Some of these construction details are also provided in Chapter 2.

Fabrication of equipment and materials such as cement and steel requires energy and, therefore, indirectly result in GHG emissions. These indirect GHG emissions associated with building materials are referred to as "embodied energy" and are based on life-cycle GHG emission analyses of individual materials. The embodied energy from building materials has not been estimated for this analysis, as detailed specifications and estimates of building materials are not available. For a typical building construction project, the materials that have some of the largest amounts of embodied energy are the aforementioned cement and steel.

Project-specific inputs into CalEEMod included estimated hauling truck trips, and use of assumptions developed by the City for the project's construction phasing and construction equipment. The equipment assumptions for all construction phases can also be found in Appendix B.

Estimated energy intensity associated with pumps at the River Trunk Pump Station and Shackleford Pump Station (as described in Chapter 2, *Program Description*) assumed pumping usage of 8 hours per day year-round (Appendix B).

Consideration of the Effects of GHG Emissions

Projected changes in climate associated with global warming may have related effects on other resources in the future, including effects on the Proposed Program (such as changed weather patterns). Anticipated potential worldwide climate change effects include coastal erosion, sea level rise, melting glaciers, atmospheric temperature warming, increased wildfire risk, ocean warming, food production issues (e.g., decreased crop yields), effects on terrestrial and marine ecosystems, flooding and/or drought conditions, and altered hydrologic patterns such as changes in river flows or lake levels (Intergovernmental Panel on Climate Change 2013). California-specific climate change effects and indicators of climate change are similar to those that may be experienced globally and are discussed in *Indicators of Climate Change in California,* a report prepared by the California Environmental Protection Agency's Office of Environmental Health Hazard Assessment in 2013 (OEHHA 2013). The evaluation of such effects on the River Trunk Realignment Project or the Proposed Program is beyond the scope of this GHG analysis and not required by the State CEQA Guidelines (see Section 15064.4).

10.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on greenhouse gas emissions and energy resources if it would:

- Generate a substantial amount of GHG emissions;
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs;
- Cause wasteful, inefficient, and unnecessary consumption of energy during construction or operation, ; or
- Cause a substantial increase in energy demand and the need for additional energy resources.

With regards to the first criterion, the SJVAPCD has adopted a BMP threshold for construction-related GHG emissions based on an achievable in practice analysis of improvement over a business-as-usual scenario or 29 percent improvement. However, at this time there is not an approved BMP for this type of project nor has suitable data to establish a business-as-usual scenario been provided by the SJVAPCD. The SJVAPCD threshold has also not been updated to reflect the SB 32 2030 goal which needs to be considered given the timeline of the Program construction activities. Therefore, published mass emissions thresholds of other California air districts were reviewed and considered in developing an appropriate threshold. The applicable threshold for the Proposed Program's construction and operational emissions was determined to be 10,000 metric tons per year, which is the threshold for industrial sources used by the Santa Barbara County Air Pollution Control District (SBCAPCD) (SBCAPCD 2015) and the South Coast Air Quality Management District (SCAQMD) (SCAQMD 2008). Although quantitative construction-specific thresholds have not been determined by the SCAQMD, the SBCAPCD recommends amortizing construction emissions over the life of the project (defined as 30 years) and adding it to the operational emissions (SCAQMD 2008). In addition, where construction-specific quantitative significance thresholds have not been defined, operational significance thresholds are typically applied or construction emissions are amortized and considered along with operational emissions to

determine a project's overall significance. Therefore, for the Proposed Program and the River Trunk Realignment Project, GHG emissions have been considered less than significant if the generated GHG emissions are less than the operational threshold of 10,000 MT CO_2e/year.

With regards to the second criterion, the applicable plans and policies the following impact analysis evaluates the Program's operational-related emissions for consistency with CARB's Scoping Plan and updates, which outline the strategies that will need to be implemented for the state to meet the goals of AB 32, SB 32 and EO S-3-05. Specifically, if a proposed component would not conflict with CARB's GHG emission reduction policies, it would have a less-than-significant impact.

The last two significance criteria were considered qualitatively for the Proposed Program and the River Trunk Realignment Project.

10.4.3 ENVIRONMENTAL IMPACTS

Impact GHG-1: Generate a Substantial Amount of GHG Emissions (Significant and Unavoidable)

Program-level Components

Construction Impacts. Construction of the program-level components, including various collection system components, new outfall pipelines, and facility upgrades at the Sutter and Jennings Plants, would involve activities that would result in one-time emissions of GHGs. Changes in carbon sequestration due to land use change and tree planting would also result in one-time emissions of GHGs. GHG emissions would also be generated from construction equipment exhaust, including exhaust from haul or equipment trucks and worker commutes. Specific project-level data about the amount, use, and locations of these equipment are not available at this time, nor are specific project-level data about the construction periods for each individual CIP. In general, replacement and maintenance of existing facilities and strengthening and replacement of existing sewer pipelines would be categorically exempt from CEQA. New sewer pipelines, or extension of sewer pipelines, that have been identified in the WWMP would therefore be considered to fall below the significance threshold. For other CIPs, in the absence of specific project-level information, it has been conservatively assumed that construction activities for each WWMP component would generate GHG emissions that, in combination with the other program components, could be substantial because they would exceed the significance threshold of 10,000 MT CO_2e/year. This is considered a significant impact.

Consulting with and permitting through the SJVAPCD for stationary source projects would reduce GHG emissions from construction of WWMP components. However, it is still possible that these emissions would not be reduced below the applicable significance threshold of 10,000 MT GHG emissions and therefore the Proposed Program would result in a **significant and unavoidable** impact.

Operational Impacts. The Proposed Program would indirectly and directly generate GHG emissions through operation and replacement of pumps at lift stations, installation of new or larger emergency electrical generators, and employee vehicle trips for operation and maintenance of future facilities. Equipment used to operate the wastewater treatment plants requires electricity which results in indirect GHG emissions, and natural gas combustion for boilers results in direct GHG emissions. The wastewater treatment plants generate digester

gas which results in direct emissions of GHGs; some of the digester gas is used in boilers or flared. Anaerobic treatment processes generate fugitive methane emissions. The proposed centralized nitrification/denitrification process would also emit N_2O emissions, and discharge of the effluent water to the San Joaquin River would result in fugitive emissions of N_2O. Employee trips would be similar to existing operations for the Sutter Plant and the City's existing other wastewater maintenance and operation activities. The Proposed Program would expand tertiary treatment facilities in effort to meet upcoming NPDES discharge requirements, and recycled water would be reused for agricultural purposes through the City's participation in the North Valley Regional Recycled Water Project (see Section 19.4.1 in Chapter 19, *Other Statutory Considerations,* for additional detail about this project). Expanding tertiary treatment facilities to increase recycled water use may decrease GHG emissions in comparison to using freshly collected and distributed water. In addition, the beneficial use of the recycled water helps with a more efficient use of the water supply and is important in addressing the impacts of climate change such as reduced water supply. Emissions for emergency electrical generators would be infrequent and would not be substantial. However, in total, operation of new or larger pumps at lift stations as well as the increased capacity and improved level of wastewater treatment would potentially generate GHG emissions greater than the applicable significance threshold of 10,000 MT CO_2e per year for industrial sources. Several of the proposed stationary sources may have applicable BPS for boilers, and process heaters. Consistency with these BPS and any future BPSs should be evaluated during project-level analyses once sufficient design details are available regarding operation of the facilities to allow for such an analysis. In the meantime, this impact has conservatively been considered significant. Again, consulting with and permitting through the SJVAPCD for stationary source projects would reduce GHG emissions from operational activities under the Proposed Program. However, these emissions may not be able to be reduced below the applicable significance threshold, and no other feasible mitigation has been identified which can further reduce emissions. Therefore, this impact would be **significant and unavoidable**.

River Trunk Realignment Project

Construction of the River Trunk Realignment Project would result in one-time emissions of GHGs, and once complete, project operations such as the pump station, would generate emissions over the longer term. As shown in **Table 10-3**, combined one-time GHG emissions associated with the project's construction activities would be approximately 2,589 MT CO_2e, spread out between 2018 and 2021. These one-time emissions would not continue to occur once construction is complete. SJVAPCD recommends amortizing GHG emissions by the operational life of a project. Construction emissions equal approximately 86 metric tons per year when amortized over the project's 30-year operation period.

Operation of the River Trunk Realignment Project would generate GHG emissions from annual maintenance of emergency generators, worker vehicle trips, and from the use of electricity for the pumps at the proposed River Trunk and Shackleford Pumping Stations. The River Trunk Realignment Project's operation would generate approximately 1,015 MT CO_2e per year. Electricity use makes up 943 MT CO_2e per year of these emissions. Combining the operation emissions with the amortized one-time emissions, the total annualized emissions are 1,101 MT CO_2e per year. Because these emissions are less than the 10,000 MT CO_2e threshold, this impact would be **less than significant.**

Table 10-3. River Trunk Realignment Project GHG Emissions

Emissions Source	MT CO_2e
Construction 2018	1,325
Construction 2019	848
Construction 2020	395
Construction 2021	21
Total One-time (Construction Activities)	2,589
Construction Activity Emissions Amortized over 30-year project life	86
Operations (per year)	1,015
Total Annual Emissions (Operations + Amortized Construction)	1,101

Notes: Construction activities emissions based on CalEEMod modeling results (Appendix B).
Amortization over 30 years based on the project facility's anticipated lifetime (SJVAPCD 2015).

Overall Conclusion

As described above, the River Trunk Realignment Project's GHG emissions would not exceed significance thresholds. On the whole, however, since specific details regarding the WWMP program-level components are not yet available, construction and operation of these components have been conservatively determined to potentially generate GHG emissions that exceed the significance threshold. Therefore, the Proposed Program's impact related to increased GHG emissions would be **significant and unavoidable**.

Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs (Significant and Unavoidable)

Program-level Components

Consistency with strategies outlined in CARB's Scoping Plan and future updates are used to ensure that the state goals of AB 32, SB 32 and EO S-3-05 will be met. The RPS would reduce GHG emissions compared to the existing mix of energy sources, and would likely result in the program-level components having more than a 29-percent reduction by at least 2030. This is consistent with the emissions reductions goal of AB 32 and SB 32, as well as the policies/actions described in CARB's 2017 Scoping Plan.

In addition, individual program-level components would comply with the RST/SCS's regional CAP goals, strategies, and policies, as well as the County's general plan policies related to reduced energy use. Specifically, Proposed Program-level components would have an energy-efficient design, and utilize MID's, TID's, and PG&E's increased renewable energy sources.

WWMP components would achieve GHG emission reductions in their design, as discussed above, and would minimize GHG emissions to the maximum extent feasible. Therefore, these program-level components would generally comply with applicable plans, policies, and regulations, including AB 32 and SB 32, and as well as the policies/actions described in CARB's Scoping Plan. However, at this time the state is still developing strategies that will be needed to fully reach the goals of SB 32 and EO S-3-05 and new strategies may be developed that are inconsistent with the project. In addition, as described in Impact GHG-1 above, the

GHG emissions for the entire Program would be significant and, as such, may impede the state from reaching the goals of AB 32 and SB 32, and EO S-3-05, to reduce GHG emissions within California. Consulting with and permitting through the SJVAPCD would reduce this impact, but not necessarily to less-than-significant levels and may not be consistent in the future with new strategies. Therefore, this impact would be **significant and unavoidable**.

River Trunk Realignment Project

The proposed River Trunk Project would comply with the RST's regional CAP goals, strategies, and policies, as well as the County's general plan policies related to reduced energy use. Specifically, the River Trunk Realignment Project would have an energy-efficient design, and utilize Modesto Irrigation District's increased renewable energy sources. The River Trunk Realignment Project would generally be consistent with the applicable policies/actions described in CARB's Scoping Plan and would make reasonable progress toward meeting the goals of AB 32, SB 32, and EO S-3-05. Thus, the River Trunk Realignment Project would therefore comply with all applicable plans, policies, and regulations, and would result in a **less than significant impact.**

Overall Conclusion

WWMP program-level components would achieve GHG emission reductions in their design, as discussed above, and would minimize GHG emissions to the maximum extent feasible. However, for the reasons described above, even with these mitigation measures, the Proposed Program may impede the state from reaching the goals of AB 32, SB 32, and EO S-3-05 to reduce GHG emissions within California. No other feasible mitigation has been identified that could further reduce this impact. Therefore, the Proposed Program's overall impact would be **significant and unavoidable.**

Impact GHG-3: Cause Wasteful, Inefficient, and Unnecessary Consumption of Energy During Construction, Operation, and/or Maintenance (Less than Significant)

All Program-level Components

Construction Impacts. Construction of program-level components would require the consumption of energy (fossil fuels) for construction equipment, worker vehicles, and truck trips. However, energy consumption during construction is necessary to maintain and improve the wastewater conveyance system and wastewater treatment facilities for the City of Modesto and surrounding areas to meet future wastewater treatment and collection system needs and improve use of recycled water. These construction activities would not cause wasteful, inefficient, and unnecessary consumption of energy, or cause a substantial increase in energy demand and increase the need for additional energy resources. Therefore, the Proposed Program's effects on energy resources would be **less than significant**.

Operational Impacts. The operational activities associated with some program-level components would require the consumption of energy including fossil fuels, natural gas, and electricity. Fossil fuel use would include worker vehicle and truck trips to and from the treatment plants, pump stations and lift stations; and material hauling of biosolids and equipment used to spread biosolids on agriculture fields near the Jennings Plant. In addition, emergency generators would use diesel fuel. Natural gas is used for space heating and in boilers used at the Jennings Plant. Electricity is used for operation of pump and lift stations

as well as numerous pieces of equipment at the wastewater treatment plants. The Sutter Plant currently utilizes some of the digester biogas instead of natural gas in some boilers. In addition, in the future, the City may consider the feasibility of cogeneration technologies that use digester biogas (Carollo Engineers 2016). These operational activities would not cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources. In addition, the design of new and replaced wastewater infrastructure will utilize the latest energy efficient design. Therefore, the Proposed Program's effects on energy resources would be **less than significant**.

River Trunk Realignment Project

The River Trunk Realignment Project's construction activities would require the consumption of energy (fossil fuels) for construction equipment, worker vehicles, and truck trips. However, the consumption of energy for the project's equipment and vehicles would be minimized by reusing excavated soils on-site and minimizing vehicle idling. **Table 10-4** shows the estimated fuel use from construction equipment, worker vehicles, and truck trips. The calculations used to develop these estimates are presented in Appendix B. This table also shows estimated fuel use during project operation.

Table 10-4. River Trunk Project Fossil Fuel Use

Source Type	Diesel Fuel Use (gallons)	Gasoline Fuel Use (gallons)
Off-road Construction Equipment[1]	783,163	
Construction Worker Vehicles[2]		29,421
Hauling Vehicles[3]	29,887	
Operational Worker Vehicles[4]		<100

[1] Fuel use for off-road construction equipment was estimated using a fuel use factor from CARB's off-road in-use engine emissions model of 0.347 pound of diesel per horsepower-hour and diesel fuel density of 7.37 pounds per gallon. Fuel use considered the total number of each equipment type.

[2] Fuel use for construction worker vehicles was estimated using fuel use estimates from EMFAC with an estimated rate of 21.7 gallons per mile.

[3] Fuel use for hauling vehicles was estimated using fuel use estimates from EMFAC with an estimated rate of 5.5 gallons per mile.

[4] During project operational and maintenance activities, workers would use less than 100 gallons, assuming less than 1 round trip per week.

The energy consumption during construction is necessary to improving the River Trunk line, which is one of the most critical trunk lines in Modesto. These construction and operational activities would not cause wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources. The proposed River Trunk Project's effects on energy resources would be **less than significant**.

Overall Conclusion

Considering the WWMP components as a whole, construction and operation impacts of program-level components and the River Trunk Realignment Project would not cause

wasteful, inefficient, and unnecessary consumption of energy or cause a substantial increase in energy demand and the need for additional energy resources. In conclusion, the Proposed Program's effect on energy resources would be **less than significant**.

Impact GHG-4: Cause a Substantial Increase in Energy Demand and the Need for Additional Energy Resources (Less than Significant)

All Program-level Components

Substantial quantities of fossil fuel would not be required for program-level components since maintenance and operation vehicle trips would be similar to existing conditions. Construction activities would require some fossil fuel use for construction equipment, material hauling, and worker commuting. However, the amount of fossil fuel use would not result in the need for additional fossil fuel energy resources beyond what is projected to be available with existing resources.

Both the Sutter and Jennings Plants are major consumers of electrical power, with a combined existing demand of 1,620 kilowatts (kW) (Carollo Engineers 2016). The proposed tertiary treatment upgrades and expansion at the Jennings Plant as well as increased treatment capacity upgrades would result in increased energy demands associated with operation of equipment at the two treatment plants. The increased amount of natural gas needed at the treatment plants would not be substantial compared to current uses of natural gas such that substantial new sources of additional energy would be required, considering the projected available electricity supply from Modesto Irrigation District. In fact, the new plant would be designed to be more energy efficient than the current plant, which could result in a reduction in energy usage. In addition, the City may consider reusing digester biogas to operate a cogeneration unit if feasible or implementation of solar energy systems. If implemented in the future, the cogeneration unit would result in a decrease of electricity for the wastewater treatment facility. Since there would not be a substantial increase in energy demand or the need for additional energy resources, this impact would be **less than significant.**

River Trunk Realignment Project

The River Trunk Realignment Project would require some additional fossil fuel use for construction equipment, material hauling, and worker commuting, resulting in a minor increase in energy demand associated with construction of the project. Once the River Trunk Realignment Project is in operation, there would be some electricity use associated with the pumps, and fossil fuel use associated with emergency generators and maintenance trips. However, the use of fossil fuels and electricity would be substantial compared to that used for existing pump stations found throughout the City, considering the projected available electricity supply from MID. Therefore, there would not be a substantial increase in energy demand or the need for additional energy resources, this impact would be **less than significant.**

Overall Conclusion

While the River Trunk Realignment Project would not generate a substantial increase in energy demand, proposed upgrades and expansion of facilities at the Sutter and Jennings Plants would incrementally increase energy demands associated with operation of equipment. However, the new plant upgrades would be designed to be more energy efficient than the current plant, which could result in a reduction in energy usage. The City may also consider reusing digester biogas to operate a cogeneration unit if feasible or implementation of solar energy systems, which would result in a decrease of electricity for the wastewater treatment facility. In conclusion, the Proposed Program's impact on increased energy demands and energy resources would be **less than significant**.

Chapter 11
HAZARDS AND HAZARDOUS MATERIALS

11.1 OVERVIEW

This chapter evaluates the Proposed Program's impacts related to hazards and hazardous materials. Hazardous materials are chemical and non-chemical substances that can pose a threat to the environment or human health if misused or released. Hazardous materials occur in various forms and can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and other property. Hazardous materials can include explosives, flammable and combustible substances, poisons, radioactive materials, pesticides, petroleum products, and other materials defined as hazardous under the Resource Conservation and Recovery Act of 1976 (RCRA) in 40 CFR 261. CEQA also considers hazards from proximity of projects to airports and schools, and hazards from wildfire.

Impacts are evaluated in light of existing laws and regulations governing hazards and hazardous materials, and the existing physical environmental setting as it relates to hazards and hazardous materials, as described in Section 11.2, "Regulatory Setting," and Section 11.3, "Environmental Setting."

11.2 REGULATORY SETTING

Because regulations for hazardous materials were developed over time, numerous agencies, whose jurisdictions and responsibilities sometimes overlap, are involved in regulating these materials. Federal agencies that regulate hazardous materials include USEPA and OSHA. At the state level, agencies such as the California Department of Industrial Relations, the California Occupational Safety and Health Administration (Cal/OSHA), and the California Emergency Management Agency (Cal EMA) govern the use of hazardous materials. State and local agencies often have either parallel or more stringent rules than federal agencies.

Generation, transport, and disposal of hazardous wastes is also regulated by different agencies, and USEPA is the lead federal agency overseeing these aspects of hazardous waste. The California Department of Toxic Substances Control (DTSC) has primary state regulatory responsibility, but may delegate enforcement authority to local jurisdictions that enter into agreements with the state agency.

The following is a review of federal, state, and local regulations and policies that are pertinent to the Proposed Program.

11.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

Resource Conservation and Recovery Act

The RCRA (42 USC Section 6901 et seq.), as amended by the Hazardous and Solid Waste Amendments of 1984, is the primary federal law for the regulation of solid waste and hazardous waste in the United States. These laws provide for the "cradle-to-grave" regulation

of hazardous wastes, including generation, transportation, treatment, storage, and disposal. Any business, institution, or other entity that generates hazardous waste is required to identify and track its hazardous waste from the point of generation until it is recycled, reused, or disposed of.

USEPA has primary responsibility for implementing RCRA, but individual states are encouraged to seek authorization to implement some or all RCRA provisions. California received authority to implement the RCRA program in August 1992. DTSC is responsible for implementing the RCRA program in California.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, also called the Superfund Act; 42 USC Section 9601 et seq.) is intended to protect the public and the environment from the effects of past hazardous waste disposal activities and new hazardous material spills. Under CERCLA, USEPA has the authority to seek the parties responsible for hazardous materials releases and to ensure their cooperation in site remediation. CERCLA also provides federal funding (through the "Superfund") for the remediation of hazardous materials contamination. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-499) amends some provisions of CERCLA and provides for a Community Right-to-Know program.

Energy Policy Act of 2005

Title XV, Subtitle B of the Energy Policy Act of 2005 (the Underground Storage Tank [UST] Compliance Act of 2005) contains amendments to Subtitle I of the Solid Waste Disposal Act, the original legislation that created the UST Program. As defined by law, a UST is "any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground." In cooperation with USEPA, SWRCB oversees the UST Program. The intent is to protect public health and safety and the environment from releases of petroleum and other hazardous substances from USTs. The four primary program elements include leak prevention (implemented by Certified Unified Program Agencies [CUPAs]), cleanup of leaking tanks, enforcement of UST requirements, and tank integrity testing. CUPAs are described in more detail below.

Spill Prevention, Control, and Countermeasure Rule

USEPA's Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112) applies to facilities with a single above-ground storage tank with a storage capacity greater than 660 gallons, or multiple tanks with a combined capacity greater than 1,320 gallons. The rule includes requirements for oil spill prevention, preparedness, and response to prevent oil discharges into navigable waters and adjoining shorelines. The rule requires specific facilities to prepare, amend, and implement these plans.

Renovation and Demolition of Buildings Containing Asbestos

The National Emission Standards for Hazardous Air Pollutants regulations (40 CFR Part 61, Subpart M), established under the federal Clean Air Act, require that specific practices for handling asbestos-containing building materials be followed during demolition and renovation of all structures, installations, and buildings (excluding residential buildings that

have four or fewer dwelling units). The regulations require a thorough inspection of the demolition or renovation site and notification to the appropriate state agency before any demolition or renovation of buildings that could contain a certain threshold amount of asbestos or asbestos-containing material. In addition, certain requirements must be followed when removing asbestos-containing waste. USEPA is the lead enforcement agency. The Asbestos Hazard Emergency Response Act's Model Accreditation Plan (MAP) (40 CFR, Part 763, Subpart E, Appendix C) requires that professionals working with asbestos-containing building materials be accredited under the USEPA MAP or a program at least as stringent as the USEPA MAP program.

Occupational Safety and Health Act

OSHA is responsible at the federal level for ensuring worker safety. OSHA sets federal standards for implementation of workplace training, exposure limits, and safety procedures for the handling of hazardous substances, as well as other workplace hazards. OSHA also establishes criteria by which each state can implement its own health and safety program. 29 CFR Chapter XVII, Subpart Z, Section 1926.1101 includes regulations to prevent worker exposure to unsafe levels of asbestos during construction and demolition activities. These regulations require contractors to set up regulated areas in dealing with asbestos materials and ensure that persons entering these areas are wearing respirators.

11.2.2 STATE LAWS, REGULATIONS, AND POLICIES

The Unified Program

The Unified Program (20 Health and Safety Code [HSC] Sections 25404-25404.9) consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. Statewide, DTSC has primary regulatory responsibility for management of hazardous materials, and it works with other state agencies and delegates its authority to local jurisdictions that enter into agreements with the state. Local agencies, including Stanislaus County, administer these laws and regulations. DTSC, the Cal/EPA, and other state agencies set the standards for their programs while local governments implement the standards. These local implementing agencies, the CUPAs, regulate/oversee the following for each county:

- Hazardous materials business plans (19 CCR Sections 2650-2660);
- California accidental release prevention plans or federal risk management plans (RMPs) (19 CCR Sections 2735-2785);
- The operation of USTs (23 CCR Sections 2610-2729) and above-ground storage tanks (20 HSC Sections 25270-25270.13);
- Universal waste and hazardous waste generators and handlers (22 CCR Division 4.5);
- On-site hazardous waste treatment (22 CCR Division 4.5);
- Inspections, permitting, and enforcement (22 CCR Division 4.5);

- Proposition 65 reporting; and
- Emergency response.

Hazardous Materials Business Plans

Hazardous materials business plans (HMBPs) are required for businesses that handle hazardous materials in quantities equal to or greater than 55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of compressed gas, or extremely hazardous substances above the threshold planning quantity (40 CFR, Part 355, Appendix A; California Governor's Office of Emergency Services [Cal OES] 2014). HMBPs are required to include an inventory of the hazardous materials used/stored by the business, a site map, an emergency plan, and a training program for employees. In addition, business plan information is provided electronically to a statewide information management system, verified by the applicable CUPA, and transmitted to agencies responsible for the protection of public health and safety (i.e., local fire department, hazardous material response team, and local environmental regulatory groups).

California Occupational Safety and Health Administration

Cal/OSHA assumes primary responsibility for developing and enforcing workplace safety regulations in California. Cal/OSHA regulations pertaining to the use of hazardous materials in the workplace (CCR Title 8) include requirements for safety training, availability of safety equipment, accident and illness prevention programs, warnings about exposure to hazardous substances, and preparation of emergency action and fire prevention plans. Hazard communication program regulations that are enforced by Cal/OSHA require workplaces to maintain procedures for identifying and labeling hazardous substances, inform workers about the hazards associated with hazardous substances and their handling, and prepare health and safety plans to protect workers at hazardous waste sites. Employers also must make material safety data sheets available to employees and document employee information and training programs.

California Accidental Release Prevention

The purpose of the California Accidental Release Prevention program (19 Cal. Code Regs. Section 2735 et seq.) is to prevent accidental releases of substances that can cause serious harm to the public and the environment, to minimize the damage if releases do occur, and to satisfy community right-to-know laws. In accordance with this program, businesses that handle more than a threshold quantity of regulated substance are required to develop a RMP. This RMP must provide a detailed analysis of potential risk factors and associated mitigation measures that can be implemented to reduce accident potential. CUPAs implement the California Accidental Release Prevention program through review of RMPs, facility inspections, and public access to information that is not confidential or trade secret.

CAL FIRE Wildland Fire Management

The Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CAL FIRE) administer state policies regarding wildland fire safety. Construction contractors must comply with the following requirements in the Public Resources Code during construction activities at any sites with forest-, brush-, or grass-covered land:

- Earthmoving and portable equipment with internal combustion engines must be equipped with a spark arrestor to reduce the potential for igniting a wildland fire (Pub. Res. Code Section 4442).

- Appropriate fire-suppression equipment must be maintained from April 1 to December 1, the highest-danger period for fires (Pub. Res. Code Section 4428).

- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire-suppression equipment (Pub. Res. Code Section 4427).

- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (Pub. Res. Code Section 4431).

11.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

City of Modesto Urban Area General Plan

The *Modesto Urban Area General Plan* (City of Modesto 2019) guides land use and development within the City's incorporated areas. Goals and policies contained in the General Plan related to hazards and the Proposed Program include the following:

Policy VII-J[a]. Support the Local Hazard Mitigation Plan (LHMP) and ensure the LHMP will be monitored, evaluated, and updated every three years or more frequently as the need arises.

Policy VII-J[b]. Ensure that all new development is designed to reduce potential safety and health hazards.

Policy VII-J[d]. Support efforts to improve levels of emergency response.

Policy VII-M.C[2]. Design and maintain roads so as to ensure adequate access in hazardous conditions.

Policy VII-N [h]. The City shall promote public awareness of the following local routes (shown in **Figure 11-1**) for the public's use in evacuating the City in the event of an emergency:

(1) State Highways 99, 132, 219, and 108

(2) Briggsmore Avenue

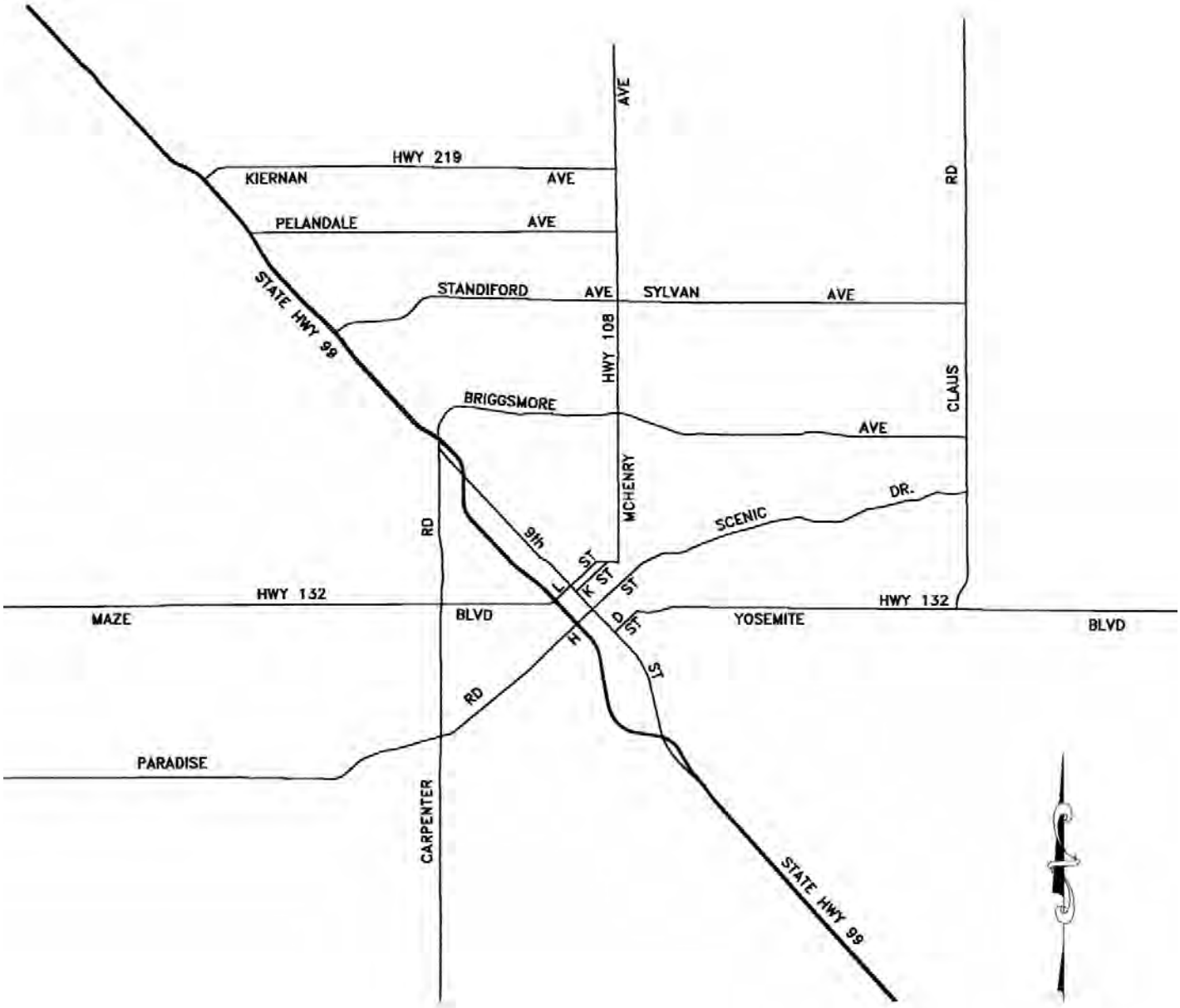
(3) Claus Road

(4) Standiford/Sylvan Avenue

(5) Scenic Drive

(6) Pelandale Avenue

(7) Ninth Street



Source: City of Modesto 2008

Figure 11-1. City of Modesto Emergency Evacuation Routes

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(8) Paradise Road

(9) Carpenter Road

Policy VI-E.5[b]. City plans and policies shall not interfere with any emergency evacuation and response plans. This would include the continued maintenance of adequate police and fire services, and identified emergency evacuation routes [refer to Figure 11-1 of this DEIR].

Policy VI-E.5[c]. The City shall ensure the provision of adequate and accessible evacuation routes.

Stanislaus County General Plan

The *Stanislaus County General Plan* (Stanislaus County 2016a) guides land use, development, and impact mitigation decisions in Stanislaus County. Goals and policies associated with hazards and hazardous materials include the following:

Safety Element

Goal One: Prevent loss of life and reduce property damage as a result of natural disasters.

Policy One: The County will adopt (and implement as necessary) plans inclusive of the Multi-Jurisdictional Hazard Mitigation Plan, to minimize the impacts of natural and man-made disasters.

Policy Two: Development should not be allowed in areas that are within the designated floodway or any areas that are known to be susceptible to being inundated by water from any source.

Goal Two: Minimize the effects of hazardous conditions that might cause loss of life and property.

Policy Thirteen: The Department of Environmental Resources shall continue to coordinate efforts to identify locations of hazardous materials and prepare and implement plans for management of spilled hazardous materials as required.

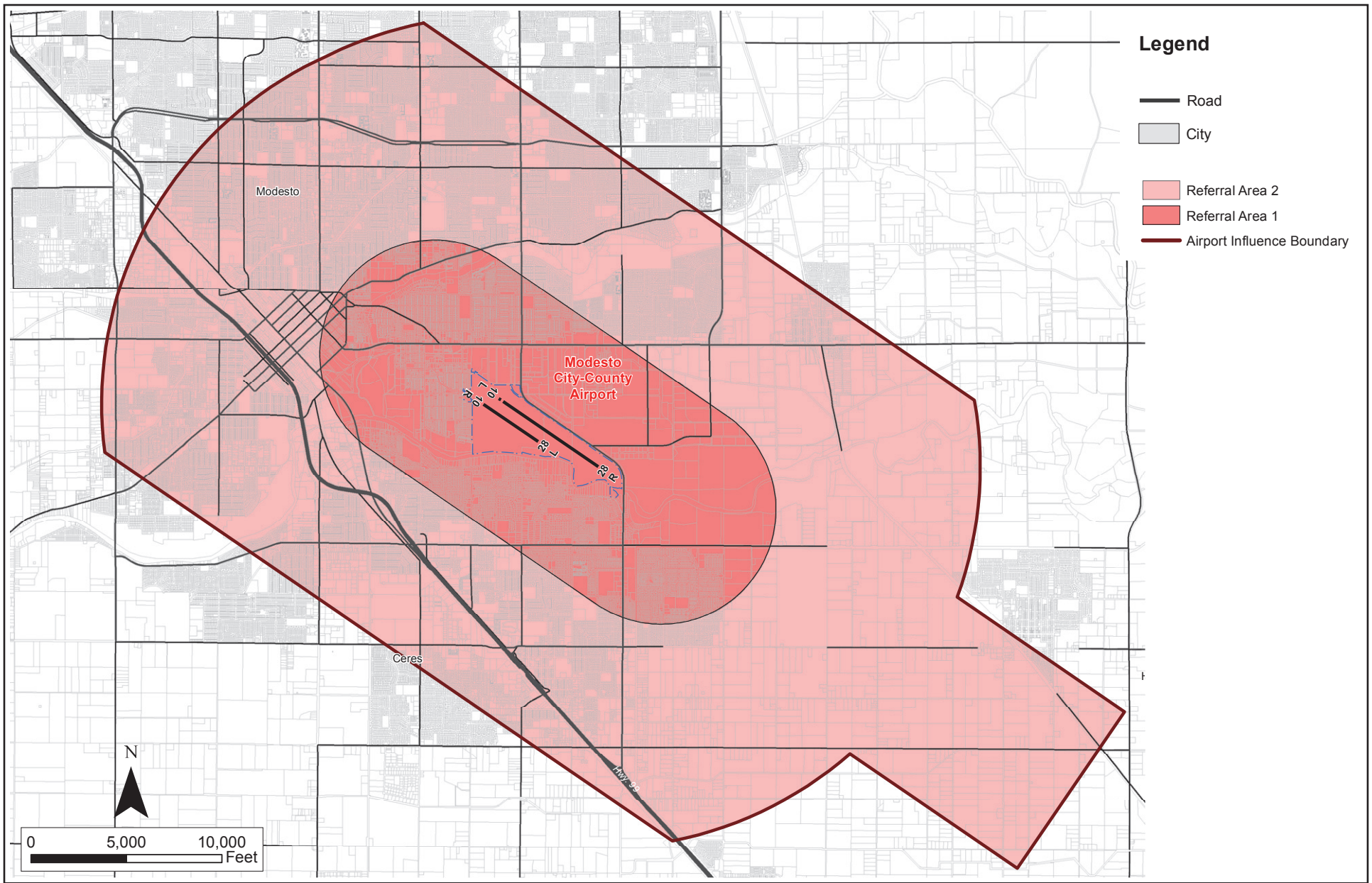
Stanislaus County Airport Land Use Compatibility Plan

The *Stanislaus County Airport Land Use Compatibility Plan* identifies compatible land uses in proximity to airports in Stanislaus County including the Modesto City-County Airport. Compatible land uses are those that will not threaten the safe operation of an airport or create hazards endangering public safety (Stanislaus County 2016b). Each airport has a designated airport influence area, which is defined by the area encompassing lands on which uses could be negatively affected by existing or future aircraft operations. As shown in **Figure 11-2,** the Modesto City-County Airport's referral area is divided into two areas: "Referral Area 1" and "Referral Area 2." Referral Area 1 encompasses locations where noise and/or safety represent compatibility concerns and airspace protection and air flight may also be concerns; and Referral Area 2 includes areas where airspace protection and/or overflight are compatibility concerns but not noise or safety. Based on review of the Plan, the eastern

portion of the River Trunk Realignment Project alignment is within Safety Zone 6 where wastewater facilities are listed as normally compatible (Stanislaus County 2016b).

Stanislaus County Hazard Mitigation Plan

The Stanislaus County Hazard Mitigation Plan is a countywide plan that identifies risks posed by disasters and ways to minimize damage from those disasters. Among other functions, the Hazard Mitigation Plan creates a decision tool for management, promotes compliance with state and federal program requirements, enhances local policies for hazard mitigation capability, and provides for inter-jurisdictional coordination (Stanislaus County Office of Emergency Services [OES] 2017).



Source: Stanislaus County 2016

Figure 11-2. Modesto City-County Airport Planning Area Boundary Map

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11.3 ENVIRONMENTAL SETTING

11.3.1 SCHOOLS

Numerous schools exist within the study area, as shown in **Figure 11-3**. These include Modesto City Schools, which include over a dozen elementary schools, four middle schools, and nine high schools (Modesto City Schools 2017), as well as schools in the Ceres Unified School District and Empire School District. Numerous Modesto schools are located within 0.25 mile of proposed components. No schools in Ceres or Empire are within 0.25 mile of Proposed Program components.

11.3.2 EXISTING HAZARDS AND HAZARDOUS MATERIALS

Both the SWRCB's GeoTracker database and DTSC's EnviroStor database were searched for up to one-quarter mile of the Program area. **Figure 11-4** shows hazardous material sites identified by these databases within 0.25 mile of the Proposed Program components. **Table 11-1** provides further information on these sites. The database searches include the following hazardous materials site lists: leaking underground storage tank cleanup sites, spills, leaks, investigation and cleanup sites, and other cleanup sites.

In general, hazardous materials contamination is most often connected with past land uses such as gas stations, dry cleaners, industrial facilities with underground storage tanks, military bases, and other sites that commonly use or store hazardous materials. The proposed Jennings Plant improvements would be constructed adjacent to the City's compost facility.

The City's existing wastewater treatment facilities also use and store hazardous materials. The Sutter and Jennings Plants have backup generators which store diesel fuel; likewise, the existing lift stations located throughout the City may include generators that store fuel. Other typical hazardous materials and chemicals stored at the plants include methane, hydrogen peroxide, ferric chloride, oil, and gasoline.

11.3.3 AIRPORTS AND PRIVATE STRIPS

The Modesto City-County Airport is located at 617 Airport Way in the southwest portion of Modesto near the Tuolumne River. As shown in Figure 11-3, several proposed components including the River Trunk Realignment Project, would be located near this airport. No other airports or private airstrips are located within two miles of the Proposed Program.

11.3.4 WILDFIRE HAZARDS

The study area is primarily urban in nature, with limited potential for wildfire hazards. The majority of the study area is unzoned for fire hazards, with several isolated patches zoned as moderate (CAL FIRE 2007). **Figure 11-5** shows wildfire risk in the Proposed Program vicinity, as mapped by CAL FIRE.

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Modesto City-County Airport

Sutter Plant

Sources: California Department of Education, Caltrans Division of Aeronautics

N

0 0.5 1 2
Miles

- WWMP Study Area
- Schools
- River Trunk Realignment Project
- Proposed Third Outfall Alignment
- Sewer Line Upgrade or Rehabilitation
- L — New or Proposed Lift Station Improvement
- P — Proposed Pump Stations
- Airports

Figure 11-3
Schools and Airports in the Proposed Program Vicinity

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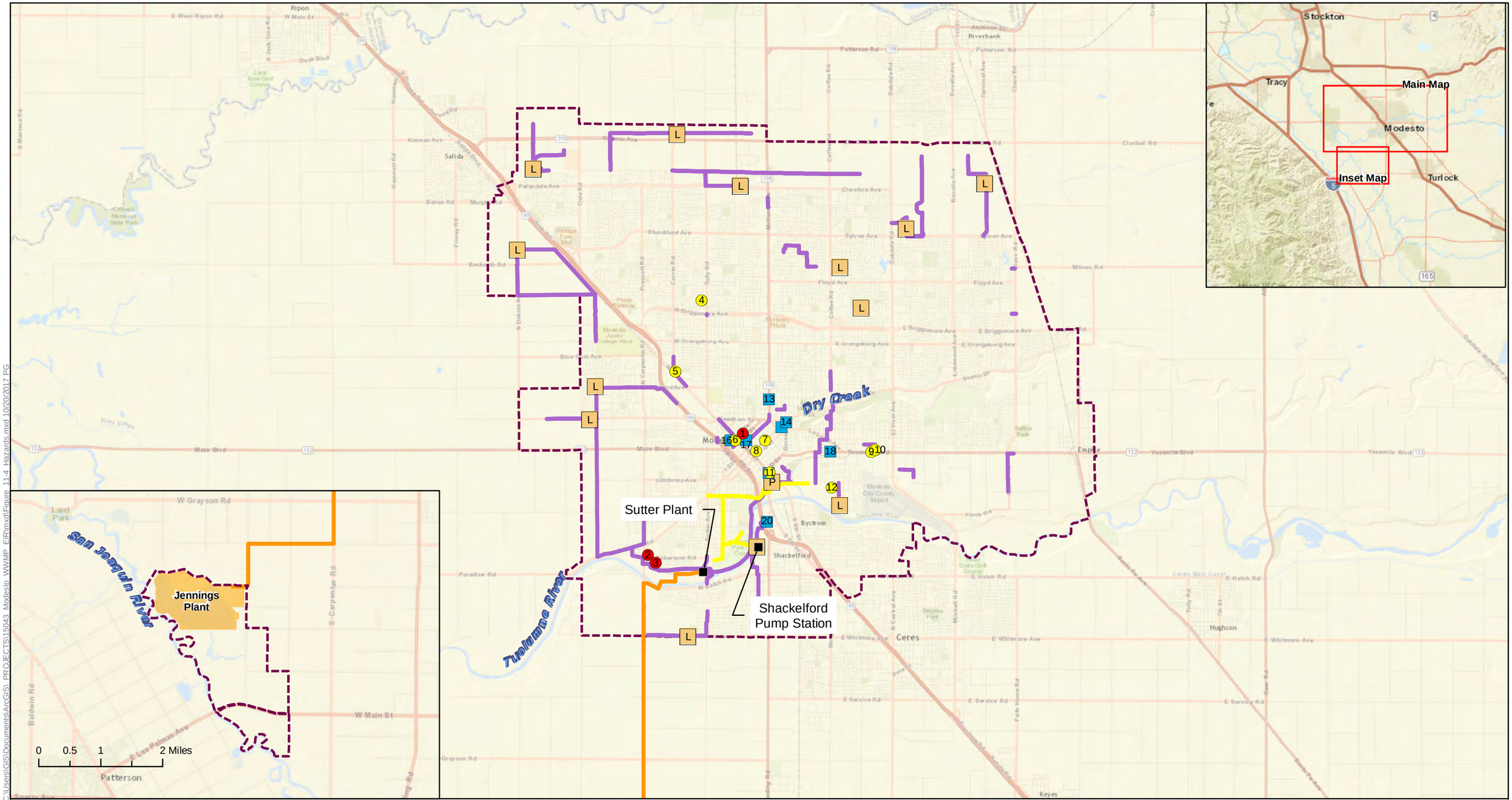
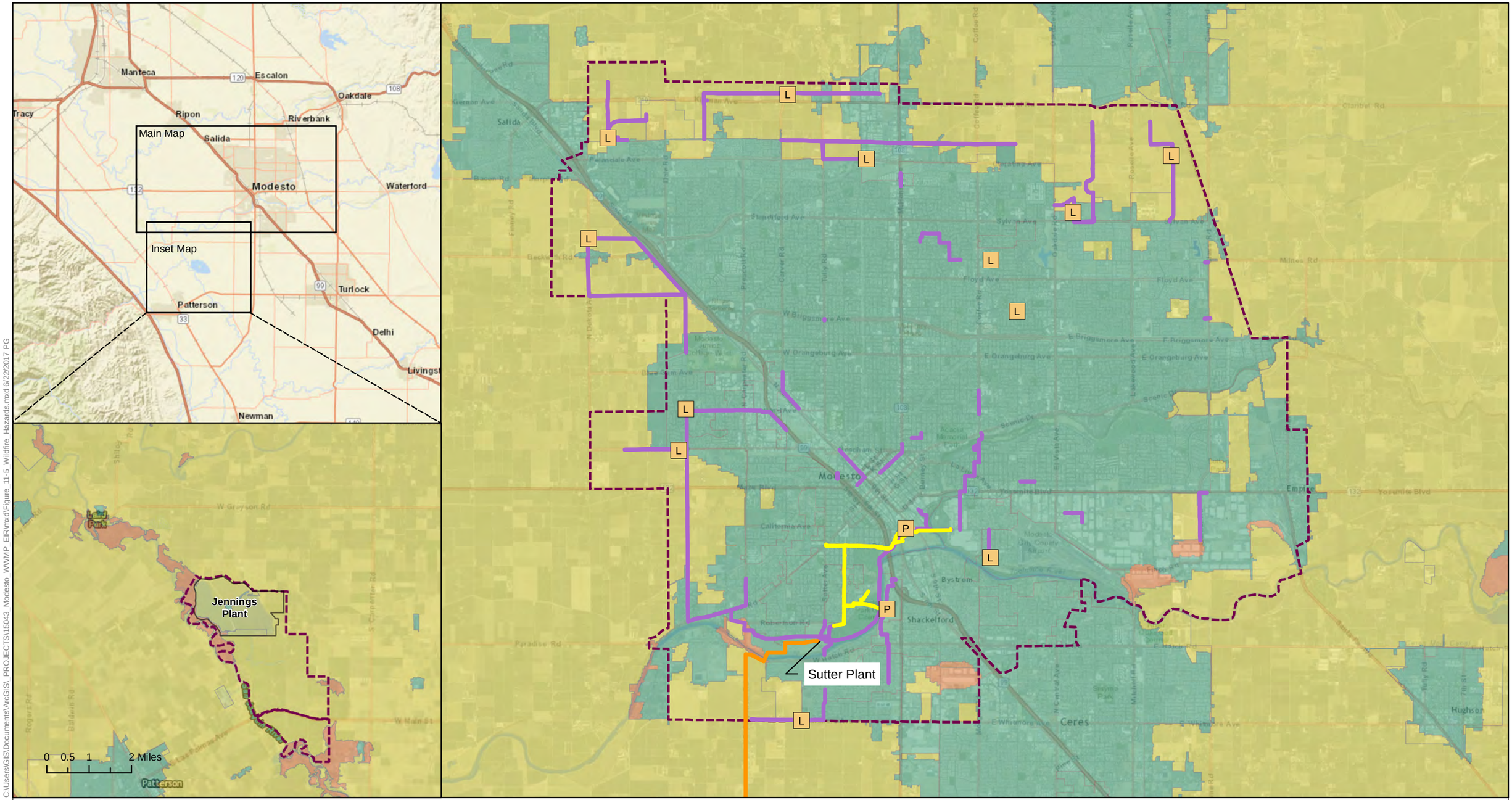


Figure 11-4
Hazardous Materials Sites within 0.25 Mile of Proposed Program Components

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Figure 11-5
Fire Hazard Severity Zones in the Program Vicinity

Horizon WATER and ENVIRONMENT

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Wastewater Master Plan EIR

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Table 11-1. Existing Hazardous Material Sites within 1/4-Mile of Proposed Components

Figure ID	Site/Business Name	Address	City	Site/Case Type	Lead Agency	Site Status	Past Uses	Potentially Contaminated Media
1	Modesto Convention Center	10th and L Streets	Modesto	State Response or NPL (National Priorities List)	DTSC Site Mitigation and Brownfields Reuse Program (SMBRP)	Certified	None	No media affected
2	Littell Property	1921 Vernon Avenue	Modesto	State Response or NPL	SMBRP	Certified	Junkyard	Soil
3	Elias Property	2120 Kenneth Street	Modesto	State Response or NPL	None Specified	Certified	None	Contaminated surface/structure, soil
4	Cesi Drycleaning Center	2021 Tully Road	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Aquifer, indoor air, soil, soil vapor
5	Sunshine Carpet & Drapery	1645 Princeton Avenue	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Aquifer, indoor air, soil, soil vapor
6	Modesto Groundwater Investigation	N/A	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Aquifer, soil, soil vapor, indoor air, groundwater well
7	The Modesto Bee	1325 H Street	Modesto	Tiered Permit	None Specified	Inactive – Needs Evaluation	None specified	None specified
8	PG&E Manufactured Gas Plant Sq-St-Mod-2	Block Bound: H, F, 10th, and Alley NE 10th	Modesto	Evaluation	None Specified	Inactive – Needs Evaluation	None specified	Soil
9	Hi Grade Drive in Cleaners	1915 Yosemite Blvd.	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Aquifer, indoor air, soil, soil vapor
10	Jerry's Drapery Service	123 Phoenix Avenue	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Aquifer, indoor air, indoor air, soil, soil vapor
11	PG&E Manufactured Gas Plant Sq-St-Mod-1	Blocks of: C, D, 8th, and 10th Streets	Modesto	Evaluation	None Specified	Inactive – Needs Evaluation	Manufactured gas plant	Soil
12	Gallo Glass – South Field Landfill	615 South Santa Cruz Avenue	Modesto	Evaluation	SMBRP	Inactive – Needs Evaluation	Landfill – domestic, unknown, transportation - warehousing	Other groundwater affected uses, soil
13	Elwood's Dry Cleaner	441 McHenry Avenue	Modesto	Cleanup Program Site	Central Valley RWQCB	Open – Remediation	Dry cleaning	None specified
14	Arco – T and T	402 Downey Avenue	Modesto	LUST (Leaking Underground Storage Tank) Cleanup Site	Central Valley RWQCB	Open – Assessment & interim Remedial Action	Gas station	Aquifer
15	Modesto Polanco – Ideal Cleaners	1801 H Street	Modesto	Cleanup Program Site	Department of Toxic Substances Control	Open – Inactive	No site history available	None specified
16	Modesto Steam Laundry	1201 8th Street	Modesto	Cleanup Program Site	Central Valley RWQCB	Open – Verification Monitoring	Dry cleaning	Groundwater, soil
17	City of Modesto, Modesto Groundwater Investigation	1010 10th Street	Modesto	Cleanup Program Site	Central Valley RWQCB	Open - Remediation	Dry cleaning	Under investigation
18	Three Star Gas	1131 Yosemite Boulevard	Modesto	LUST Cleanup Site	Central Valley RWQCB	Open – Verification Monitoring	Gas station	Aquifer
19	Berberian Company Property	320 9th Street	Modesto	Cleanup Program Site	Stanislaus County	Open – Inactive	Manufactured gas plant	Under investigation
20	Crop Production Services, Crows Landing Road	541 Crows Landing Road	Modesto	Cleanup Program Site	Central Valley RWQCB	Open – Inactive	Retail distribution of agricultural products (e.g., pesticides)	None specified

Notes: LUST = Leaking Underground Storage Tank; NPL = National Priorities List; RWQCB = regional water quality control board; SMBRP = Site Mitigation and Brownfields Reuse Program.

Source: SWRCB 2017, DTSC 2017

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11.4 IMPACT ANALYSIS

11.4.1 METHODOLOGY

Impacts from the Proposed Program related to hazards and hazardous materials were evaluated qualitatively by considering aspects of the Proposed Program in relation to the CEQA significance criteria. In many instances, where the precise locations and designs of Proposed Program have not yet been developed, possible impacts are discussed more generally (at a programmatic level), and mitigation is prescribed in the event certain conditions are encountered during future project planning. In the case of the River Trunk Realignment Project, where details are known, impacts are evaluated at a greater level of detail.

11.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on hazards and hazardous materials if it would:

- 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 one-quarter mile of an existing or proposed school;
- 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;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

11.4.3 ENVIRONMENTAL IMPACTS

Impact HAZ-1: Create a Substantial Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Construction (Less than Significant)

Construction of the Proposed Program components and the River Trunk Realignment Project would involve use of heavy construction equipment, which would use hazardous materials in their operation. These materials would include fuel, grease, oil, and other materials that may be contained within the equipment and/or stored on-site by the construction contractor. Contractors may routinely transport these materials to and from the site, and dispose of the materials once they have been used. Additionally, certain existing Modesto facilities may contain asbestos, which could be released during demolition and renovation activities.

Transport, use, and disposal of hazardous materials during construction could expose workers, the public, or the environment to hazards if adequate precautions are not taken. Construction workers could inhale toxic vapors or make bodily contact with materials, which could subject them to harm. The public or the environment could be exposed to toxic substances if materials were not stored, transported, or disposed of properly. The potential for harm may depend on the site-specific characteristics at any given component site, as well as proximity to sensitive receptors or environmental resources. Construction workers also could be exposed to asbestos during demolition of existing facilities such as those planned for demolition at the Sutter Plant.

In accordance with applicable regulations, the City and its contractors would be required to identify and track hazardous waste from "cradle to grave" (see discussion of RCRA in Section 11.2.1) and provide training and personal protective equipment to workers, if necessary, to prevent exposure to hazardous substances in excess of exposure limits (see OSHA under Section 11.2.1). Additionally, the City and/or its contractors would be required to follow protocols established under the NESHAP regulations (described in Chapter 6, *Air Quality)*, which are designed to limit health impacts associated with asbestos and other hazardous substances.

Compliance with these laws and regulations described in the regulatory setting would prevent significant impacts from occurring during construction activities. The WWMP does not create unique hazards from use, storage, transport, and disposal of materials. Therefore, this impact would be **less than significant.**

Impact HAZ-2: Create a Substantial Hazard to the Public or the Environment through the Routine Transport, Use, or Disposal of Hazardous Materials during Operation (Less than Significant)

New and upgraded lift stations, pump stations, and proposed components at the Sutter and Jennings Plants would involve storage and use of hazardous materials. More chemicals would be stored at the Jennings Plant due to expansion of the tertiary treatment facilities and construction of new primary treatment facilities like primary clarifiers, anaerobic digesters, and dewatering facilities. The refurbished treatment plant facilities may include back-up generators that store fuel, but the existing Sutter and Jennings plants also contain this equipment and fuel; therefore, the Proposed Program would not represent a substantial change from existing conditions. New pump station facilities may store fuel for back-up

generators in case the primary power source fails. In accordance with USEPA's Spill Prevention and Countermeasure Rule (see Section 11.2.1), the City would be required to provide secondary containment structures and spill counter-measure protocols if any storage tanks exceed the threshold volume (660 gallons), but the City would provide secondary containment for all storage tanks. Likewise, the City would be required to prepare a HMBP for sites that store greater than the threshold quantities of hazardous materials (55 gallons of a liquid, 500 pounds of a solid, or 200 cubic feet of a compressed gas).

City of Modesto workers also may use, transport, or dispose of hazardous materials during ongoing routine maintenance and repair activities. Under the WWMP, no changes to the City's hazardous materials transportation program are needed. Similar to existing conditions and consistent with City policy V-M.2[d], the City's Plant staff would not use residential streets for transporting hazardous materials used at either wastewater treatment plant. The same regulations described above under Impact HAZ-1 with respect to construction would apply to these activities to ensure that workers are not exposed to unsafe levels of toxic substances, and that hazardous materials are transported and disposed of in accordance with applicable laws.

In general, use, storage, transport, and disposal of hazardous materials under the Proposed Program would be similar to current activities related to operating and maintaining the City's wastewater system although amounts of hazardous materials would increase, and would not create a substantial hazard to the public or the environment. Therefore, this impact would be **less than significant**.

Impact HAZ-3: 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 during Construction (Less than Significant)

As described under Impact HAZ-1, the Proposed Program would involve use, storage, transport, and disposal of hazardous materials during construction. If these materials were to be accidentally released, such as through a spill or encountering contaminated soil, it could harm workers, the public or the environment. However, compliance with all local, state, and federal regulations concerning hazardous materials would result in less-than-significant impacts. Once operational, these facilities would not result in additional hazard emissions or the use of hazardous materials near students or school facilities. Storage of onsite hazardous materials, such as diesel fuel, would require secondary containment to prevent leaks or spills, as required by federal and state regulations. This impact would be **less than significant.**

Impact HAZ-4: 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 during Operation (Less than Significant)

As described under Impact HAZ-2, the Proposed Program would involve use, storage, transport, and disposal of hazardous materials during operation. In accordance with applicable laws and regulations, the City would be required to track any hazardous wastes generated during Program operation from "cradle to grave" and dispose of this material appropriately. The City also would be required to implement spill prevention and counter-

measures in accordance with USEPA's Spill Prevention and Countermeasure Rule for storage tanks under the Proposed Program that exceed the threshold volume, but the City would include secondary containment on all fuel storage tanks. Additionally, sites storing greater than threshold quantities of hazardous materials would require preparation of HMBPs, including an inventory of the hazardous materials used/stored by the business, a site map, an emergency plan, and a training program for employees. Compliance with these requirements would reduce this impact to **less than significant**.

Impact HAZ-5: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste within 0.25 Mile of an Existing or Proposed School (Less than Significant)

All Program-level Components

Depending on the specific WWMP component, Proposed Program activities may involve use or handling of hazardous materials within 0.25 mile of a school. As shown in Figure 11-3, numerous schools are located throughout Modesto, many of which are located in relatively close proximity to proposed lift stations and new, upgraded or rehabilitated sewer lines. The nearest school to the Sutter Plant is Evelyn Hanshaw Middle School, which is approximately 0.5 mile southeast of the treatment plant site. No schools are located in proximity to the Jennings Plant.

Use and handling of hazardous materials near schools during construction of proposed components would be as described under Impact HAZ-1 (e.g., use of fuel, grease, or related materials in construction equipment). These activities would not create a hazard, even if located in close proximity to a school, by complying with applicable regulations described in Impact HAZ-1. Construction equipment may emit some amount of TAC emissions, such as DPM from operation of diesel-fueled construction equipment; however, these emissions would be temporary.

Proposed activities would use relatively limited hazardous materials during operation and the operation of emergency generators and staff vehicle trips would emit limited amounts of TACs. Hazardous materials used at the Sutter Plant would be anticipated to be similar in type and/or quantity to hazardous materials currently used at the Sutter Plant, and no schools are located within 0.25-mile of the Sutter Plant. In addition, adherence to SJVAPCD's permitting process would ensure that TAC emissions would not create unacceptable health risks for nearby sensitive receptors, such as schools. As such, this impact would be **less than significant.**

River Trunk Realignment Project

Three schools (Modesto High School, Kirk Baucher School, and James Marshall Elementary School) would be within 0.25 mile of the River Trunk Realignment Project. Project construction activities in these areas would include trenching for installation of gravity sewer lines within the roadway. Although heavy construction equipment used in these activities may emit some amount of TACs, these emissions would be temporary and such effects are described in Chapter 6. As described above, the proposed activities would comply with applicable regulations described in Impact HAZ-1, and therefore would not present any undue risks to human health. The pipeline facilities would not emit any hazardous emissions once installed. Therefore, this impact would be **less than significant.**

Overall Conclusion

While schools are located within 0.25 mile of some Proposed Program components and the River Trunk Realignment Project, construction activities would be temporary and effects related to releases of TAC emissions are addressed in Chapter 6. By complying with applicable regulations pertaining to the safe use and handling of hazardous materials, the Proposed Program would not present any undue risks to nearby schools. The Proposed Program's overall impact would be **less than significant.**

Impact HAZ-6: Location 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, Create a Significant Hazard to the Public or the Environment (Less than Significant)

All Program-level Components

As indicated in Figure 11-4, various Proposed Program elements are located within 0.25 mile of identified hazardous materials sites. In accordance with Modesto City Council Resolution 2003-66, a Phase 1 Environmental Site Assessment is required prior to the acquisition of real property. The Phase 1 Environmental Site Assessment would identify any past sources of contamination on or near a site and, if contamination is identified, may recommend performance of a more detailed Phase 2 Environmental Site Assessment, including soils testing. The City may not purchase a property on which significant contamination is discovered during the due diligence phase and which may create a significant hazard to the public or the environment. No proposed lift or pump station sites would be located within 200 feet of a documented hazardous material clean-up site. The Sutter and Jennings Plant improvements would not be constructed on any documented hazardous materials contamination/clean-up sites. Proposed pipeline improvements would generally be located within the public right-of-way and not within documented clean-up sites. Therefore, this impact would be **less than significant.**

River Trunk Realignment Project

No open hazardous materials sites are located within 100 feet of the River Trunk Realignment Project. Therefore, **no impact** would occur**.**

Overall Conclusion

Compliance with the City's Resolution 2003-66, as described above, would prevent significant impacts associated with placement of a facility on a hazardous material site from occurring. Therefore, this impact would be **less than significant.**

Impact HAZ-7: Location in an Airport Land Use Plan or within 2 Miles of a Public Airport , Resulting in a Safety Hazard for People Residing or Working in the Program Area (Less than Significant)

All Program-level Components

As shown on Figure 11-2, only one airport is located in Modesto: the Modesto City-County Airport. Several collection system components would be located within 2 miles of this airport or within the airport land use planning area, including the River Trunk Realignment Project

(see further discussion below). Under the Proposed Program, facilities may be constructed within the Modesto City-County Airport land use plan area. However, these facilities would not pose any risks to aviation. Impacts are considered **less than significant**.

River Trunk Realignment Project

Much of the River Trunk Realignment Project would be located within the *Stanislaus County Airport Land Use Compatibility Plan* planning area boundary for the Modesto City-County Airport. As shown in Figure 11-2, the eastern portion of the project is within Referral Area 2. According to the *Stanislaus County Airport Land Use Compatibility Plan* and as discussed in Section 11.2.3, wastewater facilities are considered compatible with airport uses. In general, most project components would be largely underground, and those that are not underground would not be of a significant height such as to pose a hazard for aircraft. Therefore, the Project would not create a hazard to aircraft or to people working in the area. This impact would be **less than significant.**

Overall Conclusion

While some Proposed Program components may be within 2 miles of the Modesto City-County Airport, most facilities would be belowground and any aboveground elements such as lift stations and pump stations would not pose a significant hazard for aircraft. The Proposed Program's overall impact would be **less than significant.**

Impact HAZ-8: Impair Implementation of or Physically Interfere with an Adopted Emergency Response Plan or Emergency Evacuation Plan (Less than Significant)

All Program-level Components

In general, the Proposed Program would not substantially impair or interfere with an emergency response plan. The Proposed Program would be limited to upgrades/components to the City's wastewater infrastructure. As described in Chapter 2, *Program Description,* construction of Proposed Program components, such as installation of sewer pipelines, would involve trenching/excavation within the roadway. These activities could require temporary closure of one lane of traffic, which could interfere with emergency evacuation procedures or emergency vehicle access.

All projects would be required to follow the current version of the City of Modesto Standard Specifications. Section 12 of the General Provisions includes Temporary Traffic Control requirements that must be incorporated into all projects. As part of the Traffic Management Plan (TMP), the public and appropriate fire and police departments are notified in advance of temporary road closures. This ensures that any impacts on emergency protection services during construction would be **less than significant.**

River Trunk Realignment Project

The River Trunk Realignment Project would involve installation of force-main and gravity-fed sewage collection lines within Tuolumne Boulevard, Colorado Avenue, Neece Drive, and other roads in central Modesto. Trenching within these roadways could require closure of up to one lane of traffic and may temporarily cause congestion. As noted above, adherence to the City's Standard Specifications would prevent substantial impacts on emergency services from occurring due to these activities. The TMP required under Section 12 of the General

Provisions would include advance notification appropriate police and fire departments regarding temporary road closures. As such, this impact would be **less than significant.**

Overall Conclusion

Implementation of the City's Standard Specifications, which requires preparation of a TMP, would prevent substantial impacts related to interference with emergency response or evacuation. As a result, this impact would be **less than significant.**

Impact HAZ-9: Expose People or Structures, either directly or indirectly, to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires (No Impact)

The prevalent land uses in the program area are rural agricultural and developed. There are no wildlands in the program area, as shown in Figure 11-5. As such, implementation of the Proposed program would have **no impact** on wildfires.

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Chapter 12
HYDROLOGY AND WATER QUALITY

12.1 OVERVIEW

This chapter evaluates impacts of the Proposed Program on hydrology and water quality. It identifies the existing federal, state, and local laws, regulations, and policies related to hydrology and water quality that may be applicable to the Proposed Program; describes the existing physical environmental conditions in the study area; and evaluates impacts on hydrology and water quality from the Proposed Program.

12.2 REGULATORY SETTING

12.2.1 FEDERAL LAWS, REGULATIONS, AND POLICIES

Clean Water Act

The CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The key sections of the CWA that are potentially relevant to the Proposed Program are Sections 303(d) and 402.

Section 303(d)

Under CWA Section 303(d), states are required to identify "impaired water bodies" (i.e., those that do not meet established water quality standards), identify the pollutants causing the impairment, establish priority rankings for waters on the list, and develop a schedule for developing control plans to improve water quality. USEPA then approves the state's recommended list of impaired waters or adds and/or removes waterbodies. USEPA also reviews and approves the control plan developed for each pollutant, known as the total maximum daily load (TMDL). Section 303(d), Category 5 water body segments are segments in which at least one beneficial use is not supported and a TMDL is needed. Section 12.3.3 lists Section 303(d), Category 5 water body segments in the study vicinity.

Section 402

CWA Section 402 regulates construction-related stormwater discharges to surface waters through the NPDES, which is officially administered by USEPA. In California, USEPA has delegated its authority to the SWRCB; SWRCB, in turn, delegates implementation responsibility to the nine RWQCBs, as discussed below in regard to the Porter–Cologne Water Quality Control Act. The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual (activity- or project-specific) permits.

National Flood Insurance Program

Congress established the National Flood Insurance Program (NFIP) to provide property owners with access to federally-backed flood insurance protection and to reduce the destructive consequences of flooding. FEMA administers the NFIP and works closely with state and local officials to identify flood hazard areas and flood risks. FEMA's Flood Insurance Rate Maps (FIRMs) show the extent of areas within the 100-year floodplain (i.e., areas that would be inundated by the 1-percent annual chance flood), providing the basis of the NFIP regulations and flood insurance requirements (FEMA 2017).

12.2.2 STATE LAWS, REGULATIONS, AND POLICIES

Porter–Cologne Water Quality Act

The 1969 Porter–Cologne Water Quality Control Act (known as the Porter–Cologne Act) dovetails with CWA (see discussion of CWA above). It established the SWRCB and divided the state into nine regions, each overseen by its own RWQCB. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface water and groundwater supplies; however, much of the SWRCB's daily implementation authority is delegated to the nine RWQCBs, which are responsible for implementing CWA Sections 303[d] and 402. In general, the SWRCB manages water rights and regulates statewide water quality, whereas RWQCBs focus on water quality within their respective regions.

The Porter–Cologne Act requires that the RWQCBs develop water quality control plans (also known as Basin Plans) that designate beneficial uses of California's major surface-water bodies and groundwater basins and establish specific narrative and numerical water quality objectives for those waters. Beneficial uses represent the services and qualities of a waterbody (i.e., the reasons that the waterbody is considered valuable). Water quality objectives reflect the standards necessary to protect and support those beneficial uses. Basin Plan standards are primarily implemented by regulating waste discharges so that water quality objectives are met. Under the Porter–Cologne Act, Basin Plans must be updated every three years.

The Proposed Program is located within the planning area/jurisdiction of the Central Valley RWQCB. *The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* (Central Valley RWQCB 2016a) establishes beneficial uses for the Tuolumne River and San Joaquin River, as shown in **Table 12-1**. The Basin Plan does not identify beneficial uses for Dry Creek. In regards to groundwater, the Basin Plan states that "unless otherwise designated by the Regional Water Board, all ground waters in the Region are considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO)" (Central Valley RWQCB 2016a).

Table 12-1. Beneficial Uses for Water Bodies Potentially Affected by the Proposed Program

Water Bodies	HUC No.	MUN	AGRICULTURE		INDUSTRY			RECREATION			FRESHWATER HABITAT		MIGRATION		SPAWNING		WILD	NAV
		AGR			PROC	IND	POW	REC-1		REC-2	WARM	COLD	MIGR		SPWN		WILD	NAV
		Municipal and Domestic Supply	Irrigation	Stock Watering	Process	Service Supply	Power	Contact	Canoeing and Rafting	Other Non-Contact	Warm	Cold	Warm	Cold	Warm	Cold	Wildlife Habitat	Navigation
Tuolumne River																		
New Don Pedro Dam to San Joaquin River	535	P	E	E				E	E	E	E	E		E	E	E	E	
San Joaquin River																		
Mouth of Merced River to Vernalis	535/ 541	P	E	E	E			E	E	E	E		E	E	E		E	
Sacramento–San Joaquin Delta																		
Sacramento–San Joaquin Delta	544	E	E	E	E	E		E		E	E	E	E	E	E		E	E

Notes: AGR = agricultural supply; COLD = cold freshwater habitat; HUC = hydrologic unit code; IND = industrial service supply; MUN = municipal and domestic supply; NAV = navigation; POW = power; PROC = industrial process supply; REC-1 = water contact recreation; REC-2 = non-contact water recreation; SPWN = spawning, reproduction, and/or early development; WARM = warm freshwater habitat; WILD= wildlife habitat.

Beneficial Use Status
E = Existing beneficial uses
P = Potential beneficial uses
L = Existing limited beneficial uses

Source: Central Valley RWQCB 2016a

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National Pollutant Discharge Elimination System Permits

Construction Activities

Most construction projects that disturb 1 acre or more of land are required to obtain coverage under SWRCB's General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ as amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ). The general permit requires that the applicant file a public notice of intent to discharge stormwater and prepare and implement a SWPPP. The SWPPP must include a site map and a description of the proposed construction activities; demonstrate compliance with relevant local ordinances and regulations; and present a list of BMPs that would be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. Permittees are further required to monitor and report on all construction-related activities to ensure that BMPs are correctly implemented and are effective in controlling the discharge of construction-related pollutants.

Dewatering Activities

Although some construction-related dewatering is covered under the General Construction Permit, the Central Valley RWQCB has also adopted a general permit for limited threat discharges to surface water, including construction dewatering discharges (Order No. R5-2016-0076 [NDPES No. CAG995002]) (Central Valley RWQCB 2016b). This permit would most likely apply to the Proposed Program if construction would require dewatering in greater quantities than that allowed by the General Construction Permit and would discharge the effluent to surface waters. The general permit for limited threat discharges to surface water contains waste discharge limitations and prohibitions similar to those in the General Construction Permit. To obtain coverage, the applicant must submit a Notice of Intent and a pollution prevention and monitoring program.

Municipal Stormwater Permitting Program

The SWRCB and RWQCBs regulate stormwater discharges from municipal separate storm sewer systems (MS4) through the Municipal Stormwater Permitting Program. Permits are issued under two phases depending on the size of the urbanized area/municipality. Phase I MS4 permits are issued for medium (population between 100,000 and 250,000) and large (population of 250,000 or more) municipalities, and are often issued to a group of co-permittees within a metropolitan area. Phase I permits have been issued since 1990. The City of Modesto is covered under a Phase I permit, Order R5-2015-0025. The Order requires the City to continue implementing its Storm Water Program, which includes requirements for construction projects to implement BMPs to control sediment and pollutants from construction sites. The Storm Water Program also includes a Municipal Program, which, among other things, seeks to prevent sanitary sewer overflows (SSO) or spills from entering the storm drain system (Central Valley RWQCB 2015).

Water Reclamation Requirements for Recycled Water

In 2016, the SWRCB adopted the proposed Water Reclamation Requirements for Recycled Water Use (General Order), which replaced the existing 2014-0090-DWQ General Waste Discharge Requirements for Recycled Water Use. The General Order establishes standard conditions for recycled water use and conditionally delegates authority to an Administrator to manage a Water Recycling Program and issue Water Recycling Permits to recycled water

users. Only treated municipal wastewater for non-potable uses can be permitted, such as landscape irrigation, crop irrigation, dust control, industrial/commercial cooling, decorative fountains, etc. (SWRCB 2017).

Overview of Modesto's Current NPDES Permits

Currently, the City holds an NPDES permit from the Central Valley RWQCB that authorizes tertiary effluent discharges from the Jennings Plant to the San Joaquin River. The discharge is regulated through NPDES Permit No. CA0079103, Order R5-2017-0064. The NPDES permit allows tertiary treated wastewater discharge (up to 14.9 mgd currently and up to 19.1 mgd once the City completes upgrades to its existing Jennings Plant facilities) to the San Joaquin River (Central Valley RWQCB 2017).

The City is also participating in the North Valley Regional Recycled Water Program (NVRRWP), which will provide recycled water to the Delta-Mendota Canal (DMC). The City's permit number R5-2017-0010 allows for discharge of up to 14.9 mgd of disinfected tertiary recycled water to the DMC under the NVRRWP. The treated water is conveyed from the Jennings Plant via pipeline to the DMC (NVRRWP 2017).

In addition, the City holds WDRs (Order No. R5-99-112) that authorizes discharges to agricultural lands surrounding the Jennings Plant. The WDRs allows for irrigation of land using undisinfected secondary effluent and/or cannery process water. Additionally, the City holds a biosolids discharge permit (Order No. R5-94-030), which allows for Class B biosolids to be applied as a soil amendment at the Modesto Ranch.[1]

California Toxics Rule

On May 18, 2000, the USEPA promulgated numeric water quality criteria for priority toxic pollutants and other provisions for new water quality standards to be applied to waters in the state of California. USEPA promulgated this rule, also known as the California Toxics Rule, based on a determination that the numeric criteria were necessary in California to protect human health and the environment (USEPA 2017).

The California Toxics Rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Thus, the State of California has been without numeric water quality criteria for many priority toxic pollutants as required by the CWA, necessitating the action by the USEPA. The federal criteria included in the California Toxics Rule are legally applicable in the state of California for inland surface waters, enclosed bays and estuaries for all purposes and programs under the CWA (USEPA 2017).

Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB) (formerly the State Reclamation Board) derives its regulatory authority from CCR Title 23, Waters, and, in cooperation with USACE, is the state regulatory agency responsible for ensuring that appropriate standards are met for the construction, maintenance, and protection of the Central Valley's flood control system.

[1] The Modesto Ranch is a 2,458-acre ranch owned by the City of Modesto and located at the Jennings Plant. The ranch is used for the land application of treated domestic secondary effluent, cannery process water, and anaerobically digested biosolids trucked from the Sutter Plant.

The 2017 Central Valley Flood Protection Plan Update provides an updated vision and strategy for flood system improvements within the State Plan of Flood Control (SPFC) (see below). In general, the CVFPB requires a permit for proposed work that is located within the SPFC, within 300 feet of a Designated Floodway that has been adopted by the CVFPB, or within 30 feet from the banks of a CVFPB Regulated Stream (CVFPB 2017). Designated floodways have been established on the Tuolumne River, San Joaquin River, and portions of Dry Creek. Several Program components, including the Benson Lift Station, Sutter Plant improvements, and various pipeline facilities that would cross beneath the Tuolumne River and Dry Creek, would be located within the Designated Floodway and may be subject to CVFPB jurisdiction.

State Plan of Flood Control

The SPFC (Central Valley Flood Management Planning Program 2010) provides an inventory and description of the existing State-federal flood protection system in the Central Valley of California. The State-federal flood protection system refers to the set of federally authorized project levees and related facilities for which the State has provided assurances of cooperation to the federal government. No SPFC facilities are located on the Tuolumne River in the study area, and the Proposed Program would not affect any SPFC facilities.

12.2.3 LOCAL LAWS, REGULATIONS, AND POLICIES

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (City of Modesto 2019a) identifies the Stanislaus and Tuolumne Rivers, and Dry Creek, as regional parks. The River Greenway Program, which guides development within the Stanislaus River, Tuolumne River, and Dry Creek Comprehensive Planning Districts, includes the following policies that are potentially relevant to the Proposed Program and the hydrology and water quality impacts analysis:

> **Policy VII-B.7[l].** Sensitive habitats and natural areas, including wetlands and riparian corridors, will be protected and enhanced, when feasible.
>
> **Policy VII-B.7[n].** Aquatic species and habitat will be protected and enhanced, when feasible.
>
> **Policy VII-B.7[o].** The natural forces influencing the development of recreational areas, including potential flooding, prevailing winds, sun orientation, and topography will be considered during design.
>
> **Policy VII-B.7 [p].** A flood management program that provides protection from catastrophic flooding and contributes to the ecological values of the river corridor will be promoted.

Stanislaus County General Plan

The *Stanislaus County General Plan* guides land use and development in the unincorporated area of Stanislaus County (Stanislaus County 2016a). Goals and policies in the general plan related to hydrology and water quality include the following:

Conservation and Open Space Element

Goal Two. Conserve water resources and protect water quality in the County.

Policy Five. Protect groundwater aquifers and recharge areas, particularly those critical for the replenishment of reservoirs and aquifers.

Goal Five. Reserve, as open space, lands subject to natural disaster in order to minimize loss of life and property of residents of Stanislaus County.

Policy Sixteen. Discourage development on lands that are subject to flooding, landslide, faulting, or any natural disaster to minimize loss of life and property.

Safety Element

Goal One. Prevent loss of life and reduce property damage as a result of natural disasters.

Policy Two. Development should not be allowed in areas that are within the designated floodway or any areas that are known to be susceptible to being inundated by water from any source.

12.3 ENVIRONMENTAL SETTING

12.3.1 TOPOGRAPHY AND CLIMATE

Being located in the Central Valley of Northern California, the City of Modesto and its outlying service areas are generally flat and subject to a Mediterranean climate and precipitation pattern. Summers are typically hot and dry, while winters are cool and wet. Most precipitation falls from November through April. Flows in area surface waters are typically highest during this period as well. Snowmelt may contribute substantially to flows in the Tuolumne River during the spring.

12.3.2 SURFACE WATER HYDROLOGY

The Tuolumne River is the primary surface water feature in the Modesto area, passing through roughly the center of the city. The Stanislaus River flows in an east-west direction to the north of the city, making up the northern boundary of Stanislaus County; no proposed components would be located in the immediate proximity of this river. The Tuolumne River drains to the San Joaquin River, which flows northwest through the Central Valley before joining the Sacramento River and flowing out to San Francisco Bay and the Pacific Ocean. The Sutter Plant is located along the northern bank of the Tuolumne River at the southern end of Modesto. The Jennings Plant is located along the bank of the San Joaquin River upstream of its confluence with the Tuolumne River. Dry Creek flows through northeast Modesto before discharging into the Tuolumne River. **Figure 12-1** shows surface water bodies in the study area.

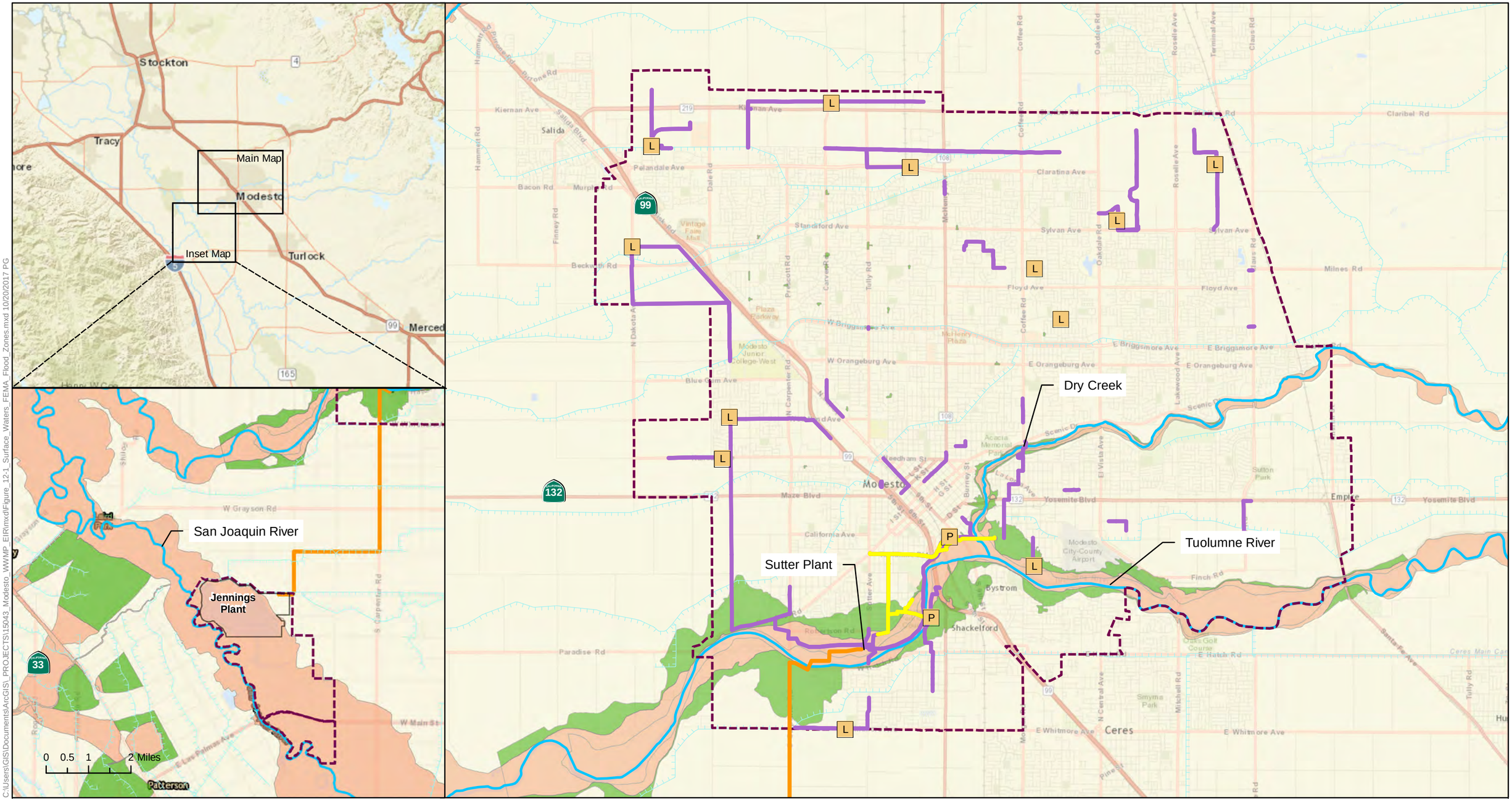


Figure 12-1
Surface Waters & FEMA Flood Zones in the Program Vicinity

City of Modesto
Wastewater Master Plan EIR

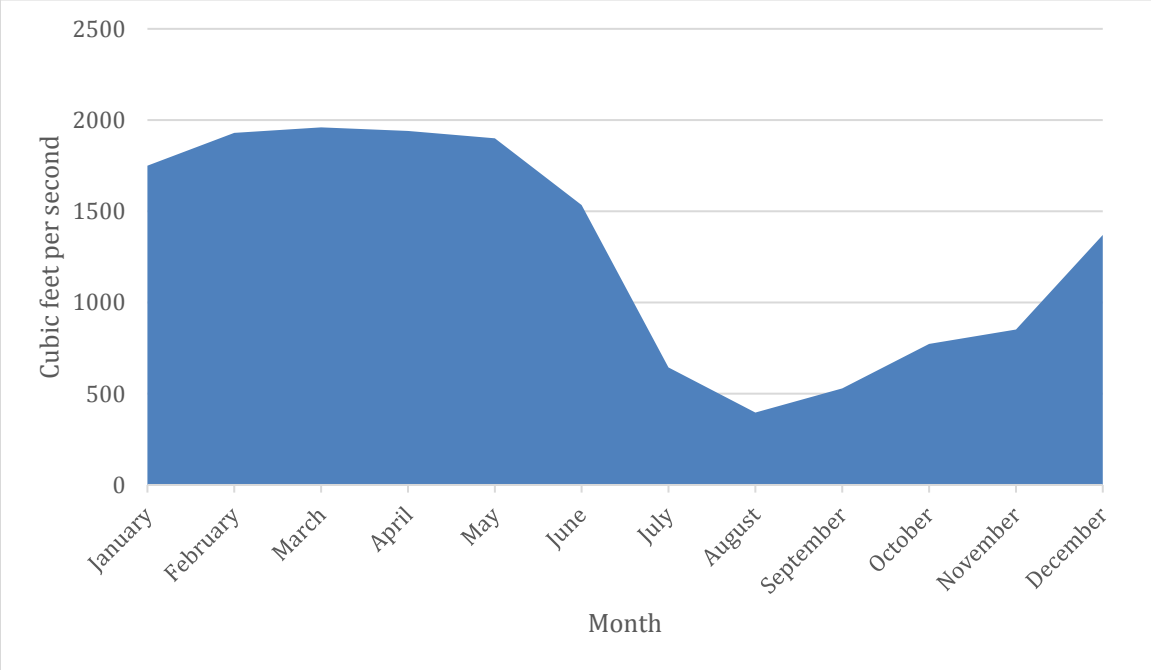
Horizon WATER and ENVIRONMENT

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Flows in study area waters vary seasonally, roughly in line with the seasonal precipitation pattern. Flows in the Tuolumne River are also regulated by reservoirs and power plants upstream from Modesto, including Hetch Hetchy Reservoir and Don Pedro Reservoir. Don Pedro Reservoir, jointly operated by MID and TID, has a capacity of 2,030,000 acre-feet (AF) and provides flood control for the Modesto area (City of Modesto 2019b). **Figure 12-2** shows the mean monthly flow in the Tuolumne River as measured at the USGS stream gage in Modesto (USGS 11290000).

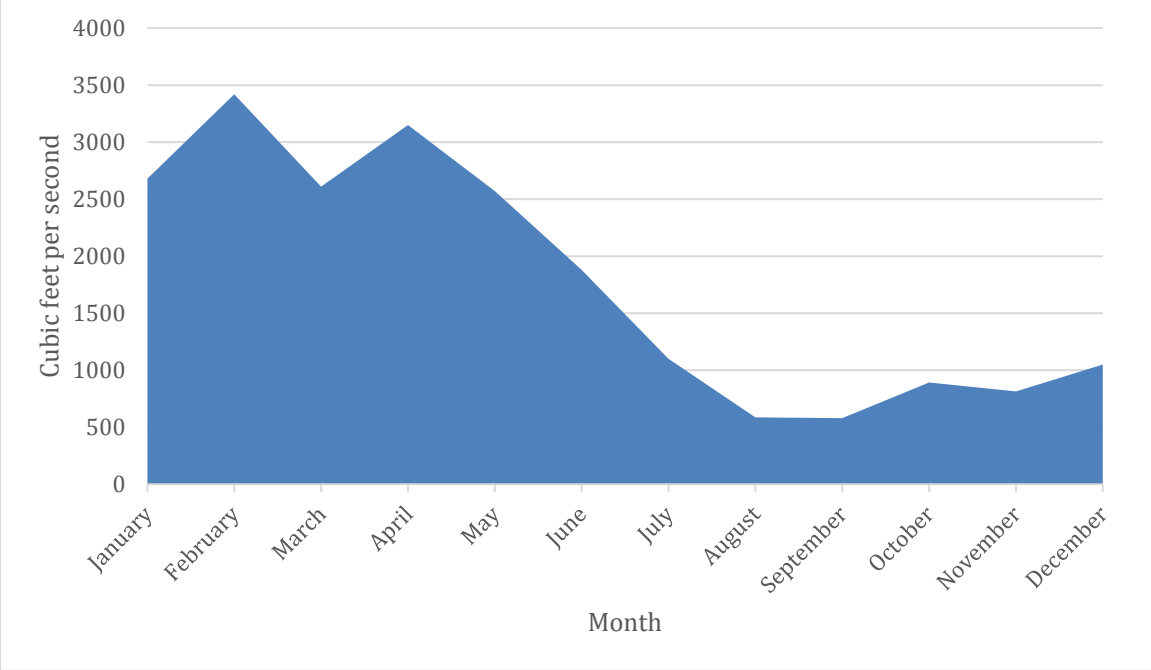
Figure 12-2. Mean Monthly Discharge at USGS Gage 11290000 (Tuolumne River at Modesto, CA), Water Years 1940-2016



Source: USGS 2017a

No stream gage exists on Dry Creek, but it can be assumed that flows follow a similar pattern. Flows in the San Joaquin River follow a somewhat different pattern, with higher peak flows in late winter/early spring, as shown in **Figure 12-3**.

Figure 12-3. Mean Monthly Discharge at USGS Gage 11274550 (San Joaquin River Near Crows Landing, CA), Water Years 1995-2016



Source: USGS 2017b

12.3.3 WATER QUALITY

Surface water quality in the San Joaquin, Stanislaus, and Tuolumne rivers is excellent at their sources in the Sierra Nevada Mountains (Stanislaus County 2016b). However, as each river flows through the San Joaquin Valley, water quality declines. Agricultural and domestic use-and-return both contribute to water quality degradation. During dry summer months, the concentration of pollutants increases, particularly in the San Joaquin River, which drains domestic and industrial wastewater for the entire San Joaquin Valley. Water quality in the Stanislaus and Tuolumne rivers declines by the time they discharge into the San Joaquin River. Comparatively, water quality declines more in the Tuolumne River than the Stanislaus River due to agricultural return flows and gas well wastes (Stanislaus County 2016b).

Table 12-2 shows CWA, Section 303(d) Category 5 (i.e., requiring a TMDL) listings for water body segments in the study area and downstream.

Table 12-2. Section 303(d), Category 5 Listings for Water Body Segments Potentially Affected by the Proposed Program

Water Body	Watershed CalWater / USGS HUC	Contaminant	Source	First Listed	TMDL Status[1]	Completion Date[2]
Tuolumne River, Lower (Don Pedro	53550000 / 18040002	Chlorpyrifos	Unknown	2012	5A	2021
		Diazinon	Unknown	2002	5A	2010
		Group A Pesticides	Unknown	2006	5A	2011

Water Body	Watershed CalWater / USGS HUC	Contaminant	Source	First Listed	TMDL Status[1]	Completion Date[2]
Reservoir to San Joaquin River)		Mercury	Unknown	2010	5A	2021
		Temperature, water	Unknown	2010	5A	2021
		Unknown Toxicity	Unknown	2006	5A	2022
San Joaquin River (Merced River to Tuolumne River)	54110000 / 18040001	Boron		2002	5B	2007
		Chlorpyrifos	Unknown	2006	5B	2007
		DDE (Dichlorodiphenyl-dichloroethylene)	Unknown	2010	5A	2011
		DDT (Dichlorodiphenyl-trichloroethane)	Unknown	2002	5A	2011
		Electrical Conductivity	Unknown	1998	5A	2021
		Group A Pesticides	Unknown	2002	5A	2011
		Mercury	Unknown	2006	5A	2012
		Temperature, water	Unknown	2010	5A	2021
		Unknown Toxicity	Unknown	2002	5A	2019
		alpha-BHC (Benzene-hexachloride or alpha-HCH)	Unknown	2002	5A	2022
San Joaquin River (Tuolumne River to Stanislaus River)	53530000 / 18040002	Chlorpyrifos	Unknown	2006	5B	2007
		DDT (Dichlorodiphenyl-trichloroethane)	Unknown	2006	5A	2011
		Diazinon	Unknown	2006	5B	2007
		Electrical Conductivity	Unknown	1998	5A	2021
		Group A Pesticides	Unknown	1994	5A	2011
		Mercury	Unknown	2006	5A	2012
		Temperature, water	Unknown	2010	5A	2021
		Unknown Toxicity	Unknown	1994	5A	2019
San Joaquin River (Stanislaus River to Delta Boundary)	54400000 / 18040002	Chlorpyrifos	Unknown	2006	5B	2007
		DDE (Dichlorodiphenyl-dichloroethylene)	Unknown	2010	5A	2011
		DDT (Dichlorodiphenyl-trichloroethane)	Unknown	2006	5A	2011
		Diuron	Unknown	2010	5A	2021
		Electrical Conductivity	Unknown	2006	5B	2007
		Escherichia coli (*E. coli*)	Unknown	2010	5A	2021
		Group A Pesticides	Unknown	2006	5A	2011

Water Body	Watershed CalWater / USGS HUC	Contaminant	Source	First Listed	TMDL Status[1]	Completion Date[2]
		Mercury	Unknown	2006	5A	2012
		Temperature, water	Unknown	2010	5A	2021
		Toxaphene	Unknown	2006	5A	2019
		Unknown Toxicity	Unknown	2006	5A	2019

Notes: TMDL = total maximum daily load.

[1] TMDL requirement status definitions: A = TMDL still required; B = being addressed by USEPA-approved TMDL; Category 5 = water body segments in which at least one beneficial use is not supported and a TMDL is needed.

[2] Completion date relates to the TMDL requirement status; a date for A = TMDL scheduled completion date; B = date USEPA approved TMDL.

Source: SWRCB 2012

12.3.4 STORMWATER

The City's storm drainage system includes approximately 77 miles of storm drain lines and 25 storm pump stations. Stormwater discharges from Modesto drain to 24 drainage basins and approximately 12 major outfalls (greater than 24 inches in diameter) to receiving waters (Tuolumne River or Dry Creek), MID laterals/drains, or rockwells. According to the City's *Storm Drainage Master Plan* (City of Modesto 2008), surface water discharges generally occur in the older parts of Modesto or those areas immediately adjacent to the Tuolumne River, Dry Creek, or irrigation canals. Approximately 40 percent of stormwater gets discharged to detention/retention basins, 20 percent of stormwater gets directed to receiving waters, 10 percent is directed to MID laterals/drains, and 30 percent goes to rockwells.

Rockwells are designed to collect surface stormwater runoff and allow it to infiltrate to the groundwater. These are rock-lined holes that are typically 6 feet in diameter and up to 50 feet deep. There are approximately 10,500 rockwells in Modesto, serving approximately two-thirds of the City's area. As a large urban area, Modesto has large areas of impervious surface, which generate increased volumes of surface runoff compared to the natural ground surface. To the extent this runoff is not captured by rockwell structures and allowed to infiltrate to groundwater, it may ultimately be discharged to nearby water bodies via the City's positive gravity stormwater drainage systems. The Tuolumne River and Dry Creek receive a large fraction of stormwater runoff from the Modesto urban area.

As described in Chapter 2, *Program Description,* many of the City's storm drain lines are interconnected with sanitary sewer lines. After storm events, these cross-connections typically increase substantially with peak flows.

12.3.5 GROUNDWATER LEVELS, FLOWS, AND QUALITY

The proposed components would primarily be located in the Modesto Subbasin of the San Joaquin Valley Groundwater Basin. This subbasin extends from the San Joaquin River east to the Sierra foothills, and from the Tuolumne River north to the Stanislaus River. Several components south of the Tuolumne River (e.g., third outfall pipeline and Jennings Plant components) also would be located in the Turlock Subbasin.

The western portions of the Modesto and Turlock subbasins generally have two principal aquifers: one above and one below the Corcoran clay[2] (Stanislaus and Tuolumne Rivers Groundwater Basin Association [STRGBA] 2005). East of the Corcoran clay, the aquifers are generally unconfined. Groundwater generally flows from east to west-southwest in the area of Modesto, following the topography of the land and differences in mean groundwater levels. Groundwater contours suggest that groundwater is discharged to the San Joaquin and Tuolumne Rivers along most reaches of the rivers.

Groundwater recharge in the region occurs primarily from percolation of applied irrigation water, as well as seepage from the Modesto Reservoir and irrigation canals (DWR 2004). Lesser recharge occurs from subsurface flows originating in the mountains and foothills along the east side of the subbasins and percolation of direct precipitation (DWR 2004). Groundwater recharge to the deeper aquifers can occur from seepage through unconfined aquifers or across the Corcoran clay, or from horizontal movement of water from the eastern portion of the subbasin (STRGBA 2005).

Groundwater levels in the Modesto area have declined over the past decades. The Modesto subbasin water level declined nearly 15 feet from 1970 through 2000 (DWR 2004), while average groundwater levels in the Turlock Subbasin declined nearly 7 feet from 1970 through 2000 (DWR 2006). Groundwater levels were locally depressed beneath and around the Modesto urban area, but completion of the Modesto Regional Water Treatment Plant in 1994 and subsequent importation of surface water supplies from the Modesto Irrigation District caused groundwater levels to rebound to some degree (STRGBA 2005). More recent data indicates that from 2007 to 2017 groundwater levels in the Modesto area decreased from 0 to 20 feet, with isolated areas of greater reductions (DWR 2017a). Some of this decrease may be attributable to the recent drought in California, which lasted in its most severe form from roughly 2013-2014, though moderate drought conditions continued for up to several years afterwards in some areas of the state, including in the Modesto area through February 2017. In 2014 in the Central Valley, total groundwater pumping was increased by 5 million acre-feet to partially compensate for a reduction in surface water deliveries to farmers of 6.5 million acre-feet in that year (Stanislaus County 2014).

Groundwater quality throughout the San Joaquin Valley region is suitable for most urban and agricultural uses; however, localized areas of high dissolved solids (TDS), nitrates, boron, chloride, arsenic, selenium, dibromochloropropane (DBCP), and radon exist (Stanislaus County 2016b). Elevated TDS concentrations may occur from recharge of streamflow originating from marine sediments or concentration of salts from agricultural practices due to evaporation and poor drainage. The major human sources of nitrates are disposal of human and animal waste products and fertilizers, but nitrates may also occur naturally. Agricultural pesticides (e.g., DBCP) and herbicides have been detected in groundwater through the region (Stanislaus County 2016b).

A groundwater characterization effort was completed at the Jennings Plant site while preparing the Report of Waste Discharge (ROWD) for renewal of the City's land discharge permits. This effort included monitoring of existing wells at the Jennings Plant site for Title

[2] The Corcoran clay is a clay layer underlying the western half of the Modesto and Turlock Subbasins. This clay layer is present at depths ranging between 50 and 200 feet below ground surface, and establishes an effective barrier to water movement between the confined and unconfined water bodies (California Department of Water Resources [DWR] 2004, 2006).

22 metals, nitrogen compounds, salinity compounds, and standard minerals, as well as taking groundwater "grab" samples at key locations using in situ groundwater sampling tools (Carollo Engineers 2016). Test results from this exercise showed elevated concentrations of the following constituents:

- Dissolved metals (arsenic, iron and manganese)
- Nitrogen
- Salinity (e.g., electrical current or total dissolved solids)
- Chloride
- Sodium

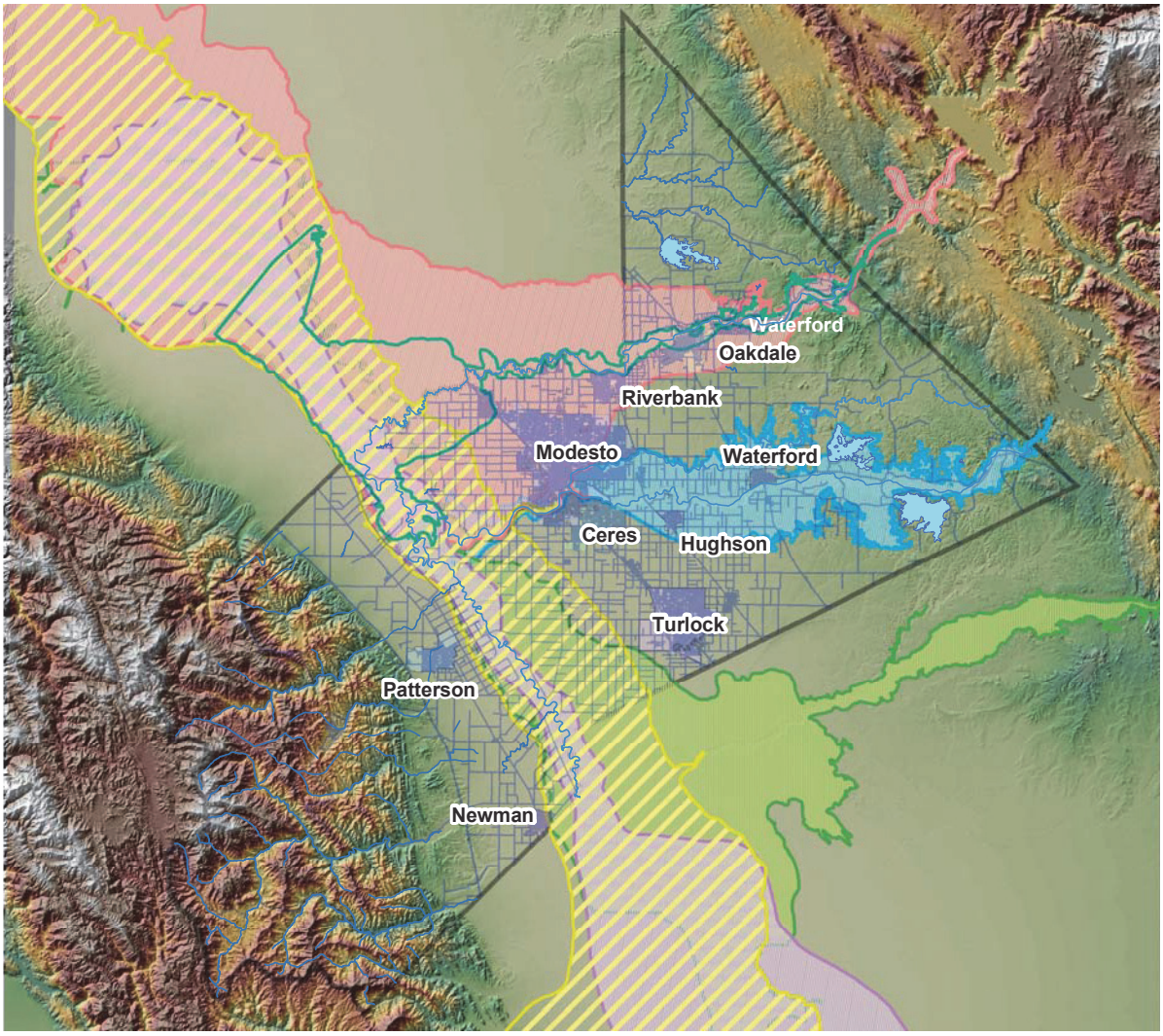
In general, the assessment could not determine whether the elevated concentrations could be attributed to effluent disposal/land application methods at the Jennings Plant or if they could be naturally occurring or caused by some other factor(s). The assessment concluded that additional analysis and monitoring were needed to better understand the extent and causes of groundwater quality issues in the Jennings Plant area (Carollo Engineers 2016).

12.3.6 FLOODPLAINS AND DAM INUNDATION AREAS

The Sutter Plant and the Jennings Plant are located within the 100-year flood (i.e., 1-percent annual chance flood) hazard zone mapped by FEMA. Several proposed components at these facilities and other collection system components would be located within the 100-year flood hazard zone. These flood zones are depicted in Figure 12-1. The Jennings Plant is protected by levees and therefore is within FEMA-designated Zone B, meaning it is in an area protected by levees from the base flood. The levees are maintained by Reclamation District No. 2091 and regularly inspected by DWR. Seepage has been noted to occur through the levees during periods of high river flows and sand boils have occurred along the levee (City of Modesto 2007). In 2016, the Reclamation District No. 2091 repaired five critical seepage areas along these levees by constructing seepage berms or seepage stability berms along 10,500 feet of the levees.

The Proposed Program is located in the Central Valley of California, approximately 70 miles from the ocean. Therefore, it would be outside of any tsunami zone.

The Stanislaus County General Plan (Figure V-3) shows that much of Modesto, including the area of the Program components, is within the inundation area for multiple dams. The figure (reproduced as Figure 12-4 here) shows that Modesto and potentially North Ceres are within the inundation area for New Melones and New Don Pedro Dams. Areas along the San Joaquin River, including the Jennings Plant, are within the inundation area for Exchequer, San Luis, and Pine Flat Dams (Stanislaus County 2010).



Map Legend:

- Lakes
- Rivers
- Streams
- Roads

Dam Inundation Areas

Dam Name

- Don Pedro
- Exchequer
- New Melones
- San Luis
- Pine Flat
- Tulloch

N

0 10 20 30 Miles

Map displays Stanislaus County with Dam Inundation Areas of regional dams.

Source: Stanislaus County 2010

Figure 12-4. Stanislaus County Dam Inundation Hazards Map

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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12.3.7 EXISTING WASTEWATER TREATMENT PLANT OPERATIONS

As described in Chapter 2, the City treats wastewater from the City, north Ceres, a portion from the community of Empire, and other "islands" in the County within Modesto that are served by agreement. Treatment facilities at the Sutter Plant consist of headworks, screening and grit removal, primary clarifiers, digesters, and sludge drying beds, and a primary effluent outfall pump station and pipeline. At the Sutter Plant, average dry weather flows (ADWF) ranged from 20.4 mgd to 20.8 mgd between 2011 and 2014. The peak flow recorded at the Sutter Plant was 72.8 mgd which occurred in December 2014 (Carollo Engineers 2016). Peak flows typically occur during large storm events.

Treated primary effluent gets routed underneath the 54-inch Primary Outfall pipeline and Cannery Segmentation flows get routed through a 60-inch pipeline. These pipelines extend approximately 6.5 miles south to the Jennings Plant where domestic effluent undergoes secondary and tertiary treatment. ADWF for domestic effluent to the Jennings Plant was 19.6 mgd (roughly 26,366 acre-feet per year) in 2016. During the canning season (July through September or early October), Cannery Segmentation flows are pumped from the Sutter Plant and sent directly to the ranch lands surrounding the Jennings Plant. Current average monthly Cannery Segmentation flows during the canning season are as high as 15 mgd (20,179 acre-feet per year). During the non-canning season, Cannery Segmentation year-round monthly flows are typically less than 2 mgd (2,690 acre-feet per year) (Carollo Engineers 2016).

As discussed in Chapter 1, *Introduction,* effluent received at the Jennings Plant undergoes a multi-step biological treatment process involving fixed film reactor towers, 300 acres of oxidation ponds, 100 acres of recirculation ponds, and storage within 1,200 acres of storage ponds. A large portion of this effluent is used to irrigate approximately 2,500 acres of agricultural lands on City-owned property. Currently, approximately 5.5 feet/year of water is applied to the Modesto Ranch (Eve, pers. comm., 2017), equating to approximately 13,520 acre-feet/year. Some of the water that is treated and stored in ponds at the Jennings Plant is also lost to evaporation and/or percolation. For 2018, such losses were projected at 5,425 acre-feet per year (Carollo Engineers 2016). Excess effluent not used for irrigation is stored, disinfected at the chlorination/dichlorination facility, and seasonally discharged (October through May) to the San Joaquin River (Carollo Engineers 2016). In 2017, the City only discharged to the San Joaquin River in March due to a breach in a primary sewer trunk line which resulted in excess wastewater volumes at the Jennings Plant. Since then, the City has discharged nominal amounts of excess effluent to the San Joaquin River and does not expect the need to discharge effluent to the San Joaquin River since operation of the NVRRWP involves delivering 14.9 mgd of tertiary treated wastewater to the DMC and sufficient capacity is available at their storage basins.

12.4 IMPACT ANALYSIS

12.4.1 METHODOLOGY

Impacts to hydrology and water quality were evaluated qualitatively based on consideration of ways in which construction and operation of the proposed components could trigger a significant impact following the CEQA significance criteria. As described through this DEIR, impacts are evaluated at a program-level of detail, except for the River Trunk Realignment Project, which is evaluated at the project level.

12.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on hydrology and water quality if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or 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;
- Otherwise substantially degrade water quality;
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Inundation by seiche, tsunami, or mudflow.

The Proposed Program would not include any new housing. Therefore, the eighth criterion above is dismissed from detailed consideration, as the Proposed Program would have no potential to place housing within the 100-year floodplain. Likewise, the Proposed Program area is generally flat and located far from the ocean or any large standing bodies of water. Therefore, the Proposed Program would have no potential to be subjected to inundation by seiche, tsunami, or mudflow, and the last criterion is dismissed.

12.4.3 ENVIRONMENTAL IMPACTS

Impact HYD/WQ-1: Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Degrade Water Quality during Construction (Less than Significant with Mitigation)

All Program-level Components

Construction of the proposed components could result in discharges of poor quality water to nearby water bodies if adequate precautions are not taken. Trenching and other ground-disturbing activities could expose loose soils that could be eroded during precipitation events. Construction equipment also would use hazardous materials (e.g., fuel and diesel) that could spill during routine use, storage, transport, or disposal, and then seep into groundwater or be washed into nearby water bodies. Use of trenchless construction methods (e.g., horizontal directional drilling [HDD]) also could present hazards to water quality, such as from frac-out[3] accidents during boring activities below or near streams. Additionally, construction of Program components may require dewatering of excavations, particularly for those components adjacent to the Tuolumne River. Discharge of this water back to the river or other areas could result in adverse water quality effects if adequate precautions are not taken.

As described in Chapter 11, *Hazards and Hazardous Materials,* many water quality impacts associated with Program construction activities would be minimized or avoided through compliance with the NPDES General Construction Permit. All components with a footprint greater than one acre of disturbance area would be subject to this permit, which requires preparation and implementation of a SWPPP. As described in Section 12.2, the SWPPP must, among other things, present a list of BMPs that would be implemented to prevent soil erosion and protect against discharge of sediment and other construction-related pollutants to surface waters. The SWPPP also would include spill prevention and response procedures for any hazardous materials used during construction. Compliance with this permit would minimize any impacts of Proposed Program construction activities on water quality, but construction water quality impacts of individual program components could nevertheless be significant.

For Program components whose construction would disturb less than one acre, the City of Modesto's Standard Specifications require that such smaller projects develop a Local SWPPP or Erosion Control Plan and implement stormwater BMPs during construction. The Local SWPPP must be submitted to the City of Modesto Land Development Engineering Division for review prior to obtaining a Grading or Encroachment Permit for the project. Erosion control BMPs are described in Chapter 15 of the Standard Specifications and would ensure that impacts on water quality related to erosion for Program components that disturb less than one acre would be less than significant.

[3] "Frac-out" is the inadvertent return and release to the environment of drilling lubricant during HDD. This is a potential concern when HDD is used under sensitive habitats, waterways, and areas of concern for cultural resources. The HDD procedure uses bentonite slurry, which is a fine clay material that is used as a drilling lubricant. Bentonite is non-toxic and is commonly used farming practices, but benthic invertebrates, aquatic plants, and fish and their eggs can be smothered by the fine particles if bentonite is discharged to waterways (Sacramento Municipal Utility District 2003).

As described in Chapter 11, *Hazards and Hazardous Materials,* the City would maintain compliance with all local, state, and federal regulations concerning hazardous materials, which would prevent substantial water quality impacts (e.g., due to accidental spills of hazardous materials) during construction activities and ensure water quality impacts would be less than significant.

Construction of the new Cannery Segmentation and primary effluent outfall pipeline crossings (Component No. OP-1.1) and new primary effluent outfall pipeline (Component No. OP-1.2) would involve trenchless pipeline construction methods at the Tuolumne River. In the event of a frac-out during construction, adverse water quality effects could occur resulting in a significant impact. To ensure that the Proposed Program would not adversely impact water quality from trenchless pipeline installation methods beneath waterways, the City would implement **Mitigation Measure HYD/WQ-1 (Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods)**. This measure would require the City's drilling contractor to prepare and implement a frac-out contingency plan for trenchless construction methods. The plan would be designed to minimize the potential for frac-out, provide for the timely detection of frac-outs, and ensure a timely and effective response in the event a frac-out occurs (California Public Utilities Commission [CPUC] 2003). Implementation of this mitigation measure would reduce adverse water quality impacts from frac-out associated with trenchless activities to a level that less than significant.

Additionally, compliance with the General Construction Permit or the Central Valley RWQCB's general permit for low threat discharges to surface water would prevent substantial adverse impacts from dewatering activities during construction of Program components. Overall, this impact would be **less than significant with mitigation**.

River Trunk Realignment Project

Impacts from construction of the River Trunk Realignment Project would be similar to those described above for all program components. The River Trunk Realignment Project would involve construction of a pump station located at B Street and Beard Street, a new pump station east of the Tuolumne River and west of Crow's Landing Road, and gravity and force main sewer lines within Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, and Neece Drive. None of these proposed facilities would be located in immediate proximity to the Tuolumne River or Dry Creek, and discharges of contaminants during construction activities would be avoided or minimized through compliance with the NPDES General Construction Permit.

The River Trunk Realignment Project also would include a new force main underneath Dry Creek, as shown on Figure 2-1, which would be installed using trenchless methods. Use of trenchless pipeline installation methods could result in a frac-out, which could significantly impact water quality and aquatic resources, but this impact would be minimized through implementation of Mitigation Measure HYD/WQ-1. As a result, this impact would be **less than significant with mitigation**.

Overall Conclusion

Construction of program-level components and the River Trunk Realignment Project could result in similar water quality impacts due to trenching, pipeline installation and other ground-disturbing activities. Both the River Trunk Realignment Project and outfall pipelines

(Component Nos. OP-1.1, OP-1.2, and OP-1.3) would involve trenchless construction methods beneath waterways and, in the event of a frac-out, adverse water quality impacts may occur. Compliance with NPDES permit requirements and the City's Standard Specifications, and implementation of Mitigation Measure HYD/WQ-1would minimize adverse effects on water quality. In conclusion, the Proposed Program's overall impact would be **less than significant with mitigation**.

Mitigation Measure HYD/WQ-1: Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods.

Applies to River Trunk Realignment Project, New Tuolumne River Crossings (OP-1.1), and New Primary Effluent Outfall (OP-1.2)

The City of Modesto's drilling contractor for trenchless pipeline installation activities (e.g., horizontal directional drilling, microtunneling, pipe bursting) shall prepare and implement a frac-out contingency plan prior to conducting Proposed Program construction activities involving these methods. At a minimum, the frac-out contingency plan shall include the following components/measures:

- Require a geotechnical engineer or qualified geologist to make recommendations regarding the suitability of the formations to be bored to minimize the potential for frac-out conditions.

- Require that a qualified archaeologist and biologist survey for and recommend protection measures for sensitive cultural and biological resources at the location of the entry and exit points and along the boring route.

- Include worker training measures to ensure that all field personnel understand their responsibility for timely reporting of frac-outs to their supervisors. Supervisors must then report frac-outs to CDFW as described in the last bullet below.

- Maintain necessary response equipment on-site or at a readily accessible location and in good working order.

- Include contingency measures to stop work, and effectively isolate and clean up released drilling fluid in the event of a frac-out. Contingency measures should be described for a potential frac-out in a terrestrial and aquatic environment. Example contingency measures include the following (CPUC 2003):

  For a terrestrial frac-out:

  - Isolate the area with hay bales, sand bags, or silt fencing to surround and contain the drilling mud.

  - Based on consultation with CDFW (see below), either:

    - Use a mobile vacuum truck to pump the drilling mud from the contained area and recycle it to the return pit; or

- Leave the drilling mud in place to avoid potential damage from vehicles entering the area.

  - Once excess drilling mud is removed, seed and/or replant the area using species similar to those in the adjacent area, or allow the area to re-grow from existing vegetation.

For an aquatic frac-out:

  - Monitor frac-out for 4 hours to determine if the drilling mud congeals (bentonite will usually harden, effectively sealing the frac-out location).

  - Based on consultation with CDFW (see below), either:

    - If the drilling mud congeals, take no other action that would potentially suspend sediments in the water column.

    - If drilling mud does not congeal, erect isolation/containment environment (underwater boom and curtain).

    - If the fracture becomes excessively large, call in a spill response team to contain and clean up excess drilling mud in the water. Keep phone numbers of spill response teams on-site.

  - If the spill affects an area that is vegetated, seed and/or replant the area using species similar to those in the adjacent area, or allow the area to re-grow from existing vegetation.

- Notify and consult with CDFW in the event of a frac-out. Restore vegetation damaged by drilling fluid to pre-construction conditions.

Impact HYD/WQ-2: Violate Any Water Quality Standards or Waste Discharge Requirements or Otherwise Degrade Water Quality during Operation (Less than Significant)

All Program-level Components

Operation of the Proposed Program would be similar to operation of the existing wastewater system, and would not adversely impact water quality. As described in Chapter 2, *Program Description,* the Proposed Program would increase the capacity of various sewer lines and facilities, and over time would increase the volume of wastewater treated at the Sutter and Jennings Plants. Although the volume of wastewater handled by the facilities would increase under the Proposed Program, discharges to the San Joaquin River would decrease (and cease entirely) during the period of Program implementation as a result of implementation of the NVRRWP.

The NVRRWP is a collaborative partnership between the Cities of Modesto, Turlock, and Ceres, the Del Puerto Water District (DPWD), and Stanislaus County, which would allow for tertiary effluent from the Jennings Plant to be conveyed via pipeline to the DMC, where it

would be used directly by DPWD. The first phase of construction of the NVRRWP, which involves a new pump station, pipeline and outfall structure at the DMC, is complete. The City began delivering tertiary treated wastewater in May 2018.

As of May 1, 2018, in accordance with its NPDES permit, the City is no longer allowed to discharge secondary treated wastewater to the River, and all discharges need to be treated to tertiary levels. The City projected that in 2018, exports of tertiary treated wastewater to the DMC as part of the NVRRWP would equal 16,500 acre-feet per year (Carollo Engineers 2016). Such exports would increase to roughly 20,100 acre-feet per year by 2035. Export of tertiary treated water to DPWD would reduce the amount of water available for irrigation of the Modesto Ranch lands, such that only 3 feet per year of water (7,380 acre-feet per year) (down from 5.5 feet per year under existing conditions) were estimated to be applied in 2018, increasing to 3.6 feet per year (8,935 acre-feet per year) by 2035 (Carollo Engineers 2016). As noted in Chapter 2, *Program Description,* in the near future, the Central Valley RWQCB is expected to issue a new WDR that decreases the secondary effluent BOD limit for land application (i.e., irrigation) from 300 to 40 milligrams per liter. During the Program implementation period, the City would not discharge secondary or tertiary treated wastewater to the San Joaquin River. In the sense that wastewater effluent is generally of poorer quality than natural streamflow (although NPDES requirements are protective of receiving water quality), this reduction in discharges could benefit water quality in the San Joaquin River to some degree.

Overall, the Proposed Program components would reduce the potential for violation of water quality standards or waste discharge requirements. Many of the Proposed Program components would increase wastewater collection and treatment efficiency and reliability by providing upgraded technologies and facilities. Additionally, decommissioning facilities at the Sutter Plant that are within the 100-year flood plain would decrease the chance of discharge of raw sewage or other hazardous substances during a flood event. Additionally, increasing capacity of several trunk sewer lines and disconnection of the stormwater and sewer systems will decrease potential for SSOs to occur, which would be a benefit to water quality in nearby waters. Therefore, this impact would be **less than significant.**

River Trunk Realignment Project

As described in Chapter 2, *Program Description,* part of the need for the River Trunk Realignment Project is that the existing River Trunk is subject to heavy corrosion and isolated sections of the pipeline have recently failed or are close to failure. As the River Trunk conveys nearly 50 percent of the City's domestic wastewater, and is currently aligned directly adjacent to the Tuolumne River, such failures can have significant adverse effects on water quality. In this respect, the River Trunk Realignment Project would have a beneficial impact on water quality relative to existing conditions (i.e., the new River Trunk would be less likely to fail and would be located at a safe distance from the Tuolumne River in the event that it were to fail at some point over its operation life). Therefore, this impact would be **less than significant**.

Overall Conclusion

Collectively, proposed WWMP components would reduce the potential for violation of water quality standards or waste discharge requirements. Several components would increase the reliability of the City's existing collection system and wastewater treatment system and reduce the potential for discharging raw sewage or other hazardous substances to the Tuolumne and San Joaquin Rivers during overflow events. Additionally, given that the

existing River Trunk is subject to heavy corrosion and some sections are close to failure, realigning this critical trunk line would have a beneficial impact on water quality. Therefore, the Proposed Program's overall impact regarding violations of water quality standards would be **less than significant**.

Impact HYD/WQ-3: Substantially Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge Such That There Would be a Net Deficit in Aquifer Volume or a Lowering of the Local Groundwater Table Level (Less than Significant)

All Program-level Components

The Proposed Program would not directly use groundwater. Program components would be limited to rehabilitation of existing sewer lines or construction of new sewer lines, new pump stations and new or upgraded lift stations, treatment plant components, and related facilities. Several of these facilities (e.g., new lift and pump stations) would include new impervious surfaces such as concrete pads, which could affect existing groundwater recharge rates to some degree. New impervious surface associated with a pump or lift station is typically 5,000 square feet and no greater than 1 acre. Development of the new primary treatment and solids handling facilities at the Jennings Plant would increase impermeable surface areas by approximately 27 acres, most of which would occur due to construction of the new sludge drying beds. Because the majority of recharge in the Modesto and Turlock Subbasins occurs via percolation of applied irrigation water (and much less so via percolation of rainwater), this new impervious surface within the City boundaries and at the existing Jennings Plant would not substantially affect groundwater recharge such as to lower the local groundwater table level or result in a net deficit in aquifer volume. Additionally, because existing groundwater levels are relatively high at the Jennings Plant and the City continuously applies cannery effluent to the Modesto Ranch lands, the potential for impacts on groundwater levels in this area are limited. Therefore, this impact would be **less than significant.**

River Trunk Realignment Project

The River Trunk Realignment Project would include construction of two new pump stations: the River Trunk Pump Station and the Shackelford Pump Station. As described in Chapter 2, *Program Description,* the River Trunk Pump Station would include a circular driveway around the pump station and a paved access road leading to the pump station. Overall, the area of new impervious surface area would be approximately 2 acres. Stormwater generated on pump station sites may be handled on-site via stormwater management features, or may be conveyed to the City's stormwater or sewer systems. If it is handled on-site, it would not substantially affect groundwater recharge rates, as the water would be allowed to infiltrate into the soil and to groundwater below. If it is conveyed to the stormwater or sewer system, it could marginally decrease groundwater recharge rates at the site, as water falling on the site as precipitation would no longer be able to infiltrate into the ground. Regardless, given the small area of new impervious surfaces established as a result of the River Trunk Pump Station and Shackelford Pump Station, any decrease in groundwater recharge would not be substantial and would not result in a net deficit in aquifer volume or a lowering of the local groundwater table level. Therefore, this impact would be **less than significant**.

Overall Conclusion

WWMP components would not involve use of groundwater. While some facilities including new or upgraded lift stations and pump stations would increase impervious surface areas, such areas would be approximately 1 to 2 acres at each facility and would not substantially affect existing groundwater recharge rates. At the Jennings Plant, development of new wastewater treatment facilities would increase impermeable surface areas by approximately 27 acres; however, since the majority of recharge in the Modesto and Turlock Subbasins occurs via percolation of applied irrigation water, new impervious surfaces at the Jennings Plant would not substantially affect groundwater table levels. Additionally, existing groundwater levels at the Jennings Plant are relatively high and cannery effluent is consistently applied to Modesto Ranch lands, thereby reducing the likelihood for impacts to groundwater levels at this location. In conclusion, the Proposed Program's overall effect on groundwater supplies would be **less than significant**.

Impact HYD/WQ-4: Substantially Alter the Existing Drainage Pattern of the Site or Area Such as to Result in Substantial Erosion, Siltation, or Flooding On- or Off-Site (Less than Significant)

All Program-level Components

The Proposed Program would not alter the course of any stream or river and would not substantially affect the drainage patterns at individual project sites over the long term. Many of the proposed components would be buried underground within existing streets (e.g., new and rehabilitated sewer lines) and would have no potential to alter drainage patterns. The Proposed Program would include construction of new pipeline crossings and a new third outfall pipeline across the Tuolumne River; these would be installed using trenchless methods beneath the water bodies, and would not affect the existing drainage patterns.

As described in Impact HYD/WQ-3, new and/or upgraded lift stations and pump stations would include new impervious surface areas, which would alter existing drainage patterns on-site to some degree (impervious surfaces generally increase volume and velocity of surface runoff); however, these changes would not be substantial and would not result in substantial siltation, erosion, or flooding on- or off-site. Additionally, development of new primary treatment and solids handling facilities would increase impermeable surface by approximately 27 acres. Runoff from these surfaces would discharge to surrounding undeveloped land around the Jennings Plant where it may either percolate into the soil or sheet-flow to adjacent areas or the San Joaquin River. Given the Jennings Plant's location in an agricultural/undeveloped area along the San Joaquin River, runoff generated by the new impervious surface at the Jennings Plant would be unlikely to cause substantial erosion, siltation, or flooding on- or off-site.

As described in Impact HYD/WQ-2, discharges of wastewater effluent to the San Joaquin River would cease under the Proposed Program. In accordance with the NVRRWP, tertiary treated wastewater from the Jennings Plant would be transported via pipeline to the DMC for use by DPWD. As existing discharges to the San Joaquin River are minimal and sufficient capacity is available at the plant's storage basins, this elimination of contributing flows would marginally affect (i.e., decrease) flows in the San Joaquin River. However, this change would be caused primarily by implementation of the NVRRWP and not the Proposed Program.

During construction of individual Program components, the Proposed Program could temporarily alter the drainage patterns of individual project sites. Trenching for installation of sewer lines, excavation for installation of pump and lift station structures, and related activities could temporarily change the ground surface and potentially expose loose soils to erosive forces (e.g., water, wind). These changes could result in substantial erosion on-site if adequate measures are not implemented.

For CIP projects that exceed one acre in disturbance area, compliance with the NPDES General Construction Permit would minimize erosion during construction activities. In general, the change in runoff patterns that could occur during construction would not be sufficient to result in substantial flooding on- or off-site. In addition, for Program components in close proximity to Designated Floodways or levees along the Tuolumne River, Dry Creek, or the San Joaquin River, the City would apply for appropriate encroachment permits from CVFPB prior to construction. For Program components with less than one acre of disturbance area that may not be subject to the NPDES General Construction Permit, the City's Standard Specifications would require preparation and implementation of a Local SWPPP, which would include erosion control BMPs. With adherence to these requirements, this impact would be **less than significant.**

River Trunk Realignment Project

The River Trunk Realignment Project would include construction of two new pump stations, new sewer lines underneath various streets in central Modesto, and related facilities. As described above, trenching and excavation activities during construction of this project could temporarily alter drainage patterns on-site, but these changes would not result in substantial flooding on- or off-site. Compliance with the NPDES General Construction Permit and the City's Standard Specifications would minimize erosion of exposed soils during ground-disturbing activities. The City would also be required to apply for an encroachment permit from CVFPB because the River Trunk Realignment Project would include new pipelines crossing the Tuolumne River and Dry Creek. As a result, this impact would be **less than significant.**

Overall Conclusion

Development of proposed WWMP components would not substantially alter drainage patterns such that erosion, siltation or flooding would occur on-site. Although discharges of wastewater effluent to the San Joaquin River would cease due to the NVRRWP, this change would not substantially affect San Joaquin River flows such as to result in erosion, siltation, or flooding. During construction of WWMP components, temporary ground-disturbing activities could alter drainage patterns. For components greater than one acre in disturbance area, compliance with the NPDES General Construction Permit would prevent substantial impacts from erosion by requiring implementation of erosion control BMPs. For CIP projects less than one acre in disturbance area, the City's Standard Specifications require preparation and implementation of a Local SWPPP including erosion control BMPs. These requirements would minimize the erosion effects of exposed soils. As a result, the Proposed Program's overall impact would be **less than significant**.

Impact HYD/WQ-5: 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 (Less than Significant)

As described in Impact HYD/WQ-3, the Proposed Program would include limited areas of new impervious surface area, which could marginally increase the volume and velocity of surface water runoff at the location of certain Program components. Most components would route any stormwater generated on-site to the City's system of rockwells and positive stormwater collection features. The City would comply with its Phase I municipal stormwater permit (Order R5-2015-0025), which requires industrial/ commercial development projects greater than 1 acre to incorporate storm water measures into the design plan. Given the small amount of additional stormwater runoff that may be generated by the Proposed Program components (many of the components would be buried underground and would have no potential to generate stormwater), the Proposed Program would not exceed the capacity of existing or planned stormwater drainage systems.

These facilities also would not provide substantial additional sources of polluted runoff. It is possible that small amounts of fuel or solvents used in pump station generators or facility maintenance could be spilled and washed into the storm drain system, but this occurrence would be unlikely and any amount of polluted runoff generated by the Proposed Program would be small. The SWPPP or Local SWPPP would prevent polluted runoff from possibly being discharged to the storm drain system during construction.

The Proposed Program also would include upgrades to the City's stormwater system. The Proposed Program would disconnect the City's stormwater and sanitary systems in various locations, as well as provide other components, to provide additional capacity for the stormwater system and reduce the potential for SSOs. These components would reduce the potential for other aspects of the Proposed Program to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems. Overall, this impact would be **less than significant.**

Impact HYD/WQ-6: Place Within a 100-year Flood Hazard Area Structures Which Would Impede or Redirect Flood Flows (Less than Significant with Mitigation)

New and Upgraded Sewer Lines, Sewer Rehabilitation Components, Stormwater/ Sanitary Sewer Disconnections, R&R Projects, and Outfall Pipelines

Once constructed, all pipelines including new and upgraded sewer lines, sewer rehabilitation components, stormwater/sanitary sewer disconnections, and other pipeline projects would be belowground and therefore would not impede or redirect flood flows. These proposed CIPs would have **no impact**.

Lift Station Components

The Benson lift station (Component No. LS #3 – Benson) would be within the mapped 100-year FEMA flood hazard area (i.e., 1-percent annual chance flood zone). While improvements to the Benson lift station are anticipated to occur within the facility's existing footprint (paved), it is possible that the facility may need to be relocated to a nearby parcel. All other planned lift station component sites would be outside the 100-year flood hazard area. As

such, proposed above-ground structures at the Benson lift station could impede or redirect flood flows in the event of a 100-year flood event, a significant impact. Depending on the degree of impedance, this could result in adverse effects on nearby properties by changing the inundation area or water flow rate during a flood event. **Mitigation Measure HYD/WQ-2 (Conduct Flood Flow Study for New Structures within the 100-year Flood Hazard Area Mapped by FEMA)**, described below, would require the City to conduct a flood flow study to determine the degree to which the lift station could impede or redirect flood flows, or affect nearby properties, and develop mitigation measures to reduce impacts, if needed. This mitigation measure would ensure that impacts on flood flows from the proposed Benson lift station components would be **less than significant with mitigation.**

Sutter Plant Components

As described in Chapter 2, *Program Description,* a number of structures and facilities at the Sutter Plant are currently located within the flood hazard area. Under the Proposed Program, these facilities would be decommissioned and moved to the Jennings Plant or flood-proofed to reduce impacts to these facilities in a flood event. This would reduce potential for these existing structures to impede or redirect flood flows. In addition, several facilities that would remain at the Sutter Plant (including the administration and laboratory building, substations, portions of the headworks facility, and pumping plant) would be floodproofed and raised to meet FEMA's 100-year flood protection standards. As such, this impact would be **less than significant.**

Jennings Plant Components

The new, above-ground Program components at the Jennings Plant (e.g., primary treatment and solids handling facilities relocated from the Sutter Plant) all would be outside of the 100-year FEMA flood hazard area and therefore would not impede or redirect flood flows. The fixed film reactors are partially within the flood hazard area, but these structures are existing and would only be modified/rehabilitated as part of the Proposed Program. The treatment and storage ponds and recirculation channel at the Jennings Plant are all within the flood hazard zone. The Cannery Segregation treatment facilities components would include activities within the 100-year flood hazard zone including installation of aerators within the recirculation channel, pond aerators, a new effluent channel berm and FFR effluent pipeline. However, these components are modifications to existing Plant facilities and would not add any substantial structures that could impede or redirect flood flows. As a result, this impact would be **less than significant.**

River Trunk Realignment Project

The River Trunk Pump Station and Shackelford Pump Station would be just outside of the FEMA 100-year flood hazard area. Therefore, these features would not substantially affect flood flow passage during a 100-year event. The remaining facilities included as part of the River Trunk Realignment Project would be buried underground (e.g., new sewer lines within existing streets) and therefore would have no potential to impede or redirect flood flows. As a result, this impact would be **less than significant.**

Overall Conclusion

Many WWMP components would be either belowground or outside of the 100-year FEMA flood hazard area. At the Sutter Plant, primary treatment facilities would be demolished after the new primary treatment facilities are constructed and operating at the Jennings Plant and

several facilities to remain at the Sutter Plant would be floodproofed to meet FEMA's 100-year flood protection standards. New facilities at the Jennings Plant that would be within the 100-year flood hazard zone involve modifications to existing facilities and would not be substantial enough to impede or redirect flood flows. In conclusion, with implementation of Mitigation Measure HYD/WQ-2, the Proposed Program's overall impact would be **less than significant with mitigation.**

Mitigation Measure HYD/WQ-2: Conduct Flood Flow Study for Benson Lift Station.

Applies to lift station component LS #3 – Benson Lift Station components

Prior to final project design, the City of Modesto and/or its contractor(s) shall conduct a study to ascertain the changes in flows that may be caused by the proposed Benson Lift Station structure in the event of a 100-year flood. The study shall model the change, if any, in inundation area that may be caused by restriction in flood flow passage caused by the structure. If the study determines that the proposed lift station may cause inundation of adjacent or upstream/downstream properties or structures during a 100-year flood event, the City shall develop mitigation measures to address this impact. Feasible mitigation measures may include construction of flood protection structures for potentially affected properties or reconfiguration of the proposed project facilities to reduce impedance or redirection of flows (e.g., elevating critical facilities such as electrical panels and underground pump vault doors to levels above flood stage). Alternatively, the City may identify an alternative site for the proposed lift station that would avoid impacts on flood flows.

Impact HYD/WQ-7: Expose People or Structures to a Significant Risk of Loss, Injury, or Death Involving Flooding, Including Flooding as a Result of the Failure of a Levee or Dam (Less than Significant)

As discussed in Section 12.3, virtually the entire City of Modesto, including most if not all of the proposed components, are located within the zone of potential inundation in the event of dam failure of several reservoirs (e.g., New Melones, Don Pedro, Exchequer, San Luis, or Pine Flat Dams). The Sutter and Jennings Plants also are within dam inundation areas. These dams are routinely evaluated for seismic stability by the California Division of Safety of Dams to ensure the integrity of the structures (DWR 2017b). Because the probability of dam failure is extremely low, impacts related to flooding due to failure of a dam would be **less than significant**.

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Chapter 13
LAND USE AND PLANNING

13.1 OVERVIEW

This chapter describes the setting and impacts of the Proposed Program related to land use and planning. Existing land uses in the study area and applicable land use polices and regulations for the City of Modesto and Stanislaus County are presented. This chapter also evaluates land use compatibility impacts that would result from the implementation of the Proposed Program and considers mitigation measures to reduce Program-related impacts.

The regulatory and environmental settings and impact analysis for land use and planning were developed through a review of:

- the *Stanislaus County General Plan* (2016),
- the *City of Modesto Urban Area General Plan* (2019), and
- the *Tuolumne River Regional Park Master Plan* (EDAW 2001).

13.2 REGULATORY SETTING

No federal or state laws, regulations, or policies pertaining to land use and planning are applicable to the Proposed Program.

13.2.1 LOCAL LAWS, REGULATIONS, AND POLICIES

Stanislaus County General Plan

The *Stanislaus County General Plan* (2016) applies to unincorporated lands surrounding the City of Modesto, including unincorporated lands within the City's SOI (e.g., Bret Harte and Empire). Lift Stations #3, #29, #30, #61, the River Trunk Pump Station and the Shackelford Pump Station would all be constructed on land that is designated City lands. Lift Station #59 would be built on land with the following designations: Planned Industrial designation, which allows for light industrial development, predominantly in locations lacking public sewer and/or water service; Urban Transition, which is designated to ensure that land remains in agricultural usage until urban development consistent with a city's (or unincorporated community's) general plan designation is approved; and Planned Development, which is intended for land suitable for a variety of uses. Lift Station #60 would be built on land designated as Salida Community Plan Planned Industrial and Industrial Business Park. Lift Station #39 would be built on land designated as City land, while the adjacent Lift Station #63 would be built on land with an Urban Transition/City designation. Lift Station #62 would be built on land designated as a combination of Low-Density Residential land, which is intended to provide locations for single-family detached, semi-detached, and manufactured housing dwellings; as well as City and Agricultural designations. Lift Stations #65 and #67 would be

built on land designated as Urban Transition. Sutter Plant improvements would take place on land that is designated as Open Space (Stanislaus County 2016).

The Land Use Element contains the following policies:

Policy 1. Land will be designated and zoned for agricultural, residential, commercial, industrial, or historical uses when such designations are consistent with other adopted goals and policies of the general plan.

Policy 2. Land designated Agriculture shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation and enjoyment of scenic beauty.

Policy 4. Urban development shall be discouraged in areas with growth-limiting factors such as high water table or poor soil percolation, and prohibited in geological fault and hazard areas, flood plains, riparian areas, and airport hazard areas unless measures to mitigate the problems are included as part of the application.

Policy 5. Residential densities as defined in the General Plan shall be the maximum based upon environmental constraints, the availability of public services, and acceptable service levels. The densities reflected may not always be achievable and shall not be approved unless there is proper site planning and provision of suitable open space and recreational areas consistent with the supportive goals and policies of the General Plan.

Policy 6. Preserve and encourage upgrading of existing unincorporated urban communities.

Policy 7. Riparian habitat along the rivers and natural waterways of Stanislaus County shall to the extent possible be protected.

Policy 10. New areas for urban development (as opposed to expansion of existing areas) shall be limited to less productive agricultural areas.

Policy 11. Development of residential areas shall be adjacent to existing compatible unincorporated urban development or, in the case of remote development, included as part of a specific plan.

Policy 12. The expansion of urban boundaries of unincorporated communities shall attempt to minimize conflict between various land uses.

Policy 13. Expansion of urban boundaries of unincorporated communities should be based on infilling and elimination of existing "islands" and should not permit leapfrog development or create new "islands."

Policy 14. Uses shall not be permitted to intrude into or be located adjacent to an agricultural area if they are detrimental to continued agricultural usage of the surrounding area.

Policy 16. Outdoor lighting shall be designed to be compatible with other uses.

Policy 17. Agriculture, as the primary industry of the County, shall be promoted and protected.

Policy 18. Promote diversification and growth of the local economy.

Policy 19. Accommodate the siting of industries with unique requirements.

Policy 20. Nonconforming uses are an integral part of the County's economy and, as such, should be allowed to continue.

Policy 21. Facilitate retention and expansion of existing businesses.

Policy 22. Support and facilitate efforts to develop and promote economic development and job creation centers throughout the County.

Policy 24. Future growth shall not exceed the capabilities/capacity of the provider of services such as sewer, water, public safety, solid waste management, road systems, schools, health care facilities, etc.

Policy 26. Development, other than agricultural uses and churches, which requires discretionary approval and is within the sphere of influence of cities or in areas of specific designation created by agreement (e.g., Sperry Avenue and East Las Palmas Corridors), shall not be approved unless first approved by the city within whose sphere of influence it lies or by the city for which areas of specific designation were agreed. Development requests within the spheres of influence or areas of specific designation of any incorporated city shall not be approved unless the development is consistent with agreements with the cities which are in effect at the time of project consideration. Such development must meet the applicable development standards of the affected city as well as any public facilities fee collection agreement in effect at the time of project consideration.

Stanislaus County Zoning Ordinance

According to the Stanislaus County Zoning Ordinance, public utilities, including underground pipelines, are permitted in all zoning districts.

The County land where the third outfall pipeline would be built are classified in the General Agriculture zoning district. **Figure 13-1** shows the locations of this and other WWMP components relative to the County's and the City of Modesto's zoning districts throughout the study area. Permitted uses for General Agriculture (A-2) districts include agricultural uses; single-family dwelling; mobile homes; buildings, appurtenances, and uses such as custom contract harvesting or land preparation; home occupations; garage sales; and other uses related to agriculture. According to Section 21.20.030 of the Stanislaus County Code, this General Agriculture district allows development of certain uses that are not directly related to agriculture but may be necessary to serve other uses in the district. For example, development of facilities for public utilities qualifies as a "Tier Three" use that may be allowed if the Stanislaus County Planning Commission concludes that the use would not be substantially detrimental to or conflict with agricultural use of other property in the vicinity, and the parcel on which such use is requested is not located in one of the county's "most productive agricultural areas," as this term is used in the general plan; or if the character of

the use that is requested is such that the land may reasonably be returned to agricultural use in the future.

The Jennings Plant would be constructed on land that is zoned as Planned Development District (P-D), which, according to the Stanislaus County Zoning Ordinance, is intended to allow modification of requirements allowed by other districts and diversification in the relationship to different uses, buildings, structures, lot sizes, and open spaces. Based on these allowances, CIPs involved with the Jennings Plant would comply with the County's zoning ordinance.

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (2019) serves as the City's "blueprint for future growth" and is intended to guide the physical development of the overall Modesto community. The General Plan identifies three distinct planning areas: the Downtown Area, which generally includes the City's historic downtown; the Baseline Developed area, which generally includes areas that are already developed with urban uses; and the Planned Urbanizing Area, which forms the perimeter of Modesto's General Plan Urban Area. Land use designations for Modesto lands are shown in Figure III-1, Adopted Land Use Diagram, of the *City of Modesto Urban Area General Plan* and include the following land use designations: Residential (R), Mixed Use (MU), Commercial (C), Industrial (I), Redevelopment Planning District (RPD), Village Residential (VR), Regional Commercial (RC), Business Park (BP), Open Space (OS), and land use designations of the *Salida Community Plan* (SCP). **Table 13-1** summarizes the land use designations and zoning districts of the Program-level WWMP components. The following land uses are permitted for each of these designations:

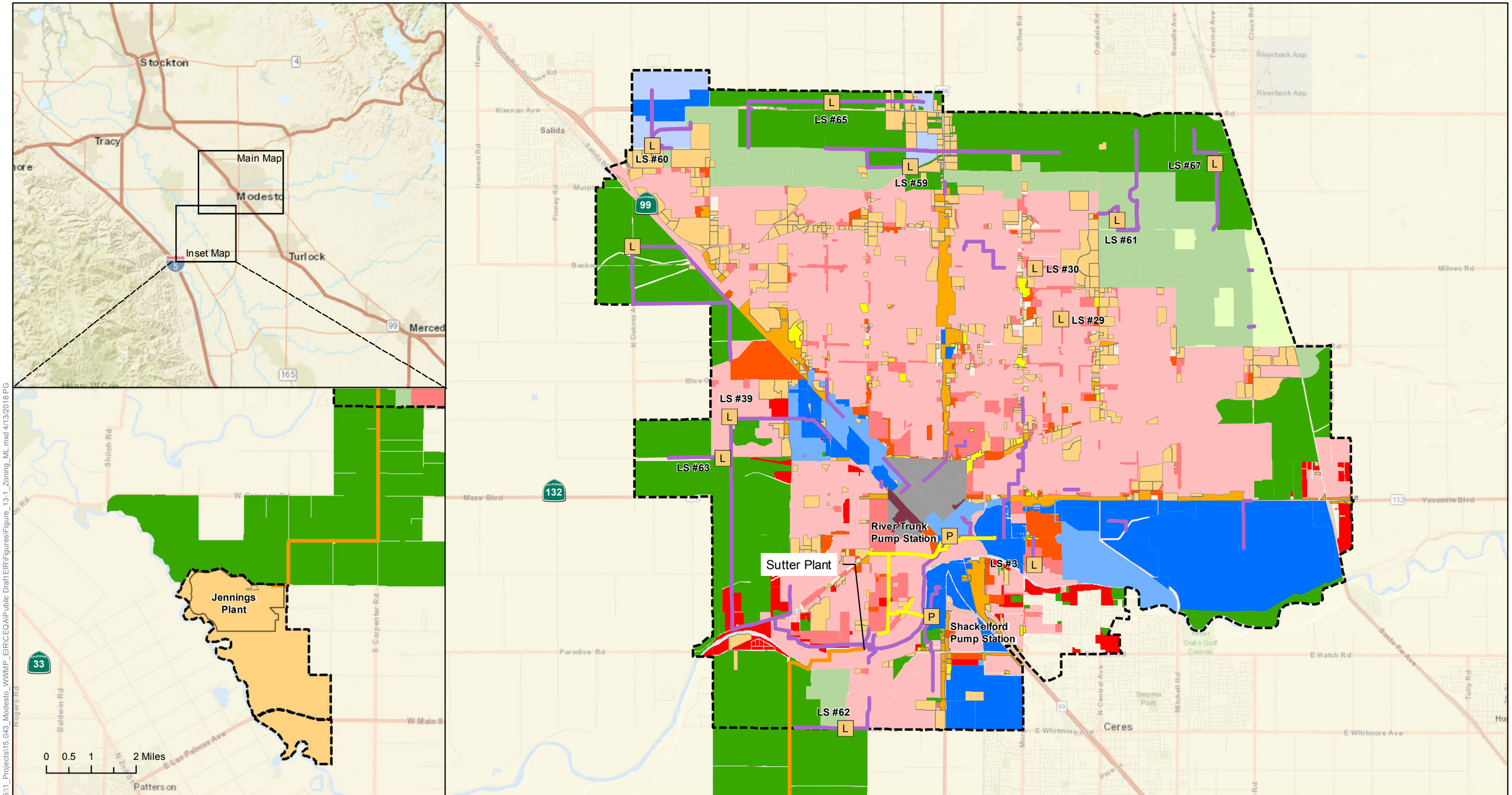
- Open Space – Planned land uses shall include low-impact recreational facilities, public ownership, low density residential, and agriculture.

- Residential – Land uses include single-family detached housing, single-family attached housing, multi-family housing, and mobile homes. Compatible uses may include schools, parks, and religious or community facilities.

- Mixed Use – Single-family residential, multi-family residential, commercial, office, and institutional uses are allowed in close proximity to each other. The guiding land use intensity is 0.35 square feet of building area per square foot of gross acreage of the site.

- Business Park – Business parks consist of light industrial and employment intensive uses. In general, these areas will have a campus-like setting, with a guiding intensity of 0.40 square feet of building area per square foot of gross area of the site.

- Regional Commercial – Land uses include but are not limited to business, medical, and professional offices other than large office campuses, neighborhood retail centers, convenience retail, highway-oriented commerce, Regional Commercial uses, and the downtown commercial districts.



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Figure 13-1
General Zoning Districts in the WWMP Study Area

City of Modesto
Wastewater Master Plan EIR

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- Village Residential – Villages are mixed-use, compact, pedestrian- and transit-oriented development that are intended to accommodate a variety of residential product types such as detached houses on small lots and multi-family and senior housing, in addition to village-serving (i.e., non-residential) units. The residential density within a Comprehensive Planning District is typically 6.6 to 7.5 dwelling units per gross acre. Approximately 4 percent of land designated as VR shall be devoted to commercial uses with a guiding intensity of 0.35 square feet of building per square foot of gross area of the site.

- Redevelopment Planning District – The Modesto RPD area is intended to consist of development that "will be the focal point of community life and the social, cultural, business, governmental and entertainment center of the northern San Joaquin Valley." Acceptable development will consist of housing, modern transportation systems, and vertical mixed-use development.

- Industrial – This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling. The guiding land use intensity for this designation is 0.50 square feet per square foot of gross area on an area-wide basis.

Table 13-1. City of Modesto General Plan Land Use Designations and Zoning Districts of Program-Level WWMP Components

Program-Level WWMP Component	General Plan Land Use Designation	Zoning District
Lift Station #3	Open Space	Single Family/Low Density Residential & Medium Density Residential
Lift Station #29	Residential/Mixed Use	Single Family/Low Density Residential & Medium Density Residential
Lift Station #30	Residential	Single Family/Low Density Residential & Medium Density Residential
Lift Station #39	Residential	Single Family/Low Density Residential
Lift Station #59	Business Park	Planned Industrial, Planned Development & General Agriculture
Lift Station #60	Regional Commercial	Planned Industrial & Planned Development
Lift Station #61	Village Residential	Specific Plan
Lift Station #62	Residential/Village Residential	Specific Plan, Single Family/Low Density Residential & General Agriculture

Program-Level WWMP Component	General Plan Land Use Designation	Zoning District
Lift Station #63	Residential/Business Park	Single Family/Low Density Residential & General Agriculture
Lift Station #64	Business Park	General Agriculture
Lift Station #65	Village Residential	General Agriculture
Lift Station #67	Business Park	General Agriculture
River Trunk Pump Station	Redevelopment Planning District	Limited Light Industrial & Single Family/Low Density Residential
Shackelford Pump Station	Industrial	Limited Light Industrial & Single Family/Low Density Residential

Sources: Stanislaus County Zoning Ordinance; Adopted Land Use Program as cited in City of Modesto 2019

The *City of Modesto Urban Area General Plan* (2019) provides the following policies related to land use and planning.

Chapter II – Community Growth Strategy

Policy II.B.1. Priority Development Areas. Support new development with infrastructure developed in accordance with the established Capital Improvement Program priority areas of Downtown, Kiernan Business Park, the Tivoli Specific Plan area and the South Modesto Industrial Park (north of Whitmore Ave. between Crows Landing Rd. and Morgan Rd.).

Policy II.B.3. Funding Capital Improvements. Increase and improve capital projects over time through maintaining or enhancing existing funding sources, maximizing joint-use efficiencies, and strategically prioritizing capital investments.

Chapter III – Community Development Policies

Goal III.A. Zoning Consistency. Maintain and enhance consistency between General Plan (land use designations and policies) and zoning.

Policy III.A.1. Parcel-Specific Zoning. Zoning within the incorporated City limits should be, and generally is, consistent with the General Plan Land Use Designations as presented on the Land Use Diagram. However, because these designations are broad in nature, there may be minor instances in which the existing zoning for a particular property is not consistent with the Land Use Designation for the property. These situations are still considered to be consistent with the overall goals and policies of the General Plan, and development of these properties may occur consistent with zoning. Chapter VII – Environmental Resources, Open Space and Conservation.

Policy VIII-B. Local Open Space Plan. Open space needs are broadly identified by the state legislature. It is within this scope that local jurisdictions must identify specific areas and targets of preservation, development, and/or production. Government

Code Section 65560 lists six broad categories to be designated on a local open space plan: Open space for 1) the preservation of natural resources, 2) public health and safety, 3) managed production of resources, 4) outdoor recreation, 5) buffer zones to military activities, and 6) protection of places, features, and objects. These categories will be discussed in detail as they relate to the Modesto Urban Area.

Open Space Policies – River Greenway Program

Policy VII-B.7[a]. Visual corridors of the river will be protected and enhanced.

Policy VII-B.7[b]. Visual corridors and access points on the riverfront will be recreated through redevelopment.

Policy VII-B.7[c]. Identifiable park entrances will be created. A comprehensive program of park signage and graphics will be developed.

Policy VII-B.7[d]. Adequate circulation throughout the park will be provided in order to accommodate pedestrians, bicyclists, and vehicles, as well as equestrians and boaters, if appropriate. Opportunities for park access via public transportation will be provided.

Policy VII-B.7[e]. Active and passive recreational areas with universal access will be created.

Modesto Code of Ordinances

Title 10 of the Modesto Code of Ordinances establishes zoning regulations for land within the City of Modesto's jurisdictional boundary.

For specific zoning district designations for each Program-level WWMP component, see Table 13-1. Land uses for all residential zoning districts associated with the City are meant to ensure that development will result in stable, desirable neighborhoods that are well-integrated into the City. Allowable area and density requirements are explained in-depth in Chapter 4, Article 1 – Residential Zones (R-1, R-2, R-3) of the City of Modesto Code of Ordinances. The following land uses are permitted for each of these zoning designations:

- Industrial – Land uses associated with Industrial zoning districts, including Limited Light Industrial and Planned Industrial, ensure that opportunities exist for development of industry, job creation and economic growth. Allowable area and density requirements are explained in-depth in Chapter 4, Article 3 – Industrial Zones (C-M, M-1, M-2) of the City of Modesto Code of Ordinances.

- Planned Development – Zones designated for Planned Development allow for the construction of residential condominiums, community apartment projects and stock cooperatives, mobile home parks, and cemeteries. Similar uses that are less intense than the uses specified above may be allowed pending approval. Chapter 7, Article 1 – Planned Development Zone (P-D) of the City of Modesto Code of Ordinances provides more details regarding this zoning district.

- Specific Plan – Land zoned as Specific Plan are intended to permit various land uses including residential, industrial, and commercial development through Specific Plans

that are pursuant to Government Code Section 65450, et seq. Chapter 7, Article 3 – Specific Plan (SP) Zone of the City of Modesto Code of Ordinances provides more details regarding this particular zoning district.

According to the City of Modesto Code of Ordinances Title 10, Chapter 3 – Land Use Regulations, land uses for all storm drainage facilities and minor public facilities (e.g., pumps) are permitted in all zoning districts. Public buildings and grounds are permitted in Commercial-Industrial and Industrial districts and conditionally permitted in Residential, Professional Office, and Commercial districts.

Tuolumne River Regional Park Master Plan

The TRRP Master Plan is a long-range plan for a riverfront park in southern Modesto (EDAW 2001). The plan encompasses over 500 acres including lands along a 7-mile stretch of the Tuolumne River, generally bounded by Mitchell Road to the east and Carpenter Road to the west. The TRRP Master Plan provides a long-range vision for establishing recreational facilities such as the Riverwalk, boat and fishing piers, vista points, a sports complex near the Sutter Plant, an interpretive center, trails, roadways and parking areas, all of which are intended to enhance the natural environment and create both recreational educational opportunities along the river. The TRRP Master Plan also has a riparian restoration component that calls for creating improved riparian habitat along the Tuolumne River and Dry Creek.

13.3 ENVIRONMENTAL SETTING

Proposed components would occur within Modesto and unincorporated areas of Stanislaus County. The following sections describe land uses that would be affected by proposed components.

13.3.1 MODESTO

The City of Modesto is located in central Stanislaus County, in the northern section of California's San Joaquin Valley. The Tuolumne River runs along the southern edge of the city. State Route (SR) 99 intersects the city along the north–south axis, and SR 132 intersects the city along the east–west axis. Nearby cities include Riverbank, Ripon, and Manteca to the north and Ceres, Turlock, and Merced to the south.

Before 1960, most of Stanislaus County's population lived in unincorporated areas. Today, the population of the nine incorporated cities substantially exceeds that of the unincorporated area. While the county's economic base remains predominantly agricultural, the regional economy is diversifying. Housing development has significantly increased the urbanized land area within Modesto. Because many of these new residents continue to work in the Bay Area, traffic along SR 99, SR 132, and Interstate 5 has increased noticeably.

The vast majority of land in Modesto is considered urban/built-up land. Land along the portion of the Tuolumne River that is adjacent to Modesto City-County Airport and along portions of Dry Creek that are adjacent to Central Valley Specialty Hospital and Creekside Golf Course, respectively, are classified as nonagricultural and natural vegetation lands (CDOC 2017). Throughout the City, the majority of the land is designated for a combination of residential, mixed use, and commercial (City of Modesto 2017a).

Sutter Plant

The Sutter Plant is located just north of the Tuolumne River in an undeveloped portion of the Tuolumne River Regional Park. According to the City's Adopted Land Use Diagram, the Sutter Plant is entirely within the Tuolumne River Comprehensive Planning District (City of Modesto 2019). The Dryden Park Golf Course is located immediately east of the Sutter Plant. This 18-hole golf course is comprised of approximately 142 acres of land. Directly north of the Sutter Plant is Bellenita Park, which features a baseball/softball field, picnic areas, and bathrooms on its approximately 48-acre property (City of Modesto 2017b).

The Sutter Plant, Dryden Park Golf Course, Bellenita Park and the parcel west of the Plant are designated as OS according to the City's general plan. Land uses to the north of the Plant are designated as R interspersed with areas of RPD and MU land between the intersections of Paradise Road/Beverly Drive and Paradise Road/South Martin Luther King Drive. The parcel located north of Bellenita Park (Assessor's Parcel No. 037017005) is designated as MU as well. Land uses south of the Sutter Plant and the Tuolumne River are designated R and VR (City of Modesto 2017c).

The Sutter Plant is zoned as low-density residential (R-1). Zoning for the Dryden Golf Course and the parcel to the west of the Plant are also designated as R-1. The parcels directly north of the Sutter Plant and west of Bellenita Park are not zoned because they are unincorporated County areas with residential or undeveloped land uses. The parcels that are designated as VR lands are zoned in the specific plan zone (S-P). The parcels south of the Plant that are designated as R are zoned R-1 (City of Modesto 2017d).

Primary land uses in the vicinity of the River Trunk and Sutter Plant consist of urban/built up land and vacant/disturbed land with similar classifications for lands surrounding these project sites.

13.3.2 UNINCORPORATED STANISLAUS COUNTY

Third Outfall Pipeline Alignment

The third outfall pipeline alignment would continue south on Carpenter Road, west on Keyes Road, south on Jennings Road, and then continue west and terminate at the Jennings Plant. These roads are located in unincorporated Stanislaus County and surrounded by land that is designated and zoned for agricultural uses. (Stanislaus County 2006).

Jennings Plant

The Jennings Plant and the 2,500 acres of agricultural lands to the south of the plant are situated on lands owned by the City, and are zoned as Planned Development (PD). This designation identifies properties that require subsequent site planning in the form of approval of a Planned Development. The Jennings Plant is surrounded by lands that are designated and zoned for agricultural uses. The San Joaquin River is located directly west of the Jennings Plant.

13.4 IMPACT ANALYSIS

13.4.1 METHODOLOGY

The analysis of land use and planning is generally qualitative and, pursuant to CEQA Guidelines Section 15125, describes potential inconsistencies between the Proposed Program and applicable land use policies, plans, and programs described in Section 13.2 above. Inconsistencies with land use policies are considered a significant impact only if those inconsistencies would result in significant adverse effects on the physical environment. Physical impacts on the environment that could result from inconsistency with land use plans or policies are addressed in the other resource chapters (Chapters 4 through 12 and Chapters 14 through 18), not in this land use analysis. Specifically, consistency with SJVAPCD's air quality plans is discussed in Chapter 6, *Air Quality;* consistency with the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* is discussed in Chapter 12, *Hydrology and Water Quality;* and consistency with the *Congestion Management Process for the Stanislaus County Region* is addressed in Chapter 16, *Transportation and Traffic.* General consistency of the Proposed Program with the laws, regulations, and policies identified in Section 13.2, above, is discussed in Impact LU-2.

13.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

The Proposed Program would result in a significant impact on land use and planning if it would:

- 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; or
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

The third criterion is addressed in Chapter 7, *Biological Resources,* and not discussed in the following impact analysis.

13.4.3 ENVIRONMENTAL IMPACTS

Impact LU-1: Divide an Established Community (Less than Significant)

All Program-level Components

Proposed Program improvements that would occur above ground would be consistent with the City's zoning and General Plan land use designations as discussed in Section 13.2, "Environmental Setting" above. Furthermore, any pipeline improvements associated with the Proposed Program would occur underground and would therefore be exempt from complying with zoning designations as well. Some pipeline improvements would also occur in areas where such facilities already exist. New groundwater wells, storage tanks, pipelines, and new water mains would generally be constructed on the outskirts of Modesto and would facilitate redevelopment or new urban development.

For all components, construction activity would be temporary and any disturbed land would be returned to pre-construction conditions except for where new aboveground structures would be built. While construction of these components could result in temporary construction impacts to neighborhood land uses, such as temporary impacts on community traffic, air emissions, public safety, or noise, construction of these CIPs would be short-term and phased through 2035. These temporary impacts are addressed in Chapter 6, *Air Quality;* Chapter 14, *Noise and Vibration;* and Chapter 16, *Transportation and Traffic*.

Operation of proposed facilities would be consistent with and, for the most part, located adjacent to existing utility operations and would not impede access to neighboring communities.

Most components at the Jennings Plant would occur within the existing footprint of the current facility. As discussed in Chapter 5, *Agricultural Resources,* construction of new sludge drying beds would involve conversion of agricultural land immediately east of the plant. The land use designation for the surrounding land is agriculture. There are no established neighborhoods near the plant. As a result, no established communities would be divided by components at the Jennings Plant.

Most of the land surrounding the proposed third outfall pipeline is designated for agricultural uses (Stanislaus County 2006). As a result, the surrounding land is used almost exclusively for farming with some single-family residential homes. Installation of this approximately 9-mile pipeline would require open trench construction, which could generate short-term traffic delays due to partial lane closures. Such impacts are described in more detail in Chapter 16, *Transportation and Traffic.* Because the outfall pipeline would be underground and since there are no communities along the outfall pipeline alignment, this component would not physically divide established neighborhoods.

Components at the Sutter Plant would occur within the existing footprint of the facility. Construction of the new Tuolumne River crossings would entail trenchless methods, and new connecting force mains would extend south from the junction structure and southern jacking pit along Monticello Lane and connect with the existing 60-inch force mains. Note that the alignment of these outfall crossings is preliminary and subject to change due to presence of existing utilities and the alignment's proximity to sensitive receptors. This pipeline would involve open trenching along the roadway at a distance that is far enough away from the existing neighborhood community to avoid affecting travel through the neighborhood. Although there is potential for temporary increased traffic, noise, and air quality impacts to occur due to pipeline installation, these impacts are addressed in Chapter 16, *Transportation and Traffic;* Chapter 14, *Noise and Vibration*; and Chapter 6, *Air Quality,* respectively. These activities would not divide any established communities.

All other program-level components would either occur in areas where collection system structures already exist (e.g., lift station upgrades) or would be constructed underground (e.g., pipelines). New lift stations would be constructed on the outskirts of Modesto and would facilitate redevelopment or new urban development. For all components, construction activity would be temporary and any disturbed land would be returned to pre-construction conditions except for where new aboveground structures would be built. While construction of these components could result in temporary construction impacts to neighborhood land uses, such as temporary impacts on community traffic, air emissions, public safety, or noise; construction of these CIPs would be short-term and phased over the next 25 years. Operation

of these facilities would be consistent with and, for the most part, located adjacent to existing utility operations and would not impede access to neighboring communities. Direct and indirect impacts on surrounding land uses from construction-related traffic delays, air emissions, public safety hazards, and noise are addressed in other chapters of this EIR. This impact would be **less than significant**.

River Trunk Realignment Project

The River Trunk Realignment Project would involve the construction of force main and gravity system pipelines as well as two new pump stations. The River Trunk Pump Station would be constructed at the corner of B Street and Beard Street. This land is zoned as Light Industrial while its land use is designated as RPD. Currently, this parcel is vacant. The Shackelford Pump Station would be constructed on land that is designated I and is also vacant. The pipelines would traverse lands designated for mixed use and residential uses (City of Modesto 2017a). The southern force main extending from the River Trunk Pump Station would be constructed on land designated as RPD. The Shackelford force main and southern segment of the gravity pipeline system would traverse the Dryden Golf Course, which could temporarily disturb ongoing golfing activities. All other pipeline segments would be constructed within existing road rights-of-ways. As shown in Figure 2-1 in Chapter 2, *Program Description,* the gravity pipelines would be constructed in residential areas. Pipeline construction activities could temporarily disrupt neighborhood land uses. However, since all pipelines would be installed underground and because the project would improve the City's wastewater collection system, this project would increase the cohesiveness of the community. As a result, the project would not divide an established community. This impact would be **less than significant.**

Overall Conclusion

Construction of WWMP components could result in temporary impacts related to increased traffic delays, air pollutant emissions, noise and public-safety hazards; however, those impacts and proposed mitigation measures that would reduce such effects are addressed in Chapters 6, 14, and 16 of this DEIR. Once construction is complete, many WWMP components would be underground and other facilities would either be located at the Sutter and Jennings Plants. While some lift station components would be in residential areas, they would be similar in character to existing utility infrastructure in the Modesto area. The new River Trunk and Shackelford Pump Stations would also be sited away from residential areas. For these reasons, the Proposed Program's overall impact regarding division of an established community would be **less than significant**.

Impact LU-2: Conflict with Land Use Plans, Policies, or Regulations Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect (Less than Significant)

All Program-level Components

The Proposed Program would include a series of CIPs that involve repair and replacement of aging collection and wastewater infrastructure, decommissioning of wastewater treatment facilities at the Sutter Plant, and construction of new wastewater infrastructure at the Jennings Plant. The Proposed Program would also involve the construction of a third outfall pipeline that would convey wastewater from the Sutter Plant to the Jennings Plant. These CIPs would be implemented to address existing deficiencies and capacity needs for the City's

wastewater treatment system and collection system through 2035. These components would provide sufficient sewer collection and wastewater treatment services for new growth anticipated in the City's Urban Area General Plan Proposed Program

Consistency with Stanislaus County Zoning and General Plan Designations. In Salida, a new lift station (LS #60) would be constructed north of Chapman Road. This land is currently zoned and designated for Planned Industrial and Industrial Business Park land use.

As discussed in Section 13.2.1 and summarized in Table 13-1, all lift stations besides Lift Station #60 would be built on City of Modesto land and would therefore not conflict with County zoning or land use designation requirements. The third outfall pipeline would be built on land that is zoned as General Agricultural District and is designated for agricultural land use; however, the pipeline would be built underground and therefore would not conflict with agricultural uses on that land. The Jennings Plant would be constructed on land that is zoned as Planned Development and would not conflict with allowed uses under the County's zoning ordinance.

Based on the above, various Program components would be constructed on lands zoned and designated for various types of uses. Proposed wastewater infrastructure on County lands zoned for agricultural uses would constitute facilities for public utilities, and, therefore, qualify as a "Tier Three" use that is allowed within the A-2 district, subject to the approval of the Stanislaus County Planning Commission. Therefore, no conflicts with County zoning would occur under the Proposed Program.

Consistency with City of Modesto Zoning and General Plan Designations. Lift stations throughout the City of Modesto, would be built on land with various designations and zoning districts, as described in Table 13-1.

As mentioned in Section 13.3, "Environmental Setting," above, minor public facilities such as pumps and wells would be permitted in all zoning districts according the City of Modesto Code of Ordinances Title 10, Chapter 3 – Land Use Regulations. Public buildings and grounds are permitted in industrial districts and conditionally permitted in residential, professional office, and commercial districts. Thus, the above-described pump stations, lift stations and associated infrastructure would be permitted in all Modesto zoning districts. A conditional use permit may need to be submitted to the City of Modesto's Planning Department prior to development of the two pump stations.

To implement the Proposed Program, temporary and/or permanent easement acquisitions may be required to ensure the City has adequate right-of-way and access to the various CIP sites. For example, some easements may need to be acquired from Modesto Irrigation District and Turlock Irrigation District prior to constructing some sewer pipeline components.

Consistency with TRRP Master Plan. Proposed components that involve work along the Tuolumne River have the potential to temporarily conflict with the TRRP Master Plan goals and actions for riparian restoration as well as planned linkages between park planning districts such as the Gateway Parcel to the Carpenter Road Area. However, once construction of planned components such as the new Tuolumne River crossings and new primary effluent outfall pipeline, the majority of these components would be below ground and therefore would not conflict with planned riparian restoration efforts envisioned in the TRRP.

Therefore, the Proposed Program would be consistent with applicable land use plans, policies, and regulations. As a result, this impact would be less than significant.

River Trunk Realignment Project

Consistency with City of Modesto Zoning and General Plan Designations. As indicated in Table 13-1, the River Trunk Pump Station would be constructed on land zoned as Light Industrial while its land use is designated as RPD. Currently, this parcel is vacant. The Shackelford Pump Station would be constructed on land that is designated Industrial and is also vacant. The pipelines would traverse lands designated for mixed use and residential uses (City of Modesto 2017a). The southern force main extending from the River Trunk Pump Station would be constructed on land designated as Redevelopment Planning District. The Shackelford force main and southern segment of the gravity pipeline system would traverse the Dryden Golf Course, which could temporarily disturb ongoing golfing activities. All other pipeline segments would be constructed within existing road rights-of-ways. As shown in Figure 2-1 in Chapter 2, *Program Description,* the gravity pipelines would be constructed in residential areas. Pipeline construction activities could temporarily disrupt neighborhood land uses. However, since all pipelines would be installed underground, these would not conflict with the designated land uses or zoning in these areas.

Consistency with TRRP Master Plan. Because the majority of the River Trunk Realignment Project components would be belowground, the project improvements would not conflict with planned riparian restoration efforts envisioned in the TRRP Master Plan.

Therefore, the Proposed Program would be consistent with applicable land use plans, policies, and regulations. As a result, this impact would be less than significant.

Overall Conclusion

Construction of program-level WWMP components would be generally consistent with County, City, and TRRP land use plans, policies, and regulations, although some proposed wastewater infrastructure on County lands zoned for agricultural uses would require approval of the Stanislaus County Planning Commission as a "Tier Three" use that is allowed within the A-2 district. The River Trunk Realignment Project would be consistent with City and TRRP land use plans, policies, and regulations. As a result, this impact would be **less than significant.**

Chapter 14
NOISE AND VIBRATION

14.1 OVERVIEW

This chapter describes the existing noise environment in the vicinity of the Proposed Program, presents relevant noise and vibration regulations, identifies sensitive noise and vibration receptors that could be affected by the Proposed Program, and evaluates the noise and vibration impacts of the Proposed Program. Mitigation measures are prescribed to reduce significant noise and vibration impacts. Technical information used in preparing this chapter is provided in **Appendix E**.

14.2 NOISE AND VIBRATION CONCEPTS AND TERMINOLOGY

14.2.1 NOISE

In the CEQA context, noise can be defined as unwanted sound. Sound is characterized by various parameters, including the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level is the most common descriptor used to characterize the loudness of an ambient sound level, or sound intensity. The decibel (dB) scale is used to quantify sound intensity. Because sound pressure can vary enormously within the range of human hearing, a logarithmic scale is used to keep sound intensity numbers at a convenient and manageable level. The human ear is not equally sensitive to all frequencies in the spectrum, so noise measurements are weighted more heavily for frequencies to which humans are sensitive, creating the A-weighted decibel (dBA) scale.

Different types of measurements are used to characterize the time-varying nature of sound. Below are brief definitions of these measurements and other terminology used in this chapter.

- **Decibel (dB)** is a measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude.
- **A-weighted decibel (dBA)** is an overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
- **Maximum sound level (L_{max})** is the maximum sound level measured during a given measurement period.
- **Minimum sound level (L_{min})** is the minimum sound level measured during a given measurement period.

- **Equivalent sound level (L_{eq})** is the equivalent steady-state sound level that, in a given period, would contain the same acoustical energy as a time-varying sound level during that same period.

- **Day-night sound level (L_{dn})** is the energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels during the period from 10:00 p.m. to 7:00 a.m. (typical sleeping hours). This weighting adjustment reflects the elevated sensitivity of individuals to ambient sound during nighttime hours.

- **Community noise equivalent level (CNEL)** is the energy average of the A-weighted sound levels during a 24-hour period, with 5 dB added to the A-weighted sound levels between 7:00 p.m. and 10:00 p.m. and 10 dB added to the A-weighted sound levels between 10:00 p.m. and 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is barely noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level. **Table 14-1** presents approximate noise levels for common noise sources, measured adjacent to the source.

Table 14-1. Examples of Common Noise Levels

Common Outdoor Activities	Noise Level (dBA)
Jet flyover at 1,000 feet	110
Gas lawnmower at 3 feet	100
Diesel truck at 50 feet traveling 50 miles per hour	90
Noisy urban area, daytime	80
Gas lawnmower at 100 feet, commercial area	70
Heavy traffic at 300 feet	60
Quiet urban area, daytime	50
Quiet urban area, nighttime	40
Quiet suburban area, nighttime	30
Quiet rural area, nighttime	20

Notes: Caltrans = California Department of Transportation; dBA = A-weighted decibel.

Source: Caltrans 2009

14.2.2 VIBRATION

Groundborne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be composed of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or "spectrum," of many frequencies. The normal frequency range of most groundborne vibrations that can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this analysis has been described in terms of the peak

particle velocity (PPV), measured in inches per second, or of the vibration level measured with respect to root-mean-square vibration velocity in decibels (VdB), with a reference quantity of 1 micro-inch per second.

Vibration energy dissipates as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High-frequency vibrations attenuate much more rapidly than do those characterized by low frequencies, so that in a far-field zone distant from a source, the vibrations with lower frequency amplitudes tend to dominate. Soil properties also affect the propagation of vibration. When groundborne vibration interacts with a building, a ground-to-foundation coupling loss usually results but the vibration also can be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows, shaking of loose items, or the motion of building surfaces. In some cases, the vibration of building surfaces also can be radiated as sound and heard as a low-frequency rumbling noise, known as groundborne noise.

Groundborne vibration is generally limited to areas within a few hundred feet of certain types of industrial operations and construction/demolition activities, such as pile driving. Road vehicles rarely create enough groundborne vibration amplitude to be perceptible to humans unless the receiver is in immediate proximity to the source or the road surface is poorly maintained and has potholes or bumps. Human sensitivity to vibration varies by frequency and by receiver. Generally, people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events; the more events or the greater the duration, the more annoying it becomes.

14.3 Regulatory Setting

14.3.1 Federal Laws, Regulations, and Policies

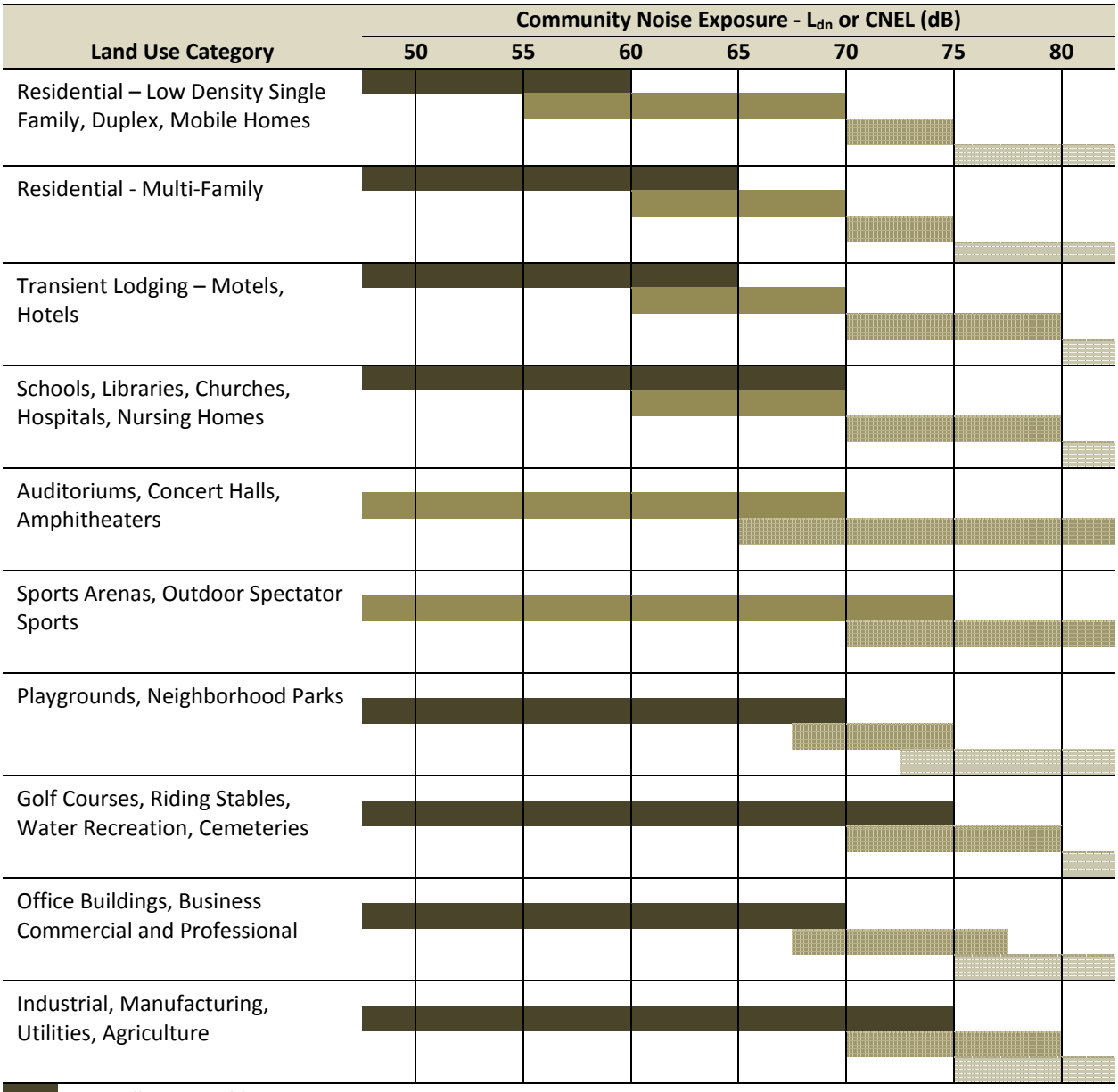
No federal laws, regulations, or policies for construction-related noise and vibration apply to the Proposed Program. However, the Federal Transit Administration (FTA) *Guidelines for Construction Vibration in Transit Noise and Vibration Impact Assessment* state that for evaluating daytime construction noise impacts in outdoor areas, a noise threshold of 90 dBA L_{eq} should be used for residential areas (FTA 2006).

For construction vibration impacts, the FTA guidelines use an annoyance threshold of 80 VdB for infrequent events (fewer than 30 vibration events per day) and a damage threshold of 0.12 inches per second (in/sec) PPV for buildings extremely susceptible to vibration damage (FTA 2006). The groundborne vibration annoyance level is 65 VdB for buildings where vibration would interfere with interior operations, 72 VdB for residences, and 75 VdB for institutional land uses with primarily daytime uses.

14.3.2 State Laws, Regulations, and Policies

California requires each local government entity to implement a noise element as part of its general plan. California Administrative Code, Title 4, presents guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The state land use compatibility guidelines are listed in **Table 14-2**.

Table 14-2. State Land Use Compatibility Standards for Community Noise Environment



Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation 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 are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Clearly Unacceptable	New construction or development generally should not be undertaken.

Notes: CNEL = community noise equivalent level; dB = decibel; Ldn = day-night sound level.
Source: California Governor's Office of Planning and Research 2017

14.3.3 LOCAL LAWS, REGULATIONS, AND POLICIES

Stanislaus County General Plan 2015

Stanislaus County addresses noise impacts through its General Plan and Municipal Code. The Noise Element of the *Stanislaus County General Plan 2015* (Stanislaus County 2016) utilizes noise exposure information to identify existing and potential noise conflicts through the Land Use Planning and Project Review processes. The Noise Element establishes exterior noise level standards and maximum allowable noise exposure from stationary noise sources at noise-sensitive land uses.

Goal Two: Protect the citizens of Stanislaus County from the harmful effects of exposure to excessive noise.

Policy Two: It is the policy of Stanislaus County to develop and implement effective measures to abate and avoid excessive noise exposure in the unincorporated areas of the County by requiring that effective noise mitigation measures be incorporated into the design of new noise generating and new noise sensitive land uses.

Implementation Measure 1: New development of noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to the following levels:

(a) For transportation noise sources such as traffic on public roadways, railroads, and airports, 60 [dBA] Ldn (or CNEL) or less in outdoor activity areas of single family residences, 65 [dBA] Ldn (or CNEL) or less in community outdoor space for multi-family residences, and 45 [dBA] Ldn (or CNEL) or less within noise sensitive interior spaces. Where it is not possible to reduce exterior noise due to these sources to the prescribed level using a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 Ldn (or CNEL) will be allowed. Under no circumstances will interior noise levels be allowed to exceed 45 Ldn (or CNEL) with the windows and doors closed in residential uses.

(b) For other noise sources such as local industries or other stationary noise sources, noise levels shall not exceed the performance standards contained within Table IV-24 [reprinted as **Table 14-3** below].

Implementation Measure 2: New development of industrial, commercial or other noise generating land uses will not be permitted if resulting noise levels will exceed 60 [dBA] Ldn (or CNEL) in noise-sensitive areas. Additionally, the development of new noise-generating land uses which are not preempted from local noise regulation will not be permitted if resulting noise levels will exceed the performance standards contained within Table IV-24 [Table 14-3 below] in areas containing residential or other noise sensitive land uses.

Table 14-3. Maximum Allowable Noise Exposure from Stationary Noise Sources

	Daytime 7a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Hourly L_{eq}, dBA	55	45
Maximum level, dBA	75	65

Note: Each of the noise level standards specified in Table IV-24 [Table 14-3] shall be reduced by five (5) dBA for pure tone noises, noise consisting primarily of speech or music, or for recurring impulsive noises. The standards in Table IV-24 [Table 14-3] should be applied at a residential or other noise-sensitive land use and not on the property of a noise-generating land use. Where measured ambient noise levels exceed the standards, the standards shall be increased to the ambient levels.

Source: Stanislaus County General Plan, Noise Element, Table IV-24 (2016)

Policy Three: It is the objective of Stanislaus County to protect areas of the County where noise-sensitive land uses are located.

Implementation Measure 1: Require the evaluation of mitigation measures for projects that would cause the Ldn at noise-sensitive uses to increase by 3 dBA or more and exceed the "normally acceptable" level, cause the Ldn at noise-sensitive uses to increase 5 dBA or more and remain normally acceptable, or cause new noise levels to exceed the noise ordinance limits (after adoption).

Stanislaus County Municipal Code

Noise generating sources in Stanislaus County are also regulated under the Municipal Code, Chapter 10.46 (Noise Control) (Stanislaus County 2017). Property line and construction noise limits are established in this ordinance. Property line noise limits apply to noise generation from one property to an adjacent property with the existence of a sensitive receptor (if no receptor, an exception or variance to the standards may be appropriate). These standards do not apply to construction noise that occurs between 7 a.m. and 7 p.m. The following are the applicable portions of the Stanislaus County Noise Control Ordinance, and **Table 14-4** and **Table 14-5** (reprinting Tables A and B of the ordinance) highlight the applicable noise limits.

Table 14-4. Exterior Noise Level Standards

Land Use Zone	Maximum A-Weighted Sound Level as Measured on a Sound Level Meter (L_{max})	
	7:00 a.m. to 9:59 p.m.	10:00 p.m. to 6:59 a.m.
Noise Sensitive	45	45
Residential	50	45
Commercial	60	55
Industrial	75	75

Source: Stanislaus County Code, Chapter 10, Table A.

Table 14-5. Cumulative Duration Allowance Standards

Cumulative Duration	Allowance Decibels
Equal to or greater than 30 minutes per hour	Table 6 plus 0 dBA
Equal to or greater than 15 minutes per hour	Table 6 plus 5 dBA
Equal to or greater than 5 minutes per hour	Table 6 plus 10 dBA
Equal to or greater than 1 minute per hour	Table 6 plus 15 dBA
Less than 1 minute per hour	Table 6 plus 20 dBA

Source: Stanislaus County Code, Chapter 10, Table B.

Section 10.46.050 Exterior Noise Level Standards

A. It is unlawful for any person at any location within the unincorporated area of the county to create any noise or to allow the creation of any noise which causes the exterior noise level when measured at any property situated in either the incorporated or unincorporated area of the county to exceed the noise level standards as set forth below:

1. Unless otherwise provided herein, the following exterior noise level standards shall apply to all properties within the designated noise zone:

2. Exterior noise levels shall not exceed the following cumulative duration allowance standards:

3. Pure Tone Noise, Speech and Music. The exterior noise level standards set forth in Table A [Table 14-4 of this DEIR] shall be reduced by five dB(A) for pure tone noises, noises consisting primarily of speech or music, or reoccurring impulsive noise.

4. In the event the measured ambient noise level exceeds the applicable noise level standard above, the ambient noise level shall become the applicable exterior noise level standard.

Section 10.46.060 Specific Noise Source Standards

E. Construction Equipment. No person shall operate any construction equipment so as to cause at or beyond the property line of any property upon which a dwelling unit is located an average sound level greater than seventy-five decibels between the hours of seven p.m. and seven a.m.

Section 10.46.070 Vibration. Operating or permitting the operation of any device that creates vibration that is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at one hundred fifty feet from the source if on a public space or public right-of-way is prohibited. For the purpose of this section, "vibration perception threshold" means the minimum groundborne or structure-borne vibration motion necessary to cause a reasonable person to be aware of the vibration by such direct means as, but not limited to, sensation by touch or visual observation of moving objects, or a measured motion velocity of 0.01 in/sec over the range of one to one hundred Hertz.

Section 10.46.080 Exemptions. The following sources are exempt from the provisions of this chapter:

J. Public Entity or Public Utility Activity. This chapter [Section 10.46 of the Municipal Code] shall not apply to construction or maintenance activities performed by or at the direction of any public entity or public utility.

Stanislaus County Airport Land Use Compatibility Plan

The Stanislaus County Airport Land Use Compatibility Plan (ALUCP) contains airport compatibility policy maps of three airports in Stanislaus County, including the Modesto City-County Airport. The ALUCP document provides planning area boundary maps and noise contours, presents airport land use background information, and discusses existing and potential noise conflicts in the area (Stanislaus County Airport Land Use Commission 2016). Figure 11-2 in Chapter 11, *Hazards and Hazardous Materials,* of this DEIR provides a copy of the Modesto City-County Airport Planning Area Boundary Map.

City of Modesto Urban Area General Plan

The following policies of Chapter VII, Environmental Resources, Open Spaces and Conservation, of the *City of Modesto Urban Area General Plan* (City of Modesto 2019) are applicable to the Proposed Program:

Noise Mitigation Policies – Baseline Developed Area

All development projects located within the Baseline Developed Area (and Redevelopment Area) shall be required to incorporate the following measures into the project.

Policy VII-G.3[g]. At noise-sensitive land uses, increases in noise should not exceed 3 dBA where any other noise threshold or standard would be exceeded, and/or 5 dBA where noise levels would otherwise fall within acceptable limits, for the existing conditions scenario as compared to the buildout scenario.

Policy VII-G.3[h]. Additional study and/or mitigation for outdoor recreation areas will be required if: ◦ For single-family dwellings, noise exceeds 65 dBA Ldn in one or

more backyards; ◦ For multi-family dwellings, noise exceeds 65 dBA Ldn at common recreation areas, such as swimming pools or play areas or at private patios and balconies; or, ◦ For other uses, noise exceeds the level considered "conditionally acceptable" as shown on [General Plan] Table VII-2.

Policy VII-G.3[i]. Limit trucking to specific routes, times, and speeds that minimize adverse effects on sensitive receptors.

Policy VII-G.3[n]. For construction activities involving high-powered vibratory tools or pile driving within 200 feet of an existing structure, demonstrate that project construction would not exceed the Caltrans construction vibration thresholds to ensure that no damage to sensitive structures would occur.

Modesto Municipal Code

The following sections of the Modesto Municipal Code in Title 4, Chapter 9, "Noise Regulations," are applicable to the Proposed Program:

Section 4-9.103 – Enumeration. The following specific acts, subject to the exemptions provided in Section 4-9.104, are declared to be public nuisances in violation of Section 4-9.102, namely:

(a) The loud and raucous discharge into the open air of the steam of any steam equipment or exhaust from any stationary internal-combustion engine.

(b) The loud and raucous operation or use of any of the following before 7:00 a.m. or after 9:00 p.m. daily (except Saturday and Sunday and State or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.):

(1) A hammer, or any other device or implement used to pound or strike an object.

(2) An impact wrench, or other tool or equipment powered by compressed air.

(3) A hand-powered saw.

(4) Any tool or piece of equipment powered by an internal-combustion engine such as, but not limited to, chain saw, backpack blower, and lawn mower. Except as included in subsection (a)(6) below, motor vehicles, powered by an internal-combustion engine and subject to the California Vehicle Code, are excluded from this prohibition.

(5) Any electrically powered (whether by alternating current electricity or by direct current electricity) tool or piece of equipment used for cutting, drilling, or shaping wood, plastic, metal, or other materials or objects, such as, but not limited to, a saw, drill, lathe, or router.

(6) Any of the following: heavy equipment (such as but not limited to bulldozer, steam shovel, road grader, back hoe), ground drilling and boring equipment (such as but not limited to derrick or dredge), hydraulic crane and boom equipment, portable power generator or pump, pavement equipment (such

as but not limited to pneumatic hammer, pavement breaker, tamper, compacting equipment), pile-driving equipment, vibrating roller, sand blaster, gunite machine, trencher, concrete truck, and hot kettle pump.

(7) Any construction, demolition, excavation, erection, alteration, or repair activity.

In the case of urgent necessity and in the interest of public health and safety, the Chief Building Official may issue a permit for exemption from the requirements within subsection (b) of this section. Such period shall not exceed three (3) working days in length while the emergency continues but may be renewed for successive periods of three (3) days or less while the emergency continues. The Chief Building Official may limit such permit as to time of use and/or permitted action, depending upon the nature of the emergency and the type of action requested.

(c) The loud and raucous use or operation of any radio, amplifier, phonograph, stereo, compact disc or tape player, loudspeaker, bullhorn, megaphone, or other device for the producing or reproducing of sound.

(d) Loud and raucous yelling, shouting, talking, whistling, or singing between the hours of 10:00 p.m. and 7:00 a.m. on any day.

(f) The loud and raucous use of any drum, guitar, horn, or other musical instrument or device.

Section 4-9.104 – Exemptions. The term "loud and raucous noise" as used in this chapter does not include noise or sound generated by the following:

(d) Activities on or in publicly owned property and facilities, or by public employees while in the authorized discharge of their responsibilities, are exempt provided that such activities have been authorized by the owner of such property or facilities or its agent or by the employing authority.

14.4 ENVIRONMENTAL SETTING

14.4.1 REGIONAL AND LOCAL NOISE SETTING

Sensitive land uses generally include those that where exposure to noise and vibration would be a nuisance, as well as uses where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both noise levels (interior and exterior) and vibration levels. Other sensitive land uses include schools, hospitals, convalescent facilities, parks, hotels, places of worship, libraries, and other uses where low noise and vibration levels are essential. Many, if not all, of these sensitive land uses can be found in the immediate vicinity of proposed components throughout Modesto and unincorporated Stanislaus County. While specific sensitive receptors may change or move over the life of the Proposed Program, Figure 11-3 in Chapter 11*, Hazards and Hazardous Materials;* Figure 13-1 in Chapter 13, *Land Use*; and **Figure 14-1** below show the locations of schools, zoned residential areas, and other existing sensitive receptors with respect to Proposed Program components and the River

Trunk Realignment Project alignment. These figures provide a general context of the proximity of Proposed Program components to sensitive receptors.

Sensitive Receptors near the River Trunk Realignment Project

The western and southern portions of the River Trunk Realignment Project are located in close proximity to numerous homes. As shown in Figure 14-1, residential uses are predominantly located along Tuolumne Boulevard, Colorado Avenue, and Pelton Avenue, and generally are approximately 30-40 feet from the River Trunk Realignment Project. Other residential receptors in proximity to the River Trunk Realignment Project include homes on Merced Avenue and Calaveras Avenue, which are 170 and 250 feet from the pipeline alignment.

A church, school, and a daycare are located near the alignment at the intersection of Calaveras Avenue and Tuolumne Boulevard. **Table 14-6** summarizes the locations of these sensitive noise receptors relative to the River Trunk Realignment Project.

Table 14-6. Non-residential Sensitive Receptors in the Vicinity of the River Trunk Realignment Project

Sensitive Receptor	Address	Distance from River Trunk Realignment Project
The Universal Church	133 Tuolumne Blvd., Modesto	190 feet
Kirk Baucher School	140 Calaveras Ave., Modesto	280 Feet
Tuolumne Christian Daycare	133 Tuolumne Blvd., Modesto	260 feet

14.4.2 EXISTING NOISE AND VIBRATION SOURCES

The Proposed Program study area covers a large area and dominant noise sources vary depending on location. In general, noise sources include industrial facilities (e.g., canneries), agricultural activities, railroads, air traffic (near the Modesto City-County Airport), and vehicular traffic, in particular near highways and major transportation corridors. Railroad lines operated by multiple companies and SR 99, 132, 108, and 219 create elevated ambient noise levels and pass through large portions of the study area. The Modesto City-County Airport's planning area boundary and noise contours overlap sections of the Program area (Stanislaus County 2016).

The Proposed Program components include new and/or improvements to wastewater collection and treatment infrastructure, lift stations, pumps, and emergency generators. The noise environment varies across the study area and is described generally in the City's 2008 Final Master Environmental Impact Report for the Modesto General Plan Update (referred to here as 2008 General Plan EIR), the noise section of which is incorporated by reference and summarized here. Figure V-3-2 in the 2008 General Plan EIR shows the projected traffic noise levels at General Plan buildout in 2025 generated by traffic, the airport, and the railroads. Stationary sources, such as industries, are discussed qualitatively.

As the City's 2008 General Plan EIR discusses, traffic on highways State Route (SR) 99, SR 132, and SR 108, various arterial streets, and other streets in particular truck routes, the railroads, and the Modesto City-County Airport would cause elevated noise levels greater than 75 dBA Ldn at buildout of the General Plan. Within a relatively short distance away from the highways, arterials, and railroads, the average noise levels typically drop to 65 dBA Ldn or lower. Noise levels in some commercial and industrial areas are described in the 2008 General Plan EIR in Table V-3-1 which indicates measured noise levels in some commercial and industrial areas were between 65 and 74 dBA. Measured noise levels in residential areas ranged from 54 to 70 dBA, based on the 2008 General Plan EIR's Table V-3-1. Based on Figure V-3-2 in the City's 2008 General Plan EIR, residences along Tuolumne Boulevard, between Paradise Avenue and North 9th Street, would experience noise levels that generally ranged from 60 to 65 dB.

The specific Proposed Program components, in particular the wastewater pipelines, would be located in almost all areas of the City and would be within the range of all noise levels indicated in the 2008 General Plan EIR.



C:\Users\GIS\Documents\ArcGIS_PROJECTS\15043_Modesto_WWMP_EIR\mxd\Figure_14-1_Sensitive_Receptors_Trenching.mxd 10/30/2017 PG

N

0 250 500 1,000
Feet

Trenching Segments

90 dBA Zone

Figure 14-1
Proximity of Sensitive Receptors to Trenching Activities
River Trunk Realignment Project

Horizon WATER and ENVIRONMENT

City of Modesto Wastewater Master Plan EIR

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Areas outside of the City's 2008 General Plan EIR scope (i.e., the new primary effluent outfall connecting the Sutter Plant to the Jennings Plant and the Jennings Plant itself) would have similar noise contour trends around traffic on highways, arterial streets, railroads, airports, and industrial areas as described for the City.

Existing Noise and Vibration Sources near the River Trunk Realignment Project

The eastern portion of the River Trunk Realignment Project would be in an industrial area of Modesto, and the eastern terminus is located at the Gallo Winery production facility's parking lot. As mentioned above, the central and southern portions of the River Trunk Realignment Project would be in a predominantly residential area of Modesto. Existing sources of noise and vibration in the vicinity of this project include a Union Pacific railroad line, SR 99, and the Modesto City-County Airport which is located approximately 1.4 miles to the east. Multiple food processing and industrial facilities are within a half-mile of the River Trunk Realignment Project.

14.5 IMPACT ANALYSIS

14.5.1 METHODOLOGY

The following impact analysis used a combination of qualitative and quantitative approaches to analyze impacts associated with the Proposed Program. Construction-related noise effects associated with the River Trunk Realignment Project were determined using a quantitative approach, since greater project-level detail was available for this program component at the time this DEIR was prepared. Construction and operation impacts of all Program-level components were determined using a qualitative approach. In addition, operational impacts of the River Trunk Realignment Project were also estimated using a qualitative approach. The qualitative analysis uses distances to sensitive receptors, project information and design, and information provided by City of Modesto staff.

For the River Trunk Realignment Project, construction-related impacts were assessed by applying the FTA's *Transit Noise and Vibration Impact Assessment* methodology (FTA 2006). This methodology assumes that the two loudest pieces of construction equipment (using the construction equipment list from California Emissions Estimator Model [CalEEMod]) would operate simultaneously at the same location under full power, assuming the following:

- full power operation for a full 1-hour,
- there are no obstructions to the noise travel paths,
- typical noise levels from construction equipment, and
- both pieces of equipment operate at the center of the project site.

Using these assumptions, the noise levels at specific distances can be obtained using the following equation:

$$L_{eq}(equip) = EL_{50ft} - 20log_{10}(D/50)$$

Where:

L_{eq} (equip) = the noise emission level at the receiver at distance D over 1 hour

EL_{50ft} = noise emission level of a particular piece of equipment at a reference distance of 50 feet

D = the distance from the receiver to the piece of equipment in feet

To add the two loudest pieces of equipment together, the following equation applies:

$$L_{total} = 10\ log_{10}(10^{\frac{L1}{10}} + 10^{\frac{L2}{10}})$$

Where:

L_{total} = the noise emission level of two pieces of equipment combined

L_1 = the noise emission level of equipment type 1

L_2 = the noise emission level of equipment type 2

Noise levels at the Proposed Program's nearest sensitive receptors generated by construction equipment were estimated by using the FTA reference guide (FTA 2006).

14.5.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on noise and vibration if it would:

- Expose persons to or generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels;
- Substantially permanently increase ambient noise levels in the project vicinity above levels existing without the project;
- Substantially temporarily or periodically increase ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or

- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

For the Proposed Program, the significance of noise effects is based on a comparison between predicted noise levels and noise criteria defined by Stanislaus County and the City of Modesto. For the Proposed Program, noise impacts would be significant if existing or proposed noise-sensitive land uses would be exposed to noise levels in excess of the County of Stanislaus General Plan Noise Element (Stanislaus County 2016), Stanislaus County Municipal Code standards, City of Modesto General Plan Noise Element (City of Modesto 2019), or City of Modesto Noise Ordinance, described in Section 14.3, "Regulatory Setting," or if implementing the Proposed Program would increase ambient noise levels at noise-sensitive land uses in excess of those described above.

The following considerations apply to the first four significance criteria:

- **Noise impacts from operation of Proposed Program facilities:** For all affected noise-sensitive uses, noise that would be generated by operation of proposed facilities would be significant if it would cause the overall exterior noise level to exceed the "normally acceptable" noise standard compatible with exterior land uses or if it would result in an increase of ambient noise levels by 10 dBA.

- **Noise impacts from increased daily traffic:** For all affected noise-sensitive uses, noise generated by an increase in daily traffic volumes caused by the Proposed Program would be significant if it would cause the overall exterior noise level to exceed the "normally acceptable" noise standard compatible with exterior land uses, exceed the interior noise standard, or result in an increase of ambient noise levels by 10 dBA.

- **Exposure of sensitive receptors to, or generation of, excessive vibration levels:** Short- and long-term vibration impacts would be significant if project construction or operation would result in the exposure of sensitive receptors to, or would generate, vibration levels that exceed Caltrans' recommended standard of 0.2-0.3 in/sec PPV for the prevention of structural damage to non-engineered timber and masonry or engineered concrete and masonry buildings or the FTA's vibration standards of 72 VdB regarding human response for residential uses (i.e., annoyance), or 65 VdB for human perception, at any nearby existing sensitive land uses.

- **Temporary, short-term noise impacts from construction:** Temporary, short-term noise impacts caused by construction are exempt from noise ordinances described in the Stanislaus County Municipal Code Specific Noise Source Standards Subsection E (Section 10.46.060, "Construction Equipment") and the City of Modesto Code Ordinances (Section 4-9.103, "Enumeration"). Program-related construction noise levels greater than the FTA significance threshold of 90 dBA at residential and noise-sensitive land uses would be considered to result in a temporary noise impact.

The final criterion has been dismissed from this analysis because the Proposed Program does not include any components within the vicinity of a private airstrip; therefore, no impact would occur and this topic is not discussed further.

14.5.3 ENVIRONMENTAL IMPACTS

Impact NOI-1: Expose Persons to Noise Levels in Excess of Standards Established in a Local General Plan or Noise Ordinance or in the Applicable Standards of Other Agencies (Less than Significant with Mitigation)

All Program-level Components

As described in Chapter 2, *Program Description,* construction activities would generally occur Monday through Friday between 7:00 a.m. and 5:00 p.m., excluding City-observed holidays. Nonetheless, since the construction timeframes and schedules for each individual CIP have not yet been determined, future construction activities have potential to expose people (particularly residential receptors) to noise levels exceeding the above-listed timeframe and other standards in the local general plan and noise ordinances. This impact is considered significant. Construction of all program-level components would be required to follow applicable local laws, and the City's contractor(s) would be required to adjust the times of construction accordingly. Stanislaus County and the City of Modesto municipal codes contain some exemptions for noise from construction and maintenance activities performed by, or for, public utilities and facilities (e.g., a special exemption permit allowed by Modesto Municipal Code Section 4-9.103[b][6]).

With implementation of **Mitigation Measure NOI-1 (Employ Noise-Reducing Construction Practices)** and **Mitigation Measure NOI-2 (Limit Nighttime Construction Noise)**, the City's contractor(s) would be required to ensure that construction activities occur in a manner consistent with local noise standards when operating during allowable daytime hours outlined above. Therefore, this impact would be **less than significant with mitigation**.

Once construction is complete, program-level components involving pipeline replacement or rehabilitation would not generate excess noise levels. In addition, because there are limited sensitive receptors in close proximity (i.e., less than 1,000 feet) to the Jennings Plant, future components planned at the Jennings Plant would not expose people to noise levels in excess of local standards. However, operation of proposed lift station components and Sutter Plant components would generate ongoing noise levels in areas that could expose people to noise levels in excess of established noise levels without mitigation. The Proposed Program's lift stations would all be underground but some would include aboveground facilities such as back-up generators that would generate noise. Some of the Proposed Program's lift station components would be located in residential areas of Modesto. Currently, the level of design detail for proposed lift station and Sutter Plant facility components is not sufficient to conduct a quantitative noise analysis; thus, operational noise impacts for these components are conservatively considered to be significant.

For the Sutter Plant components, **Mitigation Measure NOI-3 (Prepare Project-level Noise Analysis for Operation of Proposed Sutter Plant Components)** requires a detailed noise study to determine whether appropriate measures have been implemented to reduce noise levels to less than a 10-dB increase in residential areas. If the project-level noise analysis shows that relevant thresholds (10-dB increase) would be exceeded at the Sutter Plant, **Mitigation Measure NOI-4 (Employ Noise-Reducing Methods during Operations)** would be implemented for the Sutter Plant. For lift station components, Mitigation Measure NOI-4 would also require implementation of noise-reducing methods so that noise from lift stations does not exceed City or County noise-level standards at adjacent residences.

In conclusion, implementation of Mitigation Measures NOI-1, NOI-2, NOI-3, and NOI-4 would reduce noise levels for construction and operation of the WWMP program-level components, This impact would be **less than significant with mitigation**.

River Trunk Realignment Project

While construction timeframes have been generally established for the River Trunk Realignment Project, the possibility exists that project construction activities could occur outside the construction hour timeframe due to weather constraints and other unexpected delays that sometimes arise during construction projects. This impact is considered significant. Implementation of Mitigation Measures NOI-1 and NOI-2 would reduce this impact to **less than significant with mitigation** during the construction phase.

Operation of the River Trunk Pump Station and the Shackelford Pump Station would generate noise through the operation of equipment (e.g., pumps, emergency generators) and periodic maintenance-related vehicle trips. However, noise associated with equipment operation would not be substantial since the pumps would be located underground in enclosed structures that would mute any generated sounds, and the backup generators would be sound-buffered and would be operated infrequently, primarily in the event of power outages or for periodic maintenance. In addition, since there are no residential receptors in close proximity (800 feet) to either pump station, operation of the River Trunk Realignment Project would not expose persons to noise levels in excess of the standards established in applicable noise ordinances. Therefore, this impact would be **less than significant** during the operation phase.

Overall Conclusion

Considering the WWMP components as a whole, construction-related noise impacts would be reduced with implementation of Mitigation Measures NOI-1 and NOI-2. Design details for some program-level components (e.g., new/upgraded facilities at the Sutter Plant) have not yet been developed such that a quantitative operational noise analysis can be conducted at this time. Implementation of Mitigation Measure NOI-3 would ensure that a detailed project-level noise analysis is completed for future Sutter Plant components. Mitigation Measure NOI-4 would ensure that noise-reducing design measures are incorporated into lift station designs and, if necessary, the Sutter Plant's design. In conclusion, implementation of these mitigation measures would reduce noise levels associated with the Proposed Program's construction and operation, and noise levels would not be in excess of standards established in the relevant noise ordinances and policies. Therefore, this impact would be **less than significant with mitigation**.

Mitigation Measure NOI-1: Employ Noise-Reducing Construction and Maintenance Practices.

Applies to all Program-level components and the River Trunk Realignment Project

The following measures will be implemented by the City or its contractor(s) to reduce adverse effects from construction and maintenance noise in locations where noise-sensitive receptors could be adversely affected:

- Locate stationary equipment as far as practical from noise-sensitive land uses;

- Use electrified or otherwise quieter equipment when practical;
- Use sound-control devices on equipment that are more effective than devices originally provided on the equipment;
- Use noise-reducing enclosures around noise-generating equipment; and
- Install temporary barriers between noise sources and noise-sensitive land uses, or take advantage of existing barrier features (e.g., terrain and structures) to block sound transmission.

When determining haul truck routes, consideration will be given to altering haul routes to avoid sensitive receptors when feasible.

Mitigation Measure NOI-2: Limit Nighttime Construction Noise.

Applies to all Program-level components and the River Trunk Realignment Project

When feasible, the City and its contractor shall ensure that no construction activities are conducted in close proximity to a residence outside the hours of 7:00 a.m.–9:00 p.m. on weekdays and 9:00 a.m.–9:00 p.m. on Saturdays, Sundays, and state or federal holidays unless a special exemption permit allowed by Modesto Municipal Code Section 4-9.103(b)(6) is obtained.

Mitigation Measure NOI-3: Prepare Project-level Noise Analysis for Operation of Proposed Sutter Plant Components.

Applies to proposed Sutter Plant components

The City or its contractor(s) shall prepare a project-level noise analysis for operation of proposed Sutter Plant components. The detailed noise study should show that appropriate mitigation measures will be implemented to reduce noise levels to less than a 10-dB increase in residential areas. If the analysis demonstrates that significant operational noise impacts are likely to occur, Mitigation Measure NOI-4 shall be implemented. Alternately, the City can assume that the impacts would be significant and implement Mitigation Measure NOI-4 without first conducting a noise study under Mitigation Measure NOI-3.

Mitigation Measure NOI-4: Employ Noise-Reducing Methods During Operations.

Applies to lift station components and potentially Sutter Plant components

The City or its contractor(s) shall implement noise-reducing methods so that noise from lift stations does not exceed City or County noise-level standards at adjacent residences. This measure shall also be implemented to achieve City or County noise-level standards for Sutter Plant components if deemed necessary per Mitigation Measure NOI-3. Example measures may include, but are not limited to, the following:

- Locate stationary equipment as far as practical from noise-sensitive land uses;

- Use electrified or otherwise quieter equipment when practical;
- Use sound-control devices on equipment that are more effective than devices originally provided on the equipment;
- Install permanent barriers between noise sources and noise-sensitive land uses, or take advantage of existing barrier features (terrain and structures) to block sound transmission;
- Limit operations and maintenance-related trucking to specific routes, times, and speeds that minimize adverse effects to sensitive land uses such as schools and residential areas; and
- Use sound attenuation enclosures designed to achieve noise reductions sufficient to comply with City and County standards for noise-generating elements of the operation, when no other feasible control method is available.

Impact NOI-2: Expose Persons to Excessive Groundborne Vibration or Groundborne Noise Levels (Less than Significant with Mitigation)

Construction activities associated with the operation of heavy equipment may generate localized groundborne vibration. Vibration from non-impact construction activity is typically below the threshold of perception when the activity is more than about 50 feet from the receptor. Impact construction activity, including the use of pile drivers and similar equipment, may be perceived hundreds of feet away and can cause damage to susceptible buildings located over 100 feet away. Multiple components of the River Trunk Realignment Project would involve the use of pile drivers and loaded trucks, both of which are substantial sources of construction-related vibration. Such equipment, particularly loaded trucks, would likely be used during construction of Proposed Program-level components, which would involve travel along residential roads in Modesto.

Table 14-7 summarizes construction equipment that would be used during construction of the River Trunk Realignment Project that would generate major sources of vibration and the distances at which various vibration thresholds would be met.

Table 14-7. Construction Equipment and Vibration Distances

Equipment	PPV at 25 feet	Distance to PPV of 0.2 in/sec	Distance to PPV of 0.3 in/sec	Noise Vibration Level at 25 feet	Distance to Noise Vibration of 72 VdB[1]	Distance to Noise Vibration of 65 VdB[1]
Pile Driver	1.518	97 feet	74 feet	112 VdB	539 feet	922 feet
Clam Shovel Drop	0.202	25 feet	19 feet	94 VdB	135 feet	232 feet
Loaded Trucks	0.076	13 feet	10 feet	86 VdB	73 feet	125 feet

Notes: Calculations are provided in Appendix E.
[1] This is the human perception threshold. 65 VdB is the groundborne vibration annoyance level for buildings with sensitive interior operations, and 72 VdB is the groundborne vibration annoyance level for residents.

Multiple sensitive receptors (primarily residences) along the River Trunk Realignment Project route are located within the calculated vibration perception and annoyance threshold

distances. As a result, vibration effects on sensitive receptors would be significant. Given the short duration of construction in any given location, implementation of **Mitigation Measure NOI-5 (Implement Vibration Reduction Measures)** would reduce construction-related impacts from vibration to a less-than-significant level.

Operational noise would be generated from mechanical equipment such as pumps and maintenance vehicle trips. This type of activity would generate vibration levels that are much lower than the levels generated during construction. Because of the distance between the operating equipment and nearby sensitive receivers, vibration levels would result in a less-than-significant noise impact during operation.

Given the temporary nature of vibration resulting from construction activities and the implementation of Mitigation Measures NOI-5, this impact would be **less than significant with mitigation.**

Mitigation Measure NOI-5: Implement Vibration Reduction Measures.

Applies to River Trunk Realignment Project and other Program-level components

The City of Modesto and/or its contractors shall implement the following vibration-reducing measures during construction activities which could generate substantial vibration to minimize impacts on nearby sensitive receptors:

- Ensure proper tuning of vibration-causing equipment.
- Use vibration damping devices to the extent feasible.
- Limit use of vibratory equipment to the extent feasible and do not overlap use of vibratory equipment. Where possible, maintain a distance of 15+ feet from buildings.
- Require contractor(s) to ensure that impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.
- Use electric stationary equipment (e.g., generators) where feasible.
- Implement noise and/or vibration shields, such as sound aprons or temporary enclosures with sound-absorbing material, on or around construction equipment, particularly if construction activities are conducted after 7:00 pm. For all construction activities occurring within 60 feet of residences at any time of day, install a temporary noise and vibration barrier between the project site and the nearest sensitive receptors. Following the completion of construction activities within that distance, the barrier will be removed.

Impact NOI-3: Substantial Permanent Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program (Less than Significant with Mitigation)

New and Upgraded Sewers, Sewer Rehabilitation, Stormwater/Sanitary Disconnections, R&R Components, Outfall Pipeline Components

Once installed, all new and upgraded sewer lines, sewer rehabilitation components, stormwater/sanitary disconnections, R&R projects, and outfall pipelines would be belowground and would not generate noise. These program-level CIPs would not permanently increase ambient noise levels and therefore would result in **no impact**.

Lift Station Components, Sutter Plant, and Jennings Plant Components

Aside from components involving new, rehabilitated or replaced pipelines, operation of other proposed components would result in permanent sources of noise that could be substantial. This would include operation of large industrial equipment associated with the wastewater treatment plants that may generate high noise levels without implementation of proper noise mitigation measures such as sound attenuation enclosures and other barriers. Because there are limited sensitive receptors in close proximity (i.e., less than 1,000 feet) to the Jennings Plant, future components planned at the Jennings Plant would not be likely to increase ambient noise levels in excess of local standards. In addition, the operation of the belowground lift stations and the periodic operation of backup generators at the lift stations would not result in a permanent ambient noise level change. Traffic-related noise for the Proposed Program's maintenance and operation activities would not be a permanent noise source because maintenance trips to lift stations would be periodic, and the personnel change (approximately 60) from the Sutter Plant to Jennings Plant would result in a small increase in trips to and from the Jennings Plant, as well as a small decrease in trips to and from the Sutter Plant. However, future noise levels of the Sutter Plant's wastewater facilities would be significant.

Mitigation Measure NOI-3 requires Sutter Plant components to undergo a detailed noise study to show that appropriate measures have been implemented to reduce noise levels to less than a 10-dB increase in residential areas. If the project-level noise analysis shows that relevant thresholds (10-dB increase) would be exceeded at the Sutter Plant, Mitigation Measure NOI-4 would be implemented for the Sutter Plant. Mitigation Measure NOI-4 and its noise-reducing measures would ensure that the Proposed Program's operations comply with applicable noise standards and would not cause the overall exterior noise level to exceed the "normally acceptable" noise standard compatible with exterior land uses or result in an increase of ambient noise levels by 10 dBA. Thus, the Proposed Program's operation-related increase in ambient noise would not be substantial. This impact would be **less than significant with mitigation**.

River Trunk Realignment Project

As described in Impact NOI-1, the River Trunk Realignment Project's pump stations would be designed such that all pumps would be belowground and/or enclosed; thus, operation of these pumps would not permanently increase ambient noise levels. In addition, the operation of the buried proposed pipelines and the periodic operation of backup generators at the pump stations would not result in a permanent ambient noise level change. Therefore, this impact would be **less than significant**.

Overall Conclusion

Considering the WWMP components as a whole, while operation of belowground components (lift stations), components far from sensitive receptors (Jennings Plant), periodic operation of back-up generators, and the River Trunk Realignment Project would not result in a permanent increase in ambient noise levels, the Sutter Plant's wastewater treatment facilities would result in a permanent increase in ambient noise levels. Implementation of Mitigation Measure NOI-3 and, if necessary, Mitigation Measure NOI-4 would ensure that operation of new and upgraded facilities would not result in substantial permanent increases in ambient noise levels. In conclusion, the Proposed Program's effects on ambient noise levels would be **less than significant with mitigation**.

Impact NOI-4: Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program (Significant and Unavoidable)

All Program-level Components

Temporary and periodic increases in noise levels associated with the Proposed Program's construction activities, periodic maintenance activities, and associated periodic truck traffic, would increase ambient noise levels above the ambient noise levels existing without the Proposed Program. However, implementation of Mitigation Measures NOI-1 and NOI-2, which include several construction noise-reducing measures and limit nighttime construction, would reduce short-term noise impacts to a level that is **less than significant with mitigation**.

River Trunk Realignment Project

The River Trunk Realignment Project includes the construction of two pump stations and the installation of roughly four miles of pipeline, much of which passes through residential areas of Modesto. In order to more accurately analyze the noise impacts of construction of the River Trunk Realignment Project, the noise evaluation was divided into the following four sub-projects based on location and equipment usage:

- River Trunk Pump Station
- Shackelford Pump Station
- Pipeline Trenching
- Pipeline Construction Involving Horizontal Drilling and Drill Pits

Following the methodology discussed in Section 14.4.3, the two loudest pieces of equipment specified for the four River Trunk Realignment Project components were used to model noise levels during construction. For each project component, **Table 14-8** below provides information on the loudest pieces of equipment, sound levels at 50 feet, distance to noise thresholds, and noise levels at the nearest sensitive receptors. Due to the geographical scale and close proximity to numerous sensitive receptors, additional information on the pipeline segments that involve trenching is displayed in Figure 14-1.

Table 14-8. River Trunk Realignment Project Construction Noise Levels

Project Component	Loudest Pieces of Equipment	dBA at 50 ft.	Distance to 90 dBA (ft.)	dBA at Nearest Sensitive Receptor
River Trunk Pump Station	Pile Driver Loaded Truck	101.6	191	77.6 (Residences C. St.)
Shackelford Pump Station	Pile Driver Loaded Truck	101.3	183	74.4 (Residences Pueblo Ave.)
Pipeline Segments Involving Horizontal Drilling & Pile Drivers	Pile Driver Paver	101.2	182	85.6 (Residences Calaveras Ave.)
Other Pipeline Segments	Loaded Truck Excavator	89.8	49	Greater than 90 dBA (See Fig. 14-1)

Source: Modeling conducted by Horizon in 2017 (Appendix E). The 90 dBA distance relates to the FTA-recommended daytime threshold of 90 dBA for residential areas.

Construction activities would likely exceed noise thresholds at individual sensitive receptors along the pipeline route. For several components of the River Trunk Realignment Project, construction activities would raise ambient noise levels above 90 dB, the FTA significance threshold at residential and noise-sensitive land uses, for the nearest residences. Approximately 156 residential land parcels would be exposed to noise levels exceeding the 90 dBA threshold. These noise levels would be disruptive to nearby sensitive receptors because noise levels would substantially exceed existing ambient noise levels, which generally range along Tuolumne Boulevard from 60 to 65 dBA (as shown in the City's 2008 General Plan EIR) and likely at similar noise levels within other areas of the River Trunk Realignment Project area (Figure 14-1) depending on the proximity to traffic-related noise or other noise sources. This impact would be significant.

Implementation of Mitigation Measures NOI-1 and NOI-2 would reduce the noise levels during construction to the extent feasible; however, noise impacts may still exist for sensitive receptors located near the River Trunk Realignment Project, and the impact would remain **significant and unavoidable**.

Overall Conclusion

Implementation of Mitigation Measures NOI-1 and NOI-2 would reduce temporary construction noise effects associated with program-level components and the River Trunk project. However, these measures may not fully reduce construction noise impacts for sensitive receptors near the River Trunk alignment. Thus, even with implementation of Mitigation Measures NOI-1 and NOI-2, the Proposed Program's temporary impacts related to increases in ambient noise levels would be **significant and unavoidable**.

Impact NOI-5: Expose People Residing or Working in the Program Area to Excessive Noise Levels Associated with a Public Airport (Less than Significant)

The Modesto City-County Airport's planning area boundary and noise contours overlap sections of the Program study area (Stanislaus County 2016). However, the Program-level

components within areas affected by airport-related noise (i.e., the CNEL noise zones policy areas shown in the Noise Zones Policy Map for Modesto City-County Airport [Stanislaus County 2016]), would be limited to upgraded or replaced sewer pipelines, and new or upgraded pump stations or lift stations. These types of components would not require workers to be onsite during operation, and thus would only result in temporary exposure of City employees or contractors to airport-related noise exclusively during temporary construction and maintenance activities.

The Sutter and Jennings wastewater treatment plants, where City employees would primarily be onsite to perform operational activities, are not located within the vicinity of the airport noise impact zones. Therefore, since no sensitive receptors would be located in the airport noise impact zones once any construction activities are complete, this impact would be **less than significant.**

Chapter 15
POPULATION AND HOUSING

15.1 OVERVIEW

This section describes the Proposed Program's impacts related to population and housing. The environmental setting and impact analysis for population and housing were developed through a review of:

- *Stanislaus County General Plan* (2016a) and Housing Element (2016b);
- *City of Modesto Urban Area General Plan* (2019) and Housing Element (2015);
- *Ceres General Plan 2035* (2018)
- California Department of Finance's (DOF's) City and Unincorporated Areas Estimates documents (DOF 2016a, 2016b, and 2016c); and
- *U.S. Census Bureau American Fact Finder* (U.S. Census Bureau 2010a—c, 2015a—f, and 2016).

15.2 REGULATORY SETTING

There are no federal or state laws, regulations, and/or policies that are applicable to the Proposed Program. The following section describes local population and housing laws, regulations and/or policies that would be applicable to the Proposed Program.

15.2.1 LOCAL LAWS, REGULATIONS, AND POLICIES

Stanislaus County General Plan

The Stanislaus County General Plan (Stanislaus County 2016a) contains the following goals and policies related to population and housing.

Land Use Element

Goal One. Provide for diverse land use needs by designating patterns which are responsive to the physical characteristics of the land as well as to environmental, economic, and social concerns of the residents of Stanislaus County.

Policy Five. Residential densities, as defined in the General Plan, shall be the maximum based upon environmental constraints, the availability of public services, and acceptable service levels. The densities reflected may not always be achievable and shall not be approved unless there is proper site planning and provision of suitable open space and recreational areas consistent with the supportive goals and policies of the General Plan.

Implementation Measure

1. Residential development shall not be approved at the maximum density if: (1) it threatens riparian habitat; (2) growth-limiting factors such as high water table, poor soil percolation, geological fault areas, and airport hazard areas exist; (3) development is in a designated floodway or does not meet the requirements of Chapter 16.50 of the County Code; (4) it conflicts with the Airport Land Use Compatibility Plan; (5) there is lack of, or inadequate, sanitary sewer or public water service; or (6) environmental impacts, including traffic, cannot be mitigated.

Policy Six. Preserve and encourage upgrading of existing unincorporated urban communities.

Housing Element

Goal Four. Designate sufficient sites for all types of residential development required to meet projected housing needs.

Policies

- The County shall identify unincorporated areas with adequate infrastructure and limited environmental concerns that are most suited for housing, especially lower-cost and higher-density housing.

- The County shall identify specific methods and provide assistance to improve infrastructure in residential areas.

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (2019) implements a community growth strategy that emphasizes policies regulating the quality, quantity, and direction of urban growth. These policies have resulted in a compact urban form, with few infill parcels remaining, neighborhoods offering a diversity of housing types and higher-than-average densities, and a geographic balance with new growth occurring on all sides of the community. The Urban Area General Plan recognizes that, while significant public facility deficiencies may result from these policies in the short term, their resolution is still deemed manageable over the long term.

Policy II.A.3. Development Follows Annexation

Annex residential growth and development within the Modesto Urban Area General Plan boundary before development occurs.

Policy II.A.4. Direct Growth Inward

Direct urban growth to areas currently served with City services.

Goal II.B. Development Priorities and Financing

Establish priority areas for new development and identify reasonable and certain financing for capital projects consistent with applicable City policies and standard operating procedures.

Policy II.B.1. Priority Development Areas

Support new development with infrastructure developed in accordance with the established Capital Improvement Program priority areas of Downtown, Kiernan Business Park, the Tivoli Specific Plan area and the South Modesto Industrial Park (north of Whitmore Ave. between Crows Landing Rd. and Morgan Rd.).

Policy II.B.3 Funding Capital Improvements

Increase and improve capital projects over time through maintaining or enhancing existing funding sources, maximizing joint-use efficiencies, and strategically prioritizing capital investments.

Policy II.C.3 Unincorporated "Island" Annexations

Annex unincorporated County islands, generally located in the south and west areas of Modesto, into the City limits only after a Public Improvement Agreement (PIA) is established between the City and County. Certain conditions contained within the PIA, such as those regarding funding and construction of infrastructure systems, must be satisfied prior to annexation.

The PIA establishes the infrastructure systems that must be constructed, which typically include water, wastewater, storm drainage, fire hydrants, streets and streetlights. Other infrastructure components may be necessary on an area-by-area basis. The PIA also documents the applicable tax-share agreement between the City and County, and certain other project-specific details.

Housing Element 2015-2023

The *City of Modesto Housing Element 2015-2023* (2017a) is an element of the General Plan that aims to develop a coordinated and comprehensive housing strategy that promotes the production of safe, decent, and affordable housing within the community. The Housing Element identifies strategies and programs that focus on matching housing supply with need, maximizing housing choice throughout the community, assisting in the provision of affordable housing, removing governmental and other constraints to housing investment, and promoting fair and equal housing opportunities. Chapter 2, *Program Description,* of this document provides an analysis of the City's demographics, housing characteristics, and existing and future housing needs.

City of Ceres General Plan

While no proposed improvements would be located in Ceres, due to the City of Ceres' proximity to Modesto and because the Proposed Program could have indirect effects on population and housing in Ceres through providing wastewater service to north Ceres, the following policies from the *Ceres General Plan 2035* (2018) may be relevant to the Proposed Program:

Policy 2.A.2. Prioritize Growth in SOI. Prioritize growth within the Ceres Sphere of Influence. Permit development outside of the Sphere of Influence only when there is a demonstrated need for additional land and there is less than a five-year supply of appropriately designated land within the existing Sphere of Influence, in accordance with Stanislaus Local Agency Formation Commission (LAFCO).

Policy 2.A.3. Compact Footprint. Promote compact development patterns, mixed land uses, and higher development intensities and limit "leap forg" development to conserve agricultural land, reduce vehicle trips, and improe air quality.

15.3 ENVIRONMENTAL SETTING

15.3.1 POPULATION

In 2010, Stanislaus County had a population of approximately 514,453 (Stanislaus County 2016a as cited in Stanislaus County 2016b). As of January 1, 2015, this number rose to 532,297, of which the unincorporated areas accounted for 113,772 persons. Population growth by 2025 is projected to reach over 637,000 according to the Stanislaus Council of Governments (StanCOG), which represents an increase of approximately 20 percent from the County's 2015 population estimate, with the majority of growth projected to occur in incorporated cities (City of Modesto 2017a).

Modesto is the largest city in Stanislaus County. Since 1990, the City has grown by an estimated 21.6 percent from 164,730 in 1990 to 210,341 as of 2015 (California Department of Finance [DOF] 2015 as cited in City of Modesto 2017a; StanCOG 2016). Between 2000 and 2010, the population growth rate declined as the City's population grew at an average annual rate of 0.6 percent from about 188,900 to 201,165. More recent projections estimate that the City's population was at 211,903 in 2016, which represents a 0.9 percent increase from 2015 (DOF 2016a).

The City of Ceres had an estimated population of 47,754 as of January 2017 (DOF 2017). The City's population is projected to increase from the current population by an estimated 23,021 persons by 2050 (StanCOG 2016).

The community of Empire is located adjacent to Modesto's eastern boundary and is an unincorporated community of Stanislaus County (Stanislaus County 2016b). The community had an estimated population of 4,394 in 2015 and is projected to grow by 1,796 persons by 2050 (StanCOG 2016).

Table 15-1 provides a breakdown of past population estimates and future projections from 2015 through 2050 for Modesto, Ceres, Empire, and unincorporated Stanislaus County.

Table 15-1. Population Growth Trends for the Cities of Modesto and Ceres, Empire, and Unincorporated Stanislaus County

Jurisdiction	2015	2020	2025	2030	2035	2040	2045	2050	Change (2015-2050)**	
									Number	Percent Increase
Modesto	210,341	220,865	232,622	244,662	256,545	268,176	279,460	290,555	+80,214	27.6
Ceres	48,029	51,049	54,424	57,879	61,290	64,628	67,866	71,050	+23,021	32.4
Empire	4,394	4,630	4,893	5,163	5,429	5,689	5,942	6,190	+1,796	29.0
Unincorporated Stanislaus County*	113,772	117,807	121,843	125,879	133,753	141,627	N/A	N/A	+27,855	19.7
Totals	376,536	394,351	413,782	433,583	457,017	480,120	N/A	N/A	132,886	26.5

Notes: N/A = Estimates are not available for these years for unincorporated Stanislaus County area.
** Change calculations for unincorporated Stanislaus County are for 2015-2040.

Sources: *StanCOG 2016; *StanCOG 2040 Regional Growth Forecast as cited in Stanislaus County 2016c*

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15.3.2 HOUSING

Housing availability within the unincorporated portions of Stanislaus County is limited for the number of employed persons that work in the county. Based on 2010 estimates, the housing to jobs ratio in the County was 0.54, with 68,086 employed jobs to 36,684 housing units available. The housing to jobs ratio is projected to decrease steadily through 2030, and is projected to decline to 0.47 by then (StanCOG 2040 Demographic Forecast, as cited in Stanislaus County 2016b). However, the number of new homes permitted is increasing steadily, with 420 new homes being permitted in 2014 compared to 244 in 2010.

The City of Modesto makes up the largest portion of housing in the County with approximately 75,816 units as of 2017 (DOF 2017). As of 2016, the approximate housing vacancy rate was approximately 6.7 percent with about 70,613 units occupied of a total 75,715 units in the City. The average household size was 2.96 persons.

For the City of Ceres, the total number of housing units compared to Modesto were significantly less, totaling 13,807 in 2017. This is a 134-unit increase from 2010 estimates, which determined the number of households to be 13,673 (DOF 2017). The vast majority of housing stock is single-family units, which comprised approximately 76 percent of the City of Ceres' stock in 2014 (City of Ceres 2016).

Empire had an estimated housing unit count of 1,333 in 2015. 40 of these units were considered vacant, accounting for a vacancy rate of 3.0 percent (U.S. Census 2015g). This number is down by 5.4 percent from the vacancy rate in for the Community in 2010 (8.4 percent). However, the number of total housing units decreased by 14 units since then (U.S. Census 2010c). **Table 15-2** shows housing unit growth trends for the cities of Modesto and Ceres and the Community of Empire from 2015 to 2050.

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Table 15-2. Housing Unit Growth in Modesto, Ceres, and Empire (2015-2050)

City	2015	2020	2025	2030	2035	2040	2045	2050	Change (2010-2050)		
									Number	Percent Increase	Average Percent Increase
Modesto	72,897	77,383	81,861	86,253	90,184	94,105	97,742	101,314	+28,417	28.0	+0.8
Ceres	13,577	14,624	15,670	16,695	17,613	18,528	19,377	20,211	+6,634	32.8	+0.9
Empire	1,287	1,371	1,456	1,539	1,614	1,688	1,756	1,824	+537	29.4	+0.8

Source: *StanCOG 2016; *Stanislaus County 2016b*

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Table 15-3 lists the County's regional housing needs allocation for the cities of Modesto and Ceres, as well as for the entire unincorporated portion of Stanislaus County. Each value represents the number of dwelling units needed through 2023, while the classifications are organized by the following income categories: extremely/very low, low, moderate, and above moderate. Based on the Housing Element, between June 2014 and June 2015, 36 units were built in Modesto; therefore, as of 2015, the remaining housing need is roughly 6,325 units.

Table 15-3. Regional Housing Needs Allocation of Stanislaus County (2014-2023)

	Extremely/ Very Low	Low	Moderate	Above Moderate	Total	RHNA Share	Existing Housing Units
Modesto	773/773	991	1,100	2,724	6,361	29.8	75,711
Ceres	311/311	399	446	1.104	2,571	12.1	13,725
Unincorporated Stanislaus County	269/269	345	391	967	2,241	10.5	36,117
County Total	2,615/2,610	3,350	3,670	9,085	21,330	100	180,165

Note: Regional allocation is based on existing proportions of housing in each jurisdiction and continuing those proportional relationships into the future.

Source: *StanCOG 2014*

15.3.3 WORKFORCE

Employment numbers in Stanislaus County were projected to reach 171,375 jobs by 2015 (Caltrans 2015). Similarly, projected job growth is projected to rise to 236,749 jobs by 2040. As of 2015, the unemployment rate was 10.4 percent, ranking 45th out of the state's 58 counties. This number is projected to decrease to 7.8 percent by 2020. **Table 15-4** represents a more in-depth projection of employment numbers for the County between 2015 and 2040.

Employment numbers for the City of Modesto totaled approximately 56,000 jobs in 2015. This number is projected to increase to approximately 59,250 by 2020 and 62,500 employees by 2025. From 2010 to 2040, the number of jobs within the City is projected to increase by 0.91 percent annually (StanCOG, 2014 RTP Appendix J, as cited in City of Modesto 2017a). In contrast, unemployment rates in 2015 dropped to 7.4 percent, compared to a 10.5 percent unemployment rate in 2014 (City of Modesto 2017a). The majority of jobs in the City are in the service industry (39.7 percent of the occupational distribution). The second highest ranking of jobs are in the sales and office industry, comprising 22.3 percent of the City's jobs. The construction and extraction industry makes up 6.3 percent of the jobs in the City, while production and transportation account for 15.5 percent (2013 U.S. Census as cited in City of Modesto 2017a).

Employment numbers for the City of Ceres were at a total of 18,043 jobs in 2012. This number is an increase from 2010 numbers, which were 13, 098. The majority of jobs are in the trade, wholesale, and retail sector, which accounted for 19.7 percent of the share of jobs in 2012 (City of Ceres 2016).

Table 15-4. Economic Forecast for Stanislaus County (2015-2040)

	2015	2020	2025	2030	2035	2040
Population[1] (people)	534,605	559,097	585,812	612,925	637,626	658,010
Employment[2] Growth (jobs)	171,375	184,250	197,125	209,999	222,874	235,749
Unemployment[3] Rate (percent)	10.4	7.8	7.8	7.6	7.5	7.1

Sources: *[1,3] Caltrans 2015; [2] City of Modesto 2017a*

15.4 IMPACT ANALYSIS

15.4.1 METHODOLOGY

The methods for this analysis included a review of relevant documents, statistics, and policies about the City of Modesto and Stanislaus County's housing and employment data. The evaluation is based on the Proposed Program's effects on housing and population in Modesto and Stanislaus County.

15.4.2 CRITERIA FOR DETERMINING SIGNIFICANCE

Based on the State CEQA Guidelines Appendix G Environmental Checklist, the Proposed Program would result in a significant impact with regard to population and housing if it would:

- Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

15.4.3 ENVIRONMENTAL IMPACTS

Impact PH-1: Induce Substantial Unplanned Population Growth, Both Directly and Indirectly, during Construction (Less than Significant)

Neither the River Trunk Realignment project nor the Proposed Program-level improvements would directly or indirectly induce substantial population growth during construction. Construction of each improvement would be temporary and of relatively short duration. For example, all three phases of the River Trunk Realignment project are anticipated to start in spring 2018 and would be fully completed over a 30-month period. The overall implementation of the WWMP would be phased over a 25-year period where construction

activity associated with each project would be temporary and last one to five years. As described in the setting section above, the construction/extraction industry in the City accounts for roughly 6.3 percent of the City's work force (2013 U.S. Census, as cited in City of Modesto 2017a). Additional construction staff can also be obtained from neighboring cities throughout the County, the Central Valley, or the San Francisco Bay Area if needed. As such, there is sufficient availability of local existing construction companies and staff to support construction of proposed improvements. Construction crews would be capable of commuting to and from the project sites throughout the time that project construction activities would occur. Therefore, an increased demand for housing to accommodate these workers would not occur due to construction. As a result, this impact would be **less than significant.**

Impact PH-2: Displace Substantial Numbers of People or Existing Housing, Necessitating the Construction of Replacement Housing Elsewhere (No Impact)

The Proposed Program involves construction of various CIPs in the City of Modesto and in portions of Stanislaus County. Pipeline improvements in residential areas, including sewer line replacement and rehabilitation and construction of the gravity pipelines for the River Trunk Realignment Project, would be located within existing road rights-of-way. Other portions of the River Trunk Realignment Project would occur on vacant lands. As such, these improvements would not displace existing homes or people. Any roadways that require trenching would be returned to pre-construction conditions after construction as well. As a result, residents who use these roads to access their homes would not be displaced from their homes during construction; traffic-related impacts of construction are analyzed in Chapter 16, *Transportation and Traffic*.

Upgrades to existing lift stations such as the Benson Lift Station and Rose-Celeste Lift Station would be conducted at existing locations. Therefore, these improvements would have no impact on existing housing. Construction of new lift stations (see Figure 2-1 and Table 2-3) would occur in areas that are located away from any housing or neighborhoods, or would occur along the edges of established neighborhoods on properties that are vacant and/or owned by the City. Therefore, these new lift stations would not cause displacement of housing.

In addition, all improvements planned at the Sutter and Jennings Plants would occur on land currently used for wastewater treatment purposes. The new outfall pipeline, new outfall pipeline crossings at the Tuolumne River, and sliplining of the Cannery Segregation Line would not affect existing homes. The majority of the new outfall pipeline would be installed within roadway rights-of-way in unincorporated Stanislaus County and would not displace any people or housing.

As a result, the Proposed Program would have **no impact** related to housing displacement and would not require construction of replacement housing.

Impact PH-3: Long-term Inducement of Unplanned Substantial Population Growth, Both Directly and Indirectly (Less than Significant with Mitigation)

As noted above, the Proposed Program includes upgrading the City's collection and treatment systems to provide improved wastewater service to the City of Modesto, north Ceres, the community of Empire, and other areas serviced by the City. The Program would not directly induce growth as it does not entail construction of new housing. However, by upgrading the

City's collection and wastewater treatment systems to provide more wastewater service, the Proposed Program would remove an obstacle to planned development that would support population growth. Although this growth would be consistent with projected growth evaluated in adopted general plans including the recently amended *City of Modesto Urban Area General Plan* (2019), such growth could not occur without the proposed wastewater collection system and treatment improvements addressed in this EIR.

As summarized in Section 15.3, "Environmental Setting," above, between 2015 and 2050, the City's population is projected to grow from 210,341 to 290,555 at an annual average growth rate of 0.8 percent (StanCOG 2016). Based on information from DOF and for the purposes of developing the Wastewater Master Plan, population estimates for 2015 through 2035 (the planning period for the Proposed Program) were developed for the City's sewer service area, which includes a portion of north Ceres, the unincorporated community of Empire, and other unincorporated areas of Stanislaus County. These projections are presented in **Table 15-5** and assume an annual average growth rate of 1.3 percent per year.

Table 15-5. Projected Population for City's Sewer Service Area

Year	Estimated Sewer Service Population
2015	209,200
2020	223,100
2025	238,000
2030	253,900
2035	270,900
2040	288,972
2045	308,250
2050	328,814
2055	350,750
2057	359,929

Note: Extrapolation to buildout year of 2057 is based on an assumed 1.3 percent population increase between 2035 to 2057 (Eve, pers. comm. 2017). As noted in Chapter 2, the Wastewater Treatment Master Plan used a planning horizon year through 2035, while the Collection System Master Plan used a buildout scenario through the year 2057.

Source: *DOF estimates, as cited in Carollo Engineers 2016.*

Based on the estimates provided above, the total increase in population within the sewer service area is estimated to increase by 61,700 people between 2015 and 2035. This accounts for both growth within the City as well as Ceres and the community of Empire. According to the City's 2015 Urban Growth Policy Review Update and the City's Collection System Master Plan (Carollo Engineers 2016), growth within Modesto is assumed to occur on vacant industrial, commercial, and residential areas within the City's SOI and planning area, including the Beard Industrial District, Kiernan/Carver North CPD, Beckwith-Dakota CPD, North McHenry Business Park, among other planning districts.

New growth facilitated by the Proposed Program would result in associated physical environmental impacts; this could include aesthetic effects, conversion of farmland, air pollutant and greenhouse gas emissions, conversion of habitat, impacts on cultural or tribal cultural resources, increased point source or nonpoint source water pollution, use and possible releases of hazardous materials, noise, traffic, additional demands for public services and utilities such as police protection, fire protection, schools, parks, wastewater treatment, solid waste disposal, energy, etc.

Growth-inducing and secondary impacts are addressed by the policies of general plans of Stanislaus County, Ceres, and Modesto. These policies ensure that development within the planned growth areas occur as demand arises and services are available, and that utilities are sized appropriately to serve such development. The general plans mitigate for impacts through advanced planning and the implementation of growth management strategies, the provision of adequate public services and utilities such as wastewater collection and treatment, and the protection of open space and habitat areas.

In conclusion, proposed improvements to the City's wastewater collection and treatment system would remove an obstacle to urban development and population growth within the study area. This development would occur in accordance with general plans and thus would not result in unplanned or disorderly growth. Nevertheless, the Program would remain growth-inducing and the impacts of growth inducement, and the secondary environmental effects of induced growth, are considered significant.

The policies contained in general plans, as well as the mitigation measures contained in this DEIR, would reduce the secondary effects of growth to a level of insignificance. Individual development improvements would also be required to comply with CEQA, which may result in additional mitigation for growth and its effects. For these reasons, this impact is considered to be **less than significant with mitigation.**

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Chapter 16
TRANSPORTATION AND TRAFFIC

16.1 Overview

This chapter evaluates impacts of the Proposed Program on transportation and traffic. Impacts are evaluated in light of existing laws and regulations governing transportation and traffic, and in consideration of the goals and policies in applicable jurisdiction's general plans; the existing roadway system and transportation infrastructure is described; and impacts of the Proposed Program are analyzed.

The following sources of information were used in preparing this chapter:

- Transportation Research Board's *Highway Capacity Manual* (HCM) Transportation Research Board 2000, 2010);
- *City of Modesto Urban Area General Plan* (City of Modesto 2019);
- *Stanislaus County General Plan* (Stanislaus County 2016);
- *City of Ceres General Plan (2018)*; and
- *Congestion Management Process for the Stanislaus County Region* (StanCOG 2010).

16.1.1 Transportation and Traffic Terminology

The following are definitions of key transportation and traffic terms used in this section, based on the HCM (Transportation Research Board 2000).

Level of Service. The level of service (LOS) is a qualitative measure describing operational conditions within a traffic stream, based on service measures, such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience.

Peak-hour LOS for roadway segments in Modesto is evaluated by comparing the traffic volume with its vehicle capacity (the volume-to-capacity ratio) and correlating the result to a letter grade to represent the levels of congestion, as follows (City of Modesto 2018)

1. LOS A: free flow, low traffic volumes, and drivers can maintain their desired speed with little to no delay. Volume-to-capacity ratio: 0.6 or less.
2. LOS B: stable flow, operating speeds beginning to be restricted by traffic conditions. Volume-to-capacity ratio: 0.61 to 0.7.
3. LOS C: stable flow, but speeds and maneuverability are more closely controlled by higher volumes. Volume-to-capacity ratio: 0.71 to 0.8.

4. LOS D: approaching unstable flow; tolerable operating speeds which are, however, considerably affected by operating conditions. Volume-to-capacity ratio: 0.81 to 0.9.

5. LOS E: unstable flow with yet lower operating speeds and stoppages of momentary duration. Volume-to-capacity ratio: 0.91 to 1.0.

6. LOS F: stopped flow, which may occur for short or long periods. These conditions usually result when vehicles are blocked by a restriction downstream. Volume-to-capacity ratio: greater than 1.0.

Daily levels of service are calculated based on the per lane volume threshold for each level of service capacity as presented in **Table 16-1**.

Table 16-1. Per-Lane Roadway Segment Capacities

Type of Roadway Segment	Hourly Capacity[a,c]	Daily Volume Threshold[b,c]				
		LOS A	LOS B	LOS C	LOS D	LOS E
Freeway Mainline	2,000	8,000	12,750	18,750	23,130	25,000
Expressway – Class A	1,500	5,630	9,380	13,120	15,750	18,750
Expressway – Class B	1,250	4,690	7,820	10,940	13,130	15,630
Expressway – Class C	1,000	3,750	6,250	8,750	10,500	12,500
Principal Arterial (6 lanes)	850	3,190	5,320	7,440	8,930	10,630
Minor Arterial (4 lane facility with center left-turn lane)	925	810	2,190	3,930	6,820	11,560
Minor Arterial (4 lanes)	750	660	1,780	3,190	5,530	9,380
Minor Arterial (2 lane facility with center left-turn lane)	925	810	2,190	3,930	6,820	11,560
Major Collector (4 lane facility)	700	2,450	4,110	5,780	6,910	8,750
Downtown Collector	700	2,450	4,110	5,780	6,910	8,750
Minor Collector (2 lane facility with center left-turn lane)	925	810	2,190	3,930	6,820	11,560
Minor Collector (2 lanes)	650	570	1,540	2,760	4,800	8,130
Local Roadway	500	440	1,190	2,130	3,690	6,250
Rural Road	900	790	2,140	3,830	6,640	11,250

[a] Vehicles per through lane per hour.
[b] Vehicles per lane per day. Peak hour capacity 8 percent of daily capacity based on a review of peak hour to daily counts on over 200 roadway segments in the City.
[c] Hourly and daily calculated based on the method presented in the Highway Capacity Manual (HCM) (Transportation Research Board 2010). LOS is assessed based on the volume in relationship to the capacity threshold. For example, a freeway lane carrying 18,700 vehicles on a daily basis would be classified as LOS C as it is between the LOS B and LOS C threshold; if the volume was 19,000 vehicles a day, it would be classified as LOS D.

Note: These are generalized capacities that can be adjusted based on local roadway conditions, including the percentage of turning traffic, intersection spacing, driveway spacing, levels of pedestrian activity, provision of on-street parking, adjacent land use types and other factors.

Source: City of Modesto 2018

16.2 Regulatory Setting

No federal laws, regulations, or policies relate to transportation and traffic and the Proposed Program.

16.2.1 State Laws, Regulations, and Policies

Caltrans manages the state highway system and ramp interchange intersections. The state agency is also responsible for highway, bridge, and rail transportation planning, construction, and maintenance. Caltrans also issues encroachment permits for activities (e.g., installation of a pipeline or any structure) within the state highway rights of way.

16.2.2 Local Laws, Regulations, and Policies

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (City of Modesto 2019) guides land use and development in the City's incorporated area. The following policies are potentially relevant to the Proposed Program's traffic analysis.

> **Policy V.C.1. Transportation Study Thresholds.** Figure II-1 delineates the functional geographic areas (Downtown, Baseline Developed Area, Planned Urbanizing Area) of the city described below. For CEQA purposes, the following are Modesto's thresholds for performing transportation studies.
>
> Downtown Area: This area is exempt from automobile Level of Service (LOS) standards and no traffic impact analysis will be required for new development.
>
> Baseline Developed Area: If a proposal is consistent with the Urban Area General Plan, no traffic impact analysis will be required. If a general plan amendment is needed, a traffic impact analysis may be required if the proposal would result in at least 100 peak hour trips above and beyond what was assumed in the analysis for the Urban Area General Plan Master Environmental Impact Report, if determined to be necessary. LOS "D" is the significance threshold.
>
> Planned Urbanizing Area: In new specific plan areas that are outside city limits, a traffic study may be required if project-related traffic, as measured in Average Daily Trips, is expected to be at least ten percent (10%) greater than anticipated to result from the General Plan land use designations. The purpose of such a study would be to determine the amount of feasible automobile-oriented and non-auto-oriented mitigation associated with the project. Once a specific plan has been approved and the area annexed to the city, traffic study policies for the Baseline Developed Area will apply. LOS "D" is the significance threshold.
>
> **Policy V.C.6. Prioritizing Transportation Investments.** Strive to achieve quality of service, as depicted in Table V-2 (FDOT Figure 1-2, 2009) for each non-automobile travel mode appropriate to the location in the City. Downtown Area: Pedestrian and bus quality of service should be A/B. Bicycle quality of service should be C/D or better. (Air quality, public health, energy conservation, environmental justice) Baseline Developed Area: Pedestrian quality of service should be C/D on arterial streets and A/B on local and collector streets. Bicycle quality of service should be A/B

on local and collector streets, C/D on arterial streets, and E/F on expressways. Bus quality of service should range from C/D to E/F, depending upon boardings. Consider improving accessibility along impacted routes by implementing Transportation Demand Management strategies. (Air quality, public health, energy conservation, environmental justice)

City of Ceres General Plan

The *Ceres General Plan 2035* (2018) includes the following transportation policy that is relevant to the Proposed Program:

> **Policy 3.A.2. Level of Service**. Develop and manage the roadway system to maintain Level-of-Service ("LOS") C or better on secondary collectors and local streets and "LOS" D or better on primary collectors, arterials, expressways, and freeways. One service level deviation may be permitted at locations where land development or transportation improvement projects support other goals from the General Plan including transit, active transportation, and economic development. Exceptions may also be allowed in areas where the City finds that the improvements or other measures required to achieve the "LOS" standards are unacceptable because of right-of-way limitations, physical impacts on surrounding properties, adverse effects on other travel modes, and/or the visual aesthetics of the required improvement and its impact on community identity and character.

Stanislaus County General Plan

The *Stanislaus County General Plan* (Stanislaus County 2016) guides land use and development in the unincorporated area of Stanislaus County. The General Plan contains the following policy:

Circulation Element

> **Policy Five.** Transportation requirements shall be considered during planning, design and construction of commercial and industrial development to address safety, mobility, and accessibility needs.

Additionally, the County General Plan states that as a matter of policy, the County strives to maintain LOS D or better for motorized vehicles on all roadway segments and a LOS of C or better for motorized vehicles at all roadway intersections.

Congestion Management Process for the Stanislaus County Region

The 2009 *Congestion Management Process for the Stanislaus County Region* (CMP) provides a blueprint for transportation planning in Stanislaus County. The performance measures of the CMP support mobility, air quality, land use, and economic objectives, and are used to determine whether projects are to be included in the CMP's CIP for consideration for inclusion in the Regional Transportation Plan (RTP) (StanCOG 2010). Objectives and policies of potential relevance to the Proposed Program include the following:

> **Objective I.** Improve Mobility for People and Freight

Policies:

- Street and road improvements should be designed to optimize the use of existing facilities as a potential alternative to new construction.

- All feasible Transportation System Management, Transportation Demand Management strategies and required Transportation Control Measures shall be implemented to reduce congestion and improve air quality.

Objective III. Preserve and Enhance Environmental Quality

Policies:

- The environmental impacts, both short-term and long-term, of transportation decisions shall be appropriately analyzed and considered, and adverse impacts mitigated wherever possible.

Stanislaus Council of Governments Regional Transportation Plan/Sustainable Communities Strategy

The Stanislaus Council of Governments' (StanCOG) *2014 Regional Transportation Plan/Sustainable Communities Strategies (RTP/SCS)* is a regional transportation planning document that seeks to bridge the gap between land use and transportation planning, recognizing the significant connection between these two areas and its impact on the region's quality of life (StanCOG 2014). The plan also addresses recent requirements, such as Senate Bill 375, which calls for reductions in greenhouse gas emissions from the transportation sector, as well as new federal mandates under the Moving Ahead for Progress in the 21st Century Act (MAP-21). The RTP/SCS identifies the following goals:

Goal 1. Mobility & Accessibility. Improve the ability of people and goods to move between desired locations; and provide a variety of transportation choices.

Goal 2. **Social Equity.** Promote and provide equitable opportunities to access transportation services for all populations and ensure all populations share in the benefits of transportation improvements and provide a range of transportation and housing choices.

Goal 3. **Economic and Community Vitality.** Foster job creation and business attraction, retention, and expansion by improving the quality of life through new and revitalized communities.

Goal 4. **Sustainable Development Pattern.** Provide a mix of land uses and compact development patterns; and direct development toward existing infrastructure, which will preserve agricultural land, open space, and mature resources.

Goal 5. **Environmental Quality.** Consider the environmental impacts when making transportation investments and minimize direct and indirect impacts on clean air and the environment.

Goal 6. **Health & Safety.** Operate and maintain the transportation system to ensure public safety and security; and improve the health of residents by improving air quality and providing more transportation options.

Goal 7. **System Preservation.** Maintain the transportation system in a state of good repair, and protect the region's transportation investments by maximizing the use of existing facilities.

16.3 Environmental Setting

Proposed components would occur within or along numerous roadways within Modesto and outlying areas served by the City of Modesto. Other components would be constructed at the Sutter Plant and the Jennings Plant and along nearby roads. The proposed third outfall pipeline would be constructed within the following roads located south of the Tuolumne River: Carpenter Road, Keyes Road, and Jennings Road.

Modesto is a developed urban area consisting of residential, commercial, and industrial uses. Outlying areas are dominated by agricultural land uses. Regional transportation access is provided by SR 99, which runs roughly northwest-southeast through the study area. Other major transportation routes include SR 132, SR 108, and SR 219. SR 132 runs east-west along Maze Boulevard, D Street and Yosemite Avenue, and connects with SR 99 and Interstate 580 to the west. SR 108 runs in a north-south fashion along McHenry Avenue, providing direct access to adjacent land uses. SR 219 runs east-west along Kiernan Avenue to the north of Modesto and connects with SR 108 to SR 99. **Figure 16-1** shows roads and highways in the study area.

Several roadway segments in Modesto operate at congested LOS, as shown in **Table 16-2**.

Table 16-2. Roadway Segments with Existing (2014) Daily Level of Service of E or F

Roadway Segment	Cross Street	Classification	Lanes	Volume	Daily LOS
Claribel	McHenry to Coffee	Rural	2	16,300	E
Claribel	Coffee to Oakdale	Rural	2	13,800	E
Oakdale	Claribel to Claratina	Rural	2	17,900	E
Oakdale	Claratina to Sylvan	Arterial	4	23,200	E
Standiford	SR 99 to Prescott	Arterial	4	39,200	F
Standiford	Prescott to Carver	Arterial	4	34,700	E
Sylvan	McHenry to Coffee	Arterial	4	33,400	E
Claus	Sylvan to Floyd	Rural	2	18,900	E
Floyd	Coffee to Rose	Collector	2	13,300	E
Briggsmore	Prescott to SR 99	Arterial	6	66,700	F
Carpenter	SR 99 to Woodland	Arterial	4	37,200	E
El Vista	Scenic to Encina	Arterial	4	32,300	E
La Loma	Scenic to Yosemite	Collector	2	14,300	E
Paradise	Beverly to Chicago	Collector	3[1]	15,500	E

Roadway Segment	Cross Street	Classification	Lanes	Volume	Daily LOS
Crows Landing	7th Street to SR 99	Arterial	2	13,700	E
Crows Landing	SR 99 to Hatch	Arterial	4	30,500	E
Carpenter	Paradise to Hatch	Collector	3[1]	19,200	E
Hatch	Crows Landing to Jim Way	Collector	3[1]	17,600	E

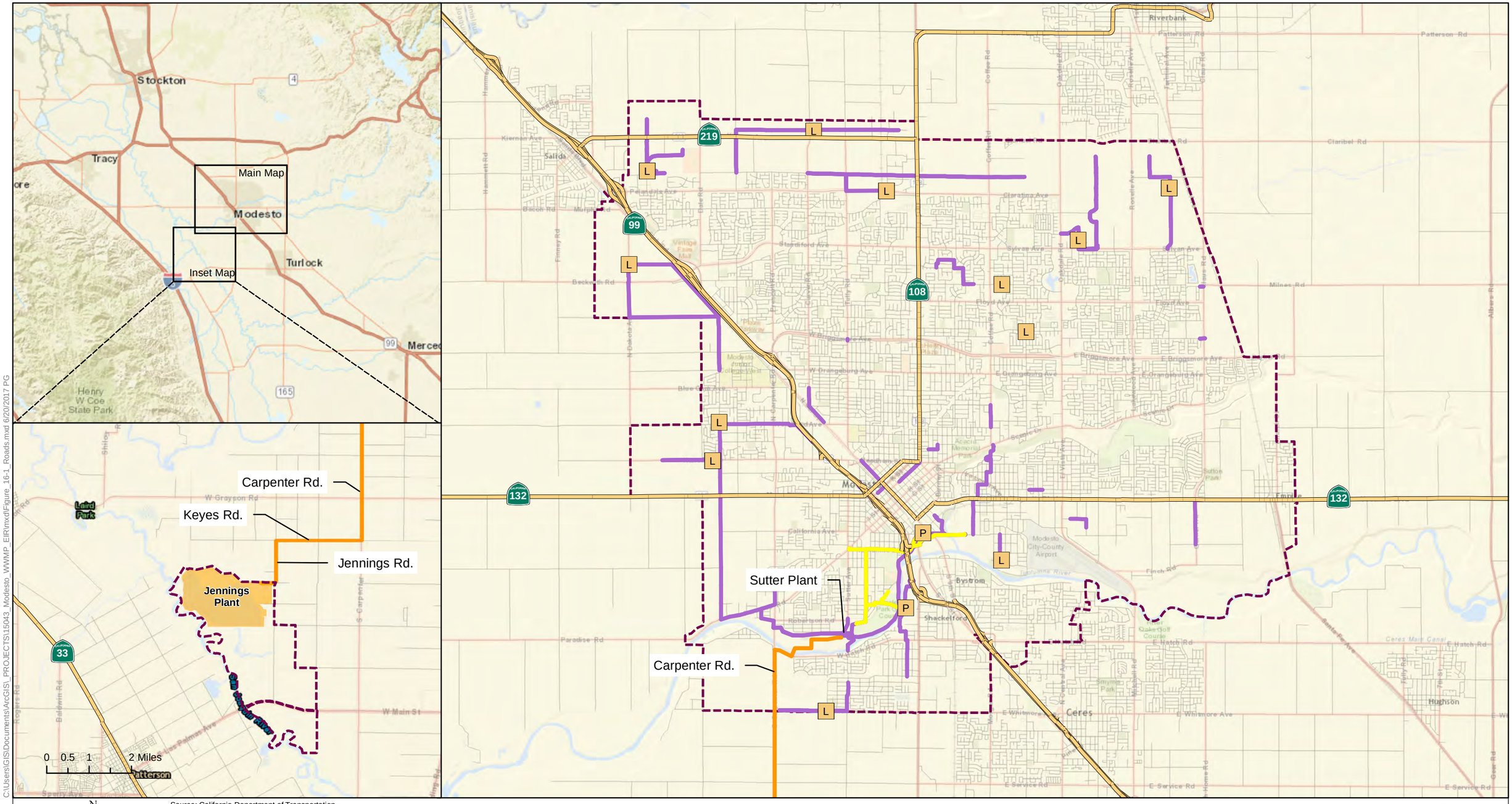
Notes: 1. Roadway has one travel lane in each direction, plus a center two-way left-turn lane. LOS is based on thresholds for Minor Collector (2 lane facility with center left-turn lane) with capacity threshold based on two lanes.

Source: City of Modesto 2018

Existing transit service in the study area includes various bus and rail service providers in Modesto, Ceres, Empire and surrounding areas in Stanislaus County. Modesto Area Express (MAX) provides transit service to the Modesto Urban Area, Empire, and nearby areas of Stanislaus County (excluding Ceres) (MAX 2017). Ceres Area Transit serves the City of Ceres. Stanislaus Regional Transit (StaRT) is a regional public transit service that takes passengers from Modesto to surrounding cities and communities including Oakdale, Hughson, Turlock, and Patterson. The Greyhound provides intercity and long distance public transit service; a Greyhound bus stop is located in downtown Modesto. Train service includes Amtrak and Altamont Commuter Express (ACE) connections.

Numerous bicycle paths and routes exist throughout the study area.

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Source: California Department of Transportation

Figure 16-1
Major Roads in the Proposed Program Vicinity

Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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16.4 Impact Analysis

16.4.1 Methodology

Because specific construction details related to most individual CIPs are not yet available, construction-related impacts to transportation and traffic were evaluated primarily qualitatively based on consideration of ways in which construction of the Proposed Program components could affect existing roadway operations and LOS. The impacts of traffic generated during construction of the River Trunk Realignment Project were evaluated quantitatively and qualitatively. The operation of the Proposed Program would have limited potential to generate trips over the long-term, and a quantitative analysis was not conducted for Program operation. Secondary impacts related to traffic and transportation from new growth and development accommodated by the Proposed Program are discussed in Chapter 15, *Population and Housing*.

16.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on transportation and traffic if it would:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

- Result in inadequate emergency access;

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such features.

The third criterion above is eliminated from detailed consideration because the Proposed Program would have no potential to affect air traffic patterns. Program components would be limited to capital upgrades to the City's wastewater collection and treatment system. Therefore, the Program would not increase air traffic levels or change the location or routes of air travel.

16.4.3 Environmental Impacts

Impact TR-1: Conflict with Applicable Circulation Plans, Ordinances, or Policies Establishing Measures of Effectiveness for the Performance of the Circulation System (Less than Significant)

All Program-level Components

The Proposed Program would not include any housing or commercial uses that would directly increase population or add vehicle trips. The Proposed Program would be limited to upgrades to existing wastewater infrastructure, to address existing needs and accommodate future growth in the City and outlying areas served by the City's wastewater collection and treatment system. Please refer to Impact PH-3 in Chapter 15, *Population and Housing,* for discussion regarding the Program's secondary traffic effects due to accommodating growth.

Trips generated by the Proposed Program during operation would be limited to routine maintenance and repair visits to facilities by City staff. As some personnel (approximately 60) would be transferred from the Sutter Plant to the Jennings Plant, there may be a small increase in trips to and from the Jennings Plant, as well as a small decrease in trips to and from the Sutter Plant. These numbers of employees and commute trips would not be sufficient to meaningfully affect roadway performance or conflict with any plans, ordinances, or policies for the circulation system, such as the City of Modesto, City of Ceres, or Stanislaus County General Plans.

During construction of individual components, the Proposed Program would temporarily increase traffic and congestion in the immediate area of the component. Construction of facilities would involve use of heavy equipment and transport of materials/hauling of debris, which could contribute to localized congestion. Construction of Program components also would involve trenching within the roadway, which could require temporary closure of up to one lane of traffic. Demolition of the Sutter Treatment Plant would generate approximately 14,000 cubic yards of building material waste, most or all of which would require transport via truck to a landfill or hazardous waste facility for disposal. Additionally, dredging of the digestion pits of Facultative Ponds Nos. 1 and 2 and the Recirculation Channel at the Jennings Plant would generate approximately 16,000 dry tons of solids that would require disposal at a landfill. During construction of the numerous collection system and wastewater treatment plant components, the increase in haul truck trips and construction worker trips could increase congestion on local roads. In addition, as shown in Figure 2-19, several components are planned to occur within the same general timeframe. Since the construction schedules of individual components have not yet been determined, it is possible that construction of several proposed components would overlap in duration. As such, the increase of haul trips and worker trips could result in temporary exceedances of LOS C or D (see Table 16-1).

All projects would be required to follow the current version of the City of Modesto Standard Specifications. Section 12, Public Convenience and Safety, of Chapter 7, General Provisions, of the specifications includes Temporary Traffic Control requirements, including preparation of a traffic management plan (TMP) that must be incorporated into all projects. As part of the TMP, the public and appropriate fire and police departments would be notified in advance of temporary road closures. The TMP also would include implementation of appropriate traffic control measures (e.g., temporary barriers, use of flaggers, etc.) to allow for the safe passage of vehicular and pedestrian traffic through and within the Project site. In addition, the City

requires that emergency vehicles would be provided access through any temporary construction work areas. These measures would reduce impacts on vehicle movement and roadway LOS during construction activities. By complying with these standard specifications, the temporary congestion and traffic delays that could result from some Proposed Program construction activities would not substantially conflict with goals and policies in the City of Modesto General Plan, Stanislaus County General Plan, or CMP for the Stanislaus County Region. As such, this impact would be **less than significant.**

River Trunk Realignment Project

The River Trunk Realignment Project would include construction of the River Trunk Pump Station at B Street and Beard Street, the Shackelford Pump Station to the east of the Tuolumne River near Crow's Landing Road, new gravity pipelines and force main sewer lines. The pipelines would be installed primarily beneath B Street, Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, and Neece Drive. With the exception of Tuolumne Boulevard, these are all two-lane streets. Tuolumne Boulevard is a four-lane road with a center turn-lane.

As described in Chapter 2, *Program Description,* construction of the River Trunk Realignment Project would occur in three general phases but pipeline construction activities will overlap with pump station construction activities. Construction activities would occur over a 30-month period, starting in summer 2018 and ending by the end of 2020. Construction of proposed components would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways.

As presented in Table B-1 in **Appendix B** (which provides air quality modeling results for the Proposed Program), the River Trunk Project would generate an estimated 8,252 hauling trips, and approximately 29,565 construction worker trips over the duration of construction. During the most active period of construction when all three construction phases would overlap (0-12 months from the construction start date), this would equal approximately 324 trips per day.[1]

As shown in Table 16-2, none of the roadways on which construction activities would take place (i.e., B Street, Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, and Neece Drive) are included on the list of Modesto roadways with existing LOS E or F. The proposed staging/work areas for the River Trunk Realignment Project are located adjacent to Tuolumne Boulevard at 7th Street, as shown on Figure 2-1. Vehicles accessing the site (e.g., on-haul and off-haul trucks, worker vehicles) would likely use SR-99 and exit at Tuolumne Boulevard. Existing traffic has been measured on Tuolumne Boulevard from SR-99 to 7th Street to have a Daily Traffic Volume of 13,100 vehicles (City of Modesto 2018).

As Tuolumne Boulevard is a 4-lane arterial road with a center turn lane, this daily traffic volume translates to 3,275 vehicles per lane, which equates to LOS C (Table 16-1). The addition of 324 trips per day during the peak construction period would equal a total of 3,599 vehicles per lane, which would not change the existing LOS. Even assuming that the number of vehicle trips due to the River Trunk Project may be somewhat higher during certain periods of construction, it would take an additional 331 vehicle trips to reduce existing

[1] Note: this calculation assumes that total construction truck and worker vehicle trips would be evenly spread over the scheduled construction duration period. In reality, this may not be the case, and periods of peak material deliveries or material off-hauling may have somewhat greater daily trip numbers.

conditions to LOS D on this road segment, and approximately 3,200 additional trips to result in LOS E. These numbers of trips would not be reached solely by River Trunk Project construction activities.

While the majority of construction vehicle trips would be to and from the Project staging areas, a certain number of trips would follow the Project alignment, transporting materials, equipment, and personnel to various points along the proposed pipeline alignment and to the River Trunk Pump Station and Shackelford Pump Station sites. Existing daily traffic information was not available for the roads along the Project alignment, but, as noted above, none of these roads are identified as being at LOS E or F (Table 16-2). Trenching within these roadways (i.e., B Street, Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, and Neece Drive) for installation of proposed pipelines could cause delays and localized congestion during the construction period, but implementation of the City's Standard Specifications, which require preparation and implementation of a TMP, would minimize these impacts. As a result, this impact would be **less than significant.**

Overall Conclusion

Construction of WWMP components including the River Trunk Realignment Project would involve pipeline installation work in public roads which would require temporary lane closures. In addition, haul truck trips and construction worker trips would result in short-term increases in congestion on local roads of each WWMP component. However, in accordance with the City's Standard Specifications, a TMP would be prepared to minimize impacts on existing roadways, including pedestrian, bicycle, and transit mobility. (See Impact TR-5 for additional discussion of impacts on alternative transportation modes.) The number of trips that would be generated by the River Trunk Realignment Project would not result in worsening LOS on the applicable road segment. Additionally, the temporary congestion that could result from construction of Proposed Program components would not substantially conflict with any policies of the City of Modesto General Plan, Stanislaus County General Plan and CMP, and the StanCOG RTP/SCS. As such, the Proposed Program's overall impact is considered **less than significant.**

Impact TR-2: Conflict with an Applicable Congestion Management Program (Less than Significant)

All Program-level Components

As described in Impact TR-1, the Proposed Program itself would not generate substantial long-term vehicle trips. To the extent that the Proposed Program components would accommodate growth, this growth would follow the respective jurisdiction's general plan (see Impact PH-3 in Chapter 15, *Population and Housing,* for further discussion).

Trips generated during operation of program-level components would primarily be limited to routine operation and maintenance trips to facilities by City staff, and would be similar to existing conditions. As some personnel (approximately 60) would be transferred from the Sutter Plant to the Jennings Plant, there may be a small increase in trips to and from the Jennings Plant, as well as a small decrease in trips to and from the Sutter Plant. Overall, these changes would not be sufficient to produce a meaningful effect on the existing roadway system. Operation of proposed components would not result in any significant effect on existing LOS or conflict with objectives, policies, or performance standards in the CMP for Stanislaus County.

During construction of individual program-level components, depending on their location and nature, some components could result in temporary congestion and traffic. Trenching within the roadway for collection system and sewer rehabilitation components may require temporary closure of up to one lane of traffic, which could create localized delays. Likewise, movement of construction equipment and materials for construction of lift stations may marginally affect existing traffic conditions. Demolition of existing structures at the Sutter Plant could generate substantial quantities of waste materials (approximately 14,000 cubic yards), some or most of which may require transport via trucks to the landfill for disposal. Additionally, dredging of digestion pits at facultative ponds and the recirculation channel at the Jennings Plant would generate approximately 16,000 dry tons of solids that would require disposal. Trucks hauling this debris to the landfill could temporarily increase congestion on nearby streets and highways.

These construction-related traffic impacts would not be considered to conflict with the County CMP, because the effects would be temporary and would not affect the long-term performance of the roadway system. This impact would therefore be less than significant. Additionally, preparation and implementation of a TMP in accordance with the City's Standard Specifications regarding temporary traffic controls to ensure public convenience and safety would further reduce construction impacts from the WWMP program-level components. This impact would be **less than significant**

River Trunk Realignment Project

As described under Impact TR-1, the River Trunk Realignment Project would include installation of new sewer lines along several roadways in Central Modesto, including B Street, Tuolumne Boulevard, Colorado Avenue, Pelton Avenue, and Neece Drive. Trenching activities for installation of these features could cause temporary traffic and congestion, potentially resulting in deterioration of LOS along these roadways and at intersections. Because these impacts would be temporary, however, and the River Trunk Realignment Project would not add people to the area or generate trips over the long term, this would not be considered a conflict with the County's CMP. These impacts would therefore be less than significant. These impacts also would be further reduced through implementation of a TMP, as required under the City's Standard Specifications. This impact would be **less than significant.**

Overall Conclusion

Construction of WWMP components would involve pipeline installation work in public roads which could require temporary lane closures and could increase traffic delays. In addition, haul truck trips and construction worker trips could result in short-term increases in congestion on local roads of each WWMP component. Such increases would not be permanent and would be minimized through implementation of a construction TMP; therefore, the Program would not conflict with the County CMP and this impact would be less than significant. In conclusion, the Proposed Program's overall impact would be **less than significant.**

Impact TR-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses (Less than Significant)

The Proposed Program would not change the design or configuration of any public road. As described in Chapter 2, *Program Description,* proposed components would be limited to

upgrades to the City's wastewater collection and treatment system. Therefore, the Proposed Program would not result in an increase in hazards due to a design feature.

During construction of individual components (e.g., new or rehabilitated sewer lines and stormwater/sanitary sewer disconnections), construction activities could temporarily create hazards from trenching within the roadway, which could result in a significant impact. As described in Impact TR-1, this potential impact would be minimized through implementation of a TMP, prepared pursuant to the City's Standard Specifications, which would require backfilling of trenches at the end of the work day and erection of temporary barriers to separate motorists from potential hazards. Temporary use of construction equipment in the roadway would not be considered an incompatible use, and would not pose a substantial hazard given adherence to the City's Standard Specifications. Over the long-term, the Proposed Program would not introduce any new land uses that could create potential for use of incompatible equipment on roadways.

Therefore, this impact would be **less than significant.**

Impact TR-4: Result in Inadequate Emergency Access (Less than Significant)

The Proposed Program would not alter the permanent design or configuration of any public roadway. In accordance with the California Fire Code, the Proposed Program would provide for fire apparatus and emergency vehicle access to new proposed facilities (e.g., lift stations), as appropriate. During construction of individual components, trenching and use of heavy equipment within roadways would reduce roadway capacity and potentially impede emergency vehicle movement and access if appropriate traffic controls are not implemented.

As described in Impact TR-1, the City would prepare and implement a TMP in accordance with its Standard Specifications. This plan would include comprehensive traffic control measures (e.g., lane closure procedures) and a requirement to notify public safety personnel in advance of construction activities. The TMP also would require advance notification of any owner of a private driveway whose access would be temporarily disrupted during Project construction activities, and to limit disruption of private driveways to no more than one hour, as feasible. With implementation of this measure, emergency vehicle access would be maintained during construction of proposed components. Therefore, this impact would be **less than significant**.

Impact TR-5: Conflict with Adopted Policies, Plans, or Programs Regarding Public Transit, Bicycle, or Pedestrian Facilities, or Otherwise Decrease the Performance or Safety of Such Features (Less than Significant)

All Program-level Components

Program-level components would not permanently alter any roadways, bicycle lanes, sidewalks, or other non-motorized transportation facilities. Many of the proposed components would be buried underground (e.g., new and upgraded sewer lines). Where features would be built above-ground, these features would be on parcels out of the road right-of-way. Construction of program-level components could temporarily interfere with bicycle, pedestrian, and transit vehicle movement (e.g., from trenching for installation of facilities) without adequate controls, and therefore result in a temporary conflict with Policy V-B.6[f] in the City's general plan. In some instances, it is possible that construction of

individual components may require temporary closure of a bicycle lane or sidewalk, or blockage of a transit stop.

In accordance with the City's Standard Specifications, the City would implement a TMP, which would require advance notification to transit agencies regarding construction activities within the roadway. Additionally, as described in Impact TR-1, the TMP would be required to provide for and maintain temporary traffic control measures to allow for the safe passage of vehicular, bicycle, and pedestrian traffic through and within the Project site, as well as make provisions for pedestrian, bicycle, and traffic access at all school sites. With implementation of the TMP, impacts on public transit, bicycle, and pedestrian facilities would be **less than significant.**

River Trunk Realignment

Limited bicycle lanes, bicycle paths, or transit routes exist along the proposed River Trunk Realignment Project alignment. Sidewalks do exist along most Project roadways that provide for pedestrian mobility. Roselawn Avenue is a designated bicycle-friendly road where it crosses Tuolumne Boulevard. There also is a transit stop at the intersection of Roselawn Avenue and Tuolumne Boulevard. Additionally, there are several bike trails between South 7th Street and 9th Street which could potentially be temporarily affected by Project construction activities. As noted above, the City would implement a TMP, which would include temporary traffic control measures to allow for the safe passage of vehicular, bicycle, and pedestrian traffic through and within the Project site. Additionally, the City's Standard Specifications require that the TMP make provisions for pedestrian, bicycle, and traffic access at all school sites. Implementation of the TMP would ensure that any impacts to pedestrian, bicycle, and transit facilities would be **less than significant.**

Overall Conclusion

Construction of proposed WWMP components could temporarily interfere with bicycle and pedestrian movement to some degree and cause transit delays due to pipeline installation work that occurs in public roads. Without adequate measures, such construction activities could thereby temporarily conflict with the Policy V-B.6[f] in the City's Urban Area General Plan, which calls for maintaining high levels of service for all transportation modes (vehicle, transit, pedestrian, and bicycle). However, implementation of the TMP would minimize this impact and avoid substantial conflicts with this policy. In conclusion, the Proposed Program's overall impact would be **less than significant**.

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Chapter 17
UTILITIES AND SERVICE SYSTEMS

17.1 Overview

This chapter describes the setting and impacts on utilities and service systems, including solid waste facilities, from the Proposed Program. Resources used to prepare this section include information and regulations from the various service providers, as referenced below:

- *City of Modesto Urban Area General Plan* (City of Modesto 2019a);
- *Stanislaus County General Plan* (Stanislaus County 2016);
- City of Modesto 2015 *Urban Water Management Plan* (West Yost Associates 2016); and
- State regulations.

17.2 Regulatory Setting

17.2.1 Federal Laws, Regulations, and Policies

There are no federal laws, regulations, and policies regarding utilities and service systems that are relevant to the Proposed Program.

17.2.2 State Laws, Regulations and Policies

California Integrated Waste Management Act of 1989 and AB 341

The California Integrated Waste Management Act of 1989 (Pub. Res. Code, Division 30) requires all California cities and counties to implement programs to reduce, recycle, and compost wastes by at least 50 percent by 2000 (Pub. Res. Code Section 41780). In 2011, the Governor approved AB 341, which sets an even more ambitious goal of 75 percent recycling, composting, or source reduction of solid waste by 2020 in effort to decrease California's reliance on landfills. The state, acting through the California Department of Resources Recycling and Recovery (CalRecycle), determines compliance with this mandate. Per capita disposal rates are used to determine whether a jurisdiction's efforts are meeting the intent of the act (CalRecycle 2017).

California Solid Waste Reuse and Recycling Access Act of 1991

The California Solid Waste Reuse and Recycling Access Act of 1991 (Pub. Res. Code Sections 42900–42911) requires that all development projects applying for building permits include adequate, accessible areas for collecting and loading recyclable materials.

Urban Water Management Planning Act

California Water Code Section10610 et seq. requires that all public water systems providing water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 acre-feet per year (af/yr), prepare an urban water management plan (UWMP). UWMPs must be submitted to DWR for approval every five years.

Urban water management plans must identify and quantify available water supplies and current and projected water use and demands, and plan for maintaining adequate water supply reliability during normal, dry, and multiple dry water years.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act is described in Chapter 12, *Hydrology and Water Quality*, of this DEIR, and would be applicable to the Proposed Program.

17.2.3 Local Laws, Regulations, and Policies

City of Modesto Urban Area General Plan

Chapter V, Community Services and Facilities, of the *City of Modesto Urban Area General Plan* (20019a) discusses the City's applicable planning goals and policies related to water supplies, water use, water management planning programs and documents, and the City's water distribution and treatment system infrastructure management are provided below. In addition, the City's policies relevant to other utilities, such as wastewater, storm drainage, and solid waste include the following:

Water Policies:

Goal VI.A. Ensure a consistent, reliable, high-quality water supply for the City of Modesto's residents and businesses.

> **Policy VI.A.3.** All new connections to the public water system are to have meters installed. In addition, on or before January 1, 2025, all existing municipal and industrial service connections are to have water meters installed.

> **Policy VI.B.2.** Prepare and maintain a Water Master Plan. Update the Water Master Plan, as needed, to incorporate changes in growth projections, water supplies, and demands.

> **Policy VI.B.3.** Encourage the optimum beneficial use of water resources within the City. Strive to maintain an adequate supply of high-quality water for urban uses. At a minimum, potable water supplies delivered to water customers shall conform to the primary maximum contaminant levels as defined in State law.

> **Policy VI.B.5**Construct, operat, maintain, and replace water infrastructure facilities in a manner that will provide the best possible service to the public. Ensure that infrastructure is installed before or concurrently with development. Take a comprehensive approach to financing, using a blend of special taxes, benefit assessments, and other methods to ensure that infrastructure installation occurs in a timely manner.

Wastewater Policies:

Goal VI.D. Strive to meet increasingly strict wastewater regulations in a cost-effective manner. The City's wastewater treatment facilities will conform to standards for wastewater and biosolids treatment and disposal, as established by the Central Valley Regional Water Quality Control Board, in compliance with applicable federal and state laws.

Policy VI.D.1. Consider reclaiming wastewater as a means to optimize the region's water resources, reduce discharge from the treatment plant, reduce the risk of fines and reduce costs associated with producing water from new / additional sources.

Policy VI.D.2. Comply with the Central Valley Regional Water Quality Control Board requirement to cease all discharge of wastewater that is treated at less than tertiary levels by May 1, 2018.

Policy VI.D.3. Consider reuse of wastewater treatment byproducts, such as biosolids and digester gas, which can reduce costs associated with treatment plant operations.

Policy VI.D.4. Pursue the near-term expansion of the wastewater treatment and disposal capacity of the Jennings Road Treatment Plant.

Policy VI.D.5. Pursue the long-term relocation of the Sutter Avenue Primary Treatment Plant, to the Jennings Road site, in order to consolidate operations and reduce treatment plant flooding risks.

Policy VI.D.6. Construct, operate, maintain, and replace wastewater facilities in a manner that will provide the best possible service to the public. In developing implementation plans, consider rehabilitation of essential existing facilities, expansion to meet current excess demand, and the timely expansion for future demand.

Policy VI.E.1. Allocate the City's wastewater system capacity to existing and future residential, commercial, and industrial customers. Discharges from environmental cleanup sites may be issued conditional discharge permits subject to the availability of excess treatment capacity. In accordance with federal and state regulations, discharges to the wastewater system may not, or may not threaten to, upset or interfere with, the wastewater system.

Policy VI.E.2. Require wastewater infrastructure master plans for the specific public infrastructure or when otherwise pertinent to provision of service at adopted service levels for the specific plan areas or other projects depending on site issues and location.

Policy VI.E.9. Strive to use land application of biosolids as the most environmentally beneficial reuse of this resource, rather than the disposal options of landfilling or incineration.

Policy VI.E.10. Develop methods to discontinue use of the sanitary system to temporarily drain stormwater runoff, and eliminate cross-connections between the wastewater and stormwater infrastructure systems.

Policy VI.E.16. Prepare and implement an update to the City's Wastewater Master Plan (WWMP), and complete an EIR for the updated WWMP. The updated WWMP should account for the UAGP, zoning revisions, updated growth projections, updated sewer demand information, regulatory requirements, and identify new capital improvement projects. The WWMP should involve several improvements to the City's collection system and upgrades to the Sutter and Jennings treatment plants. The objectives of the updated WWMP may include the following:

- Implement the City's economic goals and Urban Area General Plan by planning for, and providing, sewer infrastructure in a timely and cost-effective manner to serve new and existing development.
- Continue the City's policy of providing affordable and attractive wastewater rates.
- Repair and replace aging wastewater infrastructure.
- Ensure adequate wastewater infrastructure and services are available to serve new growth within the General Plan and City's Sphere of Influence.
- Provide an adequate funding mechanism to pay for necessary improvements.
- Require new development to pay for infrastructure necessary to serve it.
- Plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

For collection system improvements, the objectives of the updated WWMP may include:

- To increase sewer capacity to convey peak wet weather flows for a 10-year storm event, and where required, to serve future customers.
- To reduce wet weather flow volumes by removing cross connections with stormwater sewers.
- To extend service to new customers.
- To replace, repair, or rehabilitate existing trunk sewers, and to reduce infiltration and inflow of stormwater into the sanitary sewers.
- To improve sewer collection reliability by providing new and redundant infrastructure improvements, including sewer trunk lines and lift stations, in known deficient areas at critical areas within the existing system.

For treatment plant improvements, the objectives may include the following:

- To reduce flooding impacts at the Sutter Plant site and increase treatment process operational flexibility and efficiencies by constructing new primary

treatment and solids handling facilities at the Jennings Plant and remove primary treatment and handling facilities from the Sutter Plant.

- To increase the capacity of the outfall connecting the primary and secondary treatment plants, and to provide increased reliability for the existing outfall.

- To increase treatment systems efficiency, reliability, and functionality for both domestic and cannery process stream flows.

- To increase treatment operational opportunities through new systems or system alterations to remain in compliance with existing Central Valley RWQCB's NPDES requirements and plan for potential future permitting regulations.

Storm Drainage Policies:

Goal VI.F. Establish and maintain an operating storm drainage system that protects people and property from flood damage.

Policy VI.G.2. Construct, operate, maintain, and replace storm water drainage facilities in a manner that will provide the best possible service to the public, as required by federal and state laws and regulations. In developing implementation plans, consideration shall be given to rehabilitation of existing facilities, remediation of developed areas with inadequate levels of drainage service, and timely system expansion for future development.

Solid Waste Policies:

Policy VI.L.1. Continue to comply with all requirements of Assembly Bill 939, which mandates the diversion of solid waste of 50% by 2000, by way of source reduction, recycling, composting, and transformation.

Policy VI.L.3. Continue to comply with Stanislaus County's Hazardous Waste Management Plan.

Policy VI.L.5. To meet the waste disposal demands of the growing population, continue to seek alternative waste disposal methods for solid waste, including transformation, composting, and alternative energy conversion technologies.

Policy VI.L.6. In addition to the Solid Waste Disposal policies in place [as outlined above], consider implementing local land use incentives and zoning/building code modifications to encourage source reduction, recycling, and composting, and to provide adequate space for containers. Such measures to be considered include a Construction and Demolition Recycling Ordinance, an ordinance and incentive program for Green Building Projects, and mandatory recycling for commercial/industrial waste and organics recycling per AB 341 and AB 1826.

17.3 Environmental Setting

17.3.1 Water Service

Water Supply and Treatment

The City of Modesto is the primary domestic water purveyor in Stanislaus County, serving not only the City of Modesto, but also Salida; North Ceres and Walnut Manor in Ceres; Grayson; Del Rio (Hillcrest); and defined areas in North, South, and Central Turlock. The City of Modesto currently distributes treated surface water supplied by MID through the Modesto Regional Water Treatment Plant (MRWTP), and groundwater pumped from City owned and operated wells, to serve the water demands of its customers. The City, in conjunction with MID, expanded its water supply when the MRWTP Phase 2 Expansion became operational (May 2016) with an additional 30 mgd of capacity to help meet demand north of the Tuolumne River. The MRWTP has total capacity of 60 mgd, or 67,200 acre-feet per year (MID 2017a). In addition, there are a limited number of private wells operating within the City limits that provide water for parks, golf courses, industry, and agricultural uses (City of Modesto 2016). Water supply needs include residential, agricultural, industrial uses, as well as emergency (fire) and drought supplies.

From the MRWTP, treated surface water is supplied to municipal customers within the City limits and some contiguous developed County areas north of the Tuolumne River, including the communities of Empire and Salida. The treated surface water place of use is defined by the overlap of the MID water service boundary with the City of Modesto Municipal Water System service area north of the Tuolumne River. Areas served by the City of Modesto that lie outside the MID water service boundary (i.e., south of the Tuolumne River), including the communities of Grayson, parts of Ceres and Turlock, and the portion of the Modesto system south of the Tuolumne River, are served exclusively by groundwater. The County community of Del Rio is also served only by groundwater. The recently completed MRWTP expansion is intended to help reduce the City's reliance on groundwater pumping and help meet demand north of the Tuolumne River.

While the areas south of the Tuolumne River are within the TID service area, TID currently serves only agricultural customers with surface water, and does not supply water for municipal uses. However, TID is working with the Stanislaus Regional Water Authority (SRWA) on the proposed Surface Water Supply Project (SWSP), described in more detail in Section 18.4, "Cumulative Impacts," which (if approved) would supply treated Tuolumne River water as an additional source of potable water for the cities of Turlock and Ceres (City of Turlock 2012).

In 2015, total water supply for the City was 47,459 acre-feet (AF), with 15,401 AF of Tuolumne River surface water purchased from MID and 32,058 AF pumped from groundwater. **Table 17-1** summarizes projected water supplies for 2020-2040. These projections are based on normal water years (City of Modesto 2016).

Table 17-1. Projected Water Supplies

Source	Projected Water Supply (af/yr)				
	2020	2025	2030	2035	2040
Surface water (from MID)	44,800	48,533	52,267	56,000	59,733
Groundwater	24,664	26,369	28,073	29,778	31,483
Total	69,464	74,902	80,340	85,778	91,216

Notes: AF = acre-feet; af/yr = acre-feet per year; MID = Modesto Irrigation District.
All groundwater volumes are reasonably available volumes. Total right or safe yield of groundwater is 53,500 AF for all years.

Source: City of Modesto 2016 (Table 6-20)

Sources of Surface Water

MID and TID obtain surface water supply from the Tuolumne River, stored in the Don Pedro Reservoir, which they jointly own. This water is obtained under TID and MID's pre-1914 water rights. From Don Pedro Reservoir, MID releases water through its power generation facilities directly into the river. From MID's Upper Main Canal at La Grange, water is delivered to Modesto Reservoir, then flows to the canal system, where the water is diverted to several locations that drain into the San Joaquin, Stanislaus, and Tuolumne Rivers (MID 2017b). From Modesto Reservoir, MID may release water to its Lower Main Canal for irrigation purposes or to the MRWTP for municipal and industrial purposes. Currently, MID manages 208 miles of gravity flow–operated canals and pipelines and provides irrigation water to approximately 3,100 agricultural customers.

Following treatment at the MRWTP, water is conveyed to the City's distribution system. In October 2005, MID and the City approved the Amended and Restated Water Treatment and Delivery Agreement between MID and the City of Modesto. MID became the primary water supply for the City of Modesto by expansion of the MRWTP. The facility has the capacity to treat an additional 30 mgd (67,204 af/yr), which would meet demand north of the Tuolumne River through buildout in 2050, if necessary (City of Modesto 2016).

Groundwater

Groundwater conditions are described in detail in Section 12.3.5 of Chapter 12, *Hydrology and Water Quality*, and are summarized here, The Proposed Program components would primarily overlie the Modesto Subbasin of the San Joaquin Valley Groundwater Basin but some components would also be located in the Turlock Subbasin, and the Delta-Mendota Subbasin.

Prior to the operation of the MRWTP, the City conducted extensive pumping of groundwater in and near the City's service area that resulted in localized overdrafting conditions (i.e., extraction of groundwater in excess of its long-term average rate of natural recharge). All three subbasins had declining groundwater levels between 1970 and 2000. Since 1995, groundwater levels increased as surface water supplies were available from the MRWTP's operation and then declined again as drought conditions affected surface water supplies. A 2007 evaluation conducted by the City determined that, if the total, long-term average

groundwater pumpage quantity is held at or below 53,500 af/yr, groundwater levels would stabilize at approximately 40 feet msl (City of Modesto 2016).

Water Demand

City of Modesto 2015 Urban Water Management Plan

The *2015 Urban Water Management Plan* describes the City's and MID's past, current and projected water use and demand by sector up to the year 2040. **Table 17-2** summarizes the projected water demand by water source from 2020 to 2040. The City does not use recycled water to offset potable water use, nor does it anticipate doing so in the future (City of Modesto 2016).

Table 17-2. Projected Water Demand for the City of Modesto, 2020-2040

Source	Projected Water Demand (AF)				
	2020	2025	2030	2035	2040
Potable and raw water	69,464	74,902	80,340	85,778	91,216
Recycled water	0	0	0	0	0
Total	69,464	74,902	80,340	85,778	91,216

Notes: AF = acre-feet

Source: City of Modesto 2016 (Table 4-4)

A more detailed summary of the City's projected water demands by sector type is summarized in **Table 17-3**.

Table 17-3. Projected Water Demands by Use Type in the City of Modesto, 2020-2040

Use Type	Projected Water Demand (AF)				
	2020	2025	2030	2035	2040
Single Family	35,872	38,680	41,488	44,296	47,105
Multi-Family	6,894	7,434	7,974	8,513	9,053
Commercial	11,031	11,895	12,758	13,622	14,486
Industrial	3,993	4,305	4,618	4,931	5,243
Institutional/Governmental	2,175	2,345	2,515	2,685	2,855
Landscape	2,553	2,753	2,953	3,153	3,352
Other (unmetered water uses)	0	0	0	0	0
Losses	6,946	7,490	8,034	8,578	9,122
TOTAL	69,464	74,902	80,340	85,778	91,216

Note: AF = acre-feet.

Source: City of Modesto 2016

City of Modesto Water Master Plan

The City's Water Master Plan (WMP) estimates projected water demands for the contiguous and outlying water service areas at buildout and with consideration of assumed per capita water use targets in compliance with Senate Bill SB X7-7. Based on updated population estimates, the projected water demand for the contiguous service area is 99,240 af/yr. (West Yost Associates 2017).

17.3.2 Wastewater

Modesto's wastewater collection system conveys wastewater from residential, commercial, and industrial customers in its service area to treatment plants. As described in Chapter 1, *Introduction,* the City's wastewater collection system consists of approximately 40 sewer lift stations, more than 600 miles of sanitary lines ranging from 6 to 66 inches in diameter, 69 miles of trunk lines (pipelines greater than 15 inches in diameter), and an additional 15 miles of trunk lines connecting cannery food processors directly to land disposal (application) areas. Wastewater flowing into the collection system flows by gravity, or is pumped, to the Sutter Plant and the Jennings Plant for further treatment.

The majority of the influent received at the City's wastewater treatment facilities consists of domestic, commercial, industrial, food processing, and winery waste. The Sutter Plant provides primary treatment as well as screening, sedimentation and grit removal services. From there, the wastewater gets transferred via two 6.5-mile-long effluent outfall pipelines to the Jennings Plant. Currently, the Jennings plant disposes of secondary treated effluent in two ways: (1) through irrigation of approximately 2,500 acres of ranch lands owned by the City, and (2) through seasonal discharge to the San Joaquin River. According to the City's NPDES surface water discharge permit (Order R5-2017-0064, NPDES No. CA0079103), discharge of secondary treated wastewater to the San Joaquin River is only allowable between October and May until the year 2018. As discussed in Chapter 1, the City is in the process of constructing tertiary treatment facilities at the Jennings Plant. Once completed, secondary treated wastewater would undergo tertiary treatment and could be used to provide recycled water demands off-site.

As of 2015, the City's wastewater treatment system had a capacity of 81 mgd, including 40.2 mgd of capacity for cannery wastewater. In 2014, average non-canning-season domestic wastewater flows (exclusive of cannery segregated flow) was 18.5 mgd. During the 2014 dry season, the sewer system received an average of approximately 20 mgd of wastewater, with a peak of 36.3 mgd. The peak wet weather wastewater flow was approximately 72.8 mgd (Carollo Engineers 2016).

17.3.3 Stormwater

The City's stormwater drainage system consists of approximately 77 miles of drainage lines and 20 pump stations. As the stormwater drains through this system, it discharges into four major locations. Based on the City's *2015 Urban Water Management Plan*, approximately 40 percent of the stormwater discharges to detention/retention basins, 20 percent to receiving waters (Tuolumne River or Dry Creek), 10 percent to MID laterals/drains, and 30 percent to rockwells. The City currently utilizes these rock wells (approximately 11,000), along with infiltration basins and underground storage and recharge facilities, to recharge the groundwater aquifer with some of the stormwater for beneficial reuse as a water supply source to meet local water demands (City of Modesto 2016).

The outlying service areas' stormwater systems vary in size and complexity based on the various communities' needs. The Del Rio stormwater system consists of a retention pond, curbs, and gutters (Stanislaus County 2004). The retention pond does not discharge to the Stanislaus River (Stanislaus County 2004). Stormwater needs in the small Grayson community are primarily served by roadside percolation, but some areas include storm drainage pipes and a detention basin that discharges to the San Joaquin River (Stanislaus County 2004). The condition of these facilities is good (Stanislaus County 2004). The Turlock stormwater system is owned and operated solely by the City of Turlock and comprised of 28 active storm lift stations, 66 storm ponds (which total 140 acres), 1,300 stormwater catch basins, and 102 miles of storm drain pipe (City of Turlock 2003). Ultimately, stormwater from Turlock flows to the San Joaquin River.

17.3.4 Solid Waste

In 2015, the City disposed of 104,468 tons of solid waste at landfills (CalRecycle 2015). The City of Modesto has an annual per capita disposal rate target of 5 pounds per resident per day, and an annual per capita disposal rate target of 13.8 pounds per employee per day. In 2015, the most recent year for which disposal rate data were available for the city of Modesto, the City's annual per capita disposal rates were 4.5 pounds per resident per day and 12.6 pounds per employee per day (CalRecycle 2015).

There are currently two major firms that are responsible for the collection and transport of solid waste in Modesto. Gilton Solid Waste Management and Bertolotti Disposal both provide hauling and interim transfer stations for the City's waste disposal, transformation, and diversion streams. Bertolotti Disposal also manages the solid waste and recycling programs for the City of Ceres.

The City of Modesto Public Works Department manages garbage and recycling collection services throughout the City. In addition to standard waste, the department also manages hazardous waste cleanup, bulk item pick-up, composting, and street sweeping (City of Modesto 2017).

The Fink Road Sanitary Landfill is the primary landfill within Stanislaus County. This approximately 200-acre landfill is owned by Stanislaus County and operated by the County Department of Environmental Resources. It is located west of Interstate 5 near the town of Crows Landing, where it receives solid waste from all of the cities and unincorporated areas within the county, including Modesto and the study area.

Categorized as a Class II and III landfill for nonhazardous municipal solid waste, its maximum permitted throughput is 2,400 tons per day. It has a remaining capacity of 8,240,435 cubic yards as of January 5, 2012 with a maximum permitted capacity of 14,640,000 cubic yards. Most industrial, commercial, and residential waste (e.g., household and commercial garbage, construction debris) is accepted here, while waste such as car bodies, septic tank waste, and liquid waste are not. As of 2012, it had a remaining capacity of over 8 million cubic yards and an estimated closure date of 2022 (CalRecycle 2017). The landfill is currently considering alternatives for facility expansion, which would extend the closure date to approximately 2030.

Noted above, the solid waste programs operated by the City includes a recycling program; Stanislaus County operates a similar program. These include curb-side recycling and

operation of recycling centers throughout their various jurisdictions within the study area. There are also several private recycling companies that are not affiliated with those who have specific contracts with the City or County.

17.3.5 Communications

A number of communications companies serve the Modesto area, including Comcast, AT&T, and Charter Communications. Many of the streets within which the Proposed Program components would be installed include underground or overhead communications lines.

17.4 Impact Analysis

17.4.1 Methodology

This section describes the impacts of the Proposed Program related to utilities and services systems. This evaluation considers the extent to which the Proposed Program would require entirely new or altered existing facilities to address immediate or foreseeable needs associated with Proposed Program operations. Effects are evaluated qualitatively based on available information on existing facilities and current demand in the study area.

17.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on utilities and service systems if it would:

- Exceed wastewater treatment requirements of the applicable RWQCB;
- Require or result in the construction of new or expanded water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the Program 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 Program that it has adequate capacity to serve the Program'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; or
- Comply with federal, state, and local management and reduction statutes and regulations related to solid waste.

Due to the nature of the Proposed Program, the first criterion is not addressed in the impact analysis because one of the Program objectives is to increase treatment opportunities in order to remain in compliance with the existing Central Valley RWQCB's NPDES requirements. The Proposed Program is intended to meet current and near-term wastewater treatment requirements by constructing adequate wastewater infrastructure and providing services to serve existing and anticipated new growth within the City's sphere of influence. Therefore, this criterion does not apply.

In addition, a portion of the second criterion listed above is not applicable because construction of new and upgraded wastewater infrastructure services is the primary subject of this DEIR and the environmental effects of the Proposed Program are described throughout this document. Therefore, this criterion does not require further discussion in this chapter.

Similarly, the fifth criterion does not apply for the same reasons stated above for the first criterion dismissed.

17.4.3 Environmental Impacts

Impact UTL-1: Require or Result in the Construction of New Stormwater Drainage Facilities or Expansion of Existing Facilities, the Construction of Which Could Cause Significant Environmental Effects (Less than Significant)

The Proposed Program would not require the construction of any major stormwater drainage facilities or expansion of existing facilities. As described in Chapter 2, *Program Description,* one component of the Program involves removing up to 60 interconnections between storm sewers and sanitary sewers to decrease peak flows in the City's collection system. Although this effort would not involve new construction of stormwater facilities, it would involve minor alterations to existing stormwater facilities.

All other improvements are intended either to repair and replace aging wastewater infrastructure or ensure adequate wastewater infrastructure to accommodate new growth planned by the City. Improvements proposed at the Sutter Plant would be confined to the existing footprint and would not create new impervious surfaces. Similarly, most improvements at the Jennings Plant would occur within the existing plant footprint, with the exception of the proposed sludge drying beds. As discussed in Chapter 12, *Hydrology and Water Quality,* runoff from these surfaces would discharge to surrounding undeveloped land and would not require construction of new stormwater drainage facilities.

Construction of the seven new lift stations throughout the City and the River Trunk and Shackelford pump stations may affect stormwater runoff to a small degree due the construction of new impervious surfaces. While some on-site stormwater drainage may be needed for these facilities, given the small scale of the new lift and pump stations, the environmental effects of constructing any new stormwater drainage facilities would be minimal. Stormwater drainage effects of the Proposed Program are analyzed further in Chapter 12, *Hydrology and Water Quality,* in Impact HYD/WQ-5. Moreover, the environmental effects of constructing and operating new lift and pump stations, including associated improvements at these sites (e.g., stormwater drainage), are evaluated throughout this DEIR. For these reasons, this impact is considered **less than significant**.

Impact UTL-2: Require New or Expanded Water Supply Entitlements (No Impact)

Construction of each improvement would require the use of water to compact loose soils and earthen materials that are dug up from trenching activity. Except for the Jennings Plant, where recycled water is available, construction crews would likely use publicly available groundwater and surface water for most construction uses throughout the various construction phases. The City has some specially designated hydrants that are served only by wells that no longer comply with potable demands, and that are used by contractors and City crews for construction water and other allowable nonpotable uses. However, these hydrants are not conveniently located for all project needs, and the water source for these hydrants is groundwater regardless of water quality. Nevertheless, the amount of water used for construction purposes would be negligible compared to overall demands and available supplies. As a result, construction of proposed improvements would not substantially affect local water supplies.

Once construction of planned improvements is complete, operation of the Sutter and Jennings Plants and other program-level improvements, such as pipeline replacements and rehabilitation and lift station upgrades, would not involve meaningful volumes of water and would not require new or expanded water supply entitlements. Similarly, operation of the River Trunk Realignment project would not require additional water supply entitlements beyond those already obtained by the City. Note that the disconnection of up to 60 stormwater/sanitary sewer cross-connections would decrease peak flows and could allow more stormwater drainage to be directed to groundwater rather than combined with wastewater; these improvements would potentially increase available groundwater supply. As a result, program improvements would not substantially affect water supplies. There would be **no impact.**

Impact UTL-3: Require Additional Permitted Landfill Capacity to Accommodate the Project's Solid Waste Disposal Needs (Less than Significant)

Construction of the Proposed Program facilities would produce solid waste in the form of demolished asphalt, concrete, and excavated soils (construction waste). Construction waste would be transported to one of the recycling facilities currently used by the City of Modesto and outlying service areas, and soils may be reused pending testing results (see Chapter 11, *Hazards and Hazardous Materials*), thus minimizing the amount of waste sent to landfills.

When construction waste recycling is not possible, waste would be transported to the Stanislaus County Fink Road landfill, located at 4000 Fink Road in Crows Landing. The landfill has a total permitted capacity of 14.5 million tons, about one-third of which is full. The facility has an estimated closure date of 2022. The landfill is currently considering alternatives for facility expansion, which would extend the closure date to approximately 2030 (California Integrated Waste Management Board 2007; Frank pers. comm.). In the event that a new landfill would need to be used once the Fink Road landfill is closed, the City has disposal requirement standard practices and general provisions in place that would prevent any potential impacts caused by this activity. These standard practices state that the City would only dispose of waste at a licensed disposal facility, and would identify such facility prior to committing to any project action (i.e. construction activity that involves grading). These practices can be found Section 5.06, Disposal of Excess Material, and Section 11.04, Grading Plans, of the City of Modesto Standard Specifications (2014). Furthermore, the treatment and

handling of all wastes produced during the construction period would adhere to all applicable federal, state, and local statutes.

The generation of construction waste is considered a short-term impact that would not require existing disposal facilities or conveyance transfer and haul systems to be expanded. While the Proposed Program would not result in the creation of additional solid waste once proposed facilities are operational, the standard practices stated above would ensure that the Proposed Program's waste would only be disposed of at licensed disposal facilities and in accordance with all solid waste handling and disposal requirements. Therefore, this impact on solid waste generation as a result of the Proposed Program would be **less than significant**.

Impact UTL-4: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste (Less than Significant)

The Proposed Program would be in compliance with federal, state, and local statutes and regulations related to solid waste. Construction specifications would contain requirements for the handling, storage, cleanup, and disposal of hazardous materials. For additional information about hazardous materials compliance and permitting requirem0ents, refer to Chapter 11, *Hazards and Hazardous Materials*. The Proposed Program would also comply with all of the applicable policies outlined in Section 17.2.3, "Local Laws, Regulations, and Policies." As a result, this impact would be **less than significant.**

Chapter 18
OTHER STATUTORY CONSIDERATIONS

18.1 OVERVIEW

This chapter presents discussions of significant and unavoidable impacts, growth-inducing impacts, and cumulative impacts as required by the State CEQA Guidelines.

18.2 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15126.2(b) of the State CEQA Guidelines requires an EIR to describe any significant impacts that cannot be mitigated to a less-than-significant level. All of the impacts associated with the Proposed Program would be reduced to a less-than-significant level through the implementation of identified mitigation measures, with the exception of the impacts discussed below. The following impacts have been identified as significant and unavoidable:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-agricultural Use (for collection system and Jennings Plant components) (Impact AG-1)
- Conflict with or Obstruct Implementation of an Applicable Air Quality Plan (Impact AQ-1)
- 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 AQ-3)
- Generate a Substantial Amount of GHG Emissions (Impact GHG-1)
- Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs (Impact GHG-2)
- Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program (Impact NOI-4)
- Cumulative Impacts on Agriculture (Impact CUM-1)
- Cumulative Impacts Related to Noise and Vibration (Impact CUM-6)

18.3 GROWTH INDUCEMENT

Section 15126.2(d) of the State CEQA Guidelines requires an EIR to include a detailed statement of a proposed project's anticipated growth-inducing impacts. The analysis of growth-inducing impacts must discuss the ways in which a proposed project (or program) could foster economic or population growth or the construction of additional housing in the

surrounding environment. The analysis must also address project-related actions that, either individually or cumulatively, would remove existing obstacles to population growth. The Proposed Program is considered growth-inducing because it removes wastewater infrastructure as an obstacle to growth. Refer to Impact PH-3 in Chapter 15, *Population and Housing,* for detailed discussion of the growth-related effects of the Proposed Program.

18.4 CUMULATIVE IMPACTS

According to State CEQA Guidelines Section 15130(a)(1), a cumulative impact is created by the combination of a proposed project with other past, present, and probable future projects causing related impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (State CEQA Guidelines Section 15355[b]). Under CEQA, an EIR must discuss the cumulative impacts of a project when the project's incremental contribution to the group effect is "cumulatively considerable." An EIR does not need to discuss cumulative impacts that do not result, in part, from the project evaluated in the EIR.

To meet the adequacy standard established by State CEQA Guidelines Section 15130, an analysis of cumulative impacts must contain the following elements:

- an analysis of related past, present, and probable future projects that would affect resources in the project area similar to those affected by the proposed project;
- a summary of the environmental effects expected to result from those projects with specific reference to additional information stating where that information is available; and
- a reasonable analysis of the combined (cumulative) impacts of the relevant projects, including those of the Proposed Program.

The cumulative impacts analysis must evaluate a project's potential to contribute to the significant cumulative impacts identified, and it must discuss feasible options for mitigating or avoiding any contributions assessed as cumulatively considerable. The discussion of cumulative impacts is not required to provide as much detail as the discussion of the effects attributable to the project alone. Rather, the level of detail is to be guided by what is practical and reasonable.

18.4.1 APPROACH TO ANALYSIS: COMBINED APPROACH

The following analysis of cumulative impacts focuses on whether the cumulatively significant impacts exist to which the Proposed Program may contribute, and whether the Proposed Program's contribution to such impacts would be considerable. The cumulative impact analysis considers other projects proposed within the area defined for each resource that have the potential to contribute to cumulatively significant impacts.

State CEQA Guidelines Section 15130 provides the following two alternative approaches for analyzing and preparing an adequate discussion of significant cumulative impacts:

- the list approach, which involves listing past, existing, and probable future projects or activities that have or would produce related or cumulative impacts, including, if necessary, those projects outside the control of the lead agency; or

- the projection approach, which uses a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions and their contribution to the cumulative effect.

This discussion combines the projection approach and the list approach for the Proposed Program's cumulative impact analysis. Projects included in the cumulative analysis were determined using several factors, including the location and type of activity and the characteristics of the activity related to resources with the potential to be affected by the Proposed Program. In addition, regional or global conditions that might lead to cumulative impacts (e.g., GHG emissions) are also described.

Resource Topics Considered and Dismissed

The Proposed Program has been evaluated for its potential to make a considerable contribution to cumulative impacts related to the following resource topics: agricultural resources, air quality, biological resources, cultural resources, GHG and energy, hydrology and water quality, noise and vibration, traffic/transportation, and utilities and service systems. Greenhouse gas emissions are inherently a cumulative issue and are already addressed in Chapter 10, *Greenhouse Gas Emissions and Energy Resources.* In addition, the Proposed Program's contribution to cumulative air quality impacts are addressed in Chapter 6, *Air Quality.* Therefore, these topics are not discussed further in this section. For several other resource topics, as shown in **Table 18-1**, either significant cumulative impacts do not exist, or the Proposed Program would not have any potential to make a considerable contribution to any significant cumulative impacts. These resource topics have been eliminated from consideration in the analysis of cumulative impacts and are not discussed further.

Note also that, while the Proposed Program would be growth inducing and the secondary effects of growth could contribute to significant cumulative impacts, such secondary effects are considered to be already captured in the cumulative setting. Therefore, the analysis of the Proposed Program's contributions to cumulative impacts focus on the impacts of the Proposed Program itself, and not such secondary effects.

Table 18-1. Resource Topics Eliminated from Further Consideration in the Analysis of Cumulative Impacts

Resource Topic Not Discussed Further	Rationale
Forestry Resources	Stanislaus County's tracts of hardwood forest are located outside of the study area. For this reason, the Proposed Program would not have any potential to make a contribution to any significant cumulative impacts pertaining to forest lands, or lands zoned for forest land or timberland uses. Therefore, this resource topic is dismissed from further analysis.
Geology, Soils, and Seismicity	Impacts related to geology, soils, and seismicity from other projects and development in the Modesto area would be site-specific and like the Proposed Program, would be required to comply with CBC standards to minimize seismic-related impacts. For these reasons, there would be no significant cumulative impact regarding geology, soils and seismicity to which the Proposed Program could contribute. Therefore, this resource topic is dismissed from further analysis.
Land Use and Planning	As discussed in Chapter 13, *Land Use and Planning,* the Proposed Program would not result in impacts that involve the division of an established community. Land use and planning has been dismissed from the cumulative analysis because, similar to the Program, other projects are subject to planning, environmental review, and a permitting process. Through these processes, inconsistencies with relevant plans and policies would be resolved before project implementation; therefore, there would be no significant cumulative impact related to conflicts with local plans and policies to which the Proposed Program could contribute.
Minerals	There are no known mineral resource zones, historic or active mines or quarries within the study area, and the Proposed Program's components would not directly affect mineral production sites or prevent future availability of mineral resources. For this reason, the Proposed Program would not have the potential to make any contribution to a significant cumulative impact pertaining to mineral resources. Therefore, this resource topic is dismissed from further analysis.
Public Services	While the Proposed Program would indirectly induce growth, which would increase, but not individually exceed, demand for public services, the City, County, and other affected communities would plan for and implement appropriate improvement to their public services (including associated facilities and infrastructure), such that cumulatively significant impacts related to public services does not and would not occur. For this reason, no cumulatively significant impact exists to which the Proposed Program could contribute, and this topic has been dismissed from further analysis.
Recreation	While the Proposed Program would indirectly induce growth, which would increase, but not individually exceed, demand for recreational facilities, City, County, and other affected communities would plan for and implement appropriate improvement to their recreational facilities, such that cumulatively significant impacts related to recreation does not and would not occur. For this reason, no cumulatively significant impact exists to which the Proposed Program could contribute, and this topic has been dismissed from further analysis.

Notes: CBC = California Building Standards Code; DEIR = Draft Environmental Impact Report

Geographic Scope of Analysis

The level of detail of a cumulative impact analysis should consider a proposed project's geographic scope and other factors (e.g., a project's construction or operation activities, the nature of the environmental resource being examined) to ensure that the level of detail is practical and reasonable. The discussion focuses on the potential cumulative impacts of the Proposed Program for environmental resources that could be cumulatively affected by the Proposed Program in conjunction with other past, present, and reasonably foreseeable future projects. The specific geographic scope for each environmental resource topic analyzed in this DEIR for cumulative impacts is provided below.

The defined specific geographic scope for each environmental resource area analyzed in this DEIR to which the Proposed Program could contribute to cumulative impacts is provided below in **Table 18-2**.

Table 18-2. Geographic Scope for Resources with Cumulative Impacts Relevant to the Proposed Program

Resource	Geographic Scope	Explanation for the Geographic Scope
Aesthetics	General vicinity of the proposed components (e.g., within 0.5 mile) in Modesto and Jennings Plant	Aesthetic impacts are limited to the general vicinity of the proposed components. Other projects in the vicinity of proposed above-ground components would contribute to cumulative aesthetic impacts and collectively affect the region's visual character.
Agricultural Resources	Generally, agricultural land throughout the state; for the purposes of this analysis, focused on the City of Modesto, as well as the remainder of Stanislaus County	While the Proposed Program's impacts on agricultural resources are limited to the footprint of the proposed components, agricultural resources are a valuable regional asset and an important part of Modesto and its surrounding area's character. Other projects in the vicinity of Modesto and the Jennings Plant that impact agricultural land, in combination with the Proposed Program, could result in cumulative effects.
Biological Resources	Modesto, the Jennings Plant vicinity, and greater Stanislaus County, particularly areas of sensitive biological resources value (e.g., wetlands)	Animals are able to migrate and plants may disperse long distances via seed carried by the wind or other mechanisms. Additionally, biological resources are important regional assets. Therefore, the geographic scope for this analysis considers projects in the vicinity of Modesto and the Jennings Plant, as well as Stanislaus County as whole.
Cultural, Paleontological, and Tribal Cultural Resources	Modesto and the Jennings Plant vicinity	Cultural, paleontological, and tribal cultural resources impacts from the Proposed Program would be limited to the immediate area or footprint of the proposed components. Other projects in the City of Modesto and vicinity that disturb the ground surface could impact cultural resources (including TCRs) in a similar manner to the Proposed Program, potentially leading to significant cumulative impacts.

Resource	Geographic Scope	Explanation for the Geographic Scope
Hazards and Hazardous Materials	Modesto and the Jennings Plant vicinity	Hazards and hazardous materials impacts are limited to the general vicinity of the proposed components and hauling routes. Other projects in the vicinity of proposed components using hazardous materials during the construction and/or operation phases could impact sensitive receptors in a similar manner to the Proposed Program. As described in Chapter 11, *Hazards and Hazardous Materials,* compliance with applicable federal, state, and local laws and regulations pertaining to hazardous materials would ensure that the City and/or its contractor prepare and implement a hazardous materials and waste management plan, which requires that proper measures are taken in the event of an accidental hazardous materials spill or in the event that contaminated soils are encountered during construction. Other projects in the Modesto region could have similar construction-related hazards and hazardous materials impacts but these likewise would likely be site-specific and/or temporary. Similar to the Proposed Program, other projects would also be required to comply with the same regulations pertaining to safe use, storage, transport, and disposal of hazardous materials used during construction. Other development in the region that adds hazardous materials-intensive land uses (e.g., gas stations, dry cleaners) could increase the cumulative burden of potential hazardous materials releases in the area, but these impacts would result by a different mechanism than the Proposed Program. Therefore, there are no cumulatively significant impacts to which the Proposed Program could contribute, and this resource topic is dismissed from further analysis.
Hydrology and Water Quality	Immediate vicinity of Modesto, the Jennings Plant, including adjacent (downstream) reaches of the Tuolumne and San Joaquin Rivers	Contributions of the Proposed Program to cumulative impacts on hydrology and water quality (e.g., stormwater discharges from construction sites) would affect the immediate area of the proposed components and potentially areas downstream. Other projects that are constructed in this same area could affect hydrology and water quality in similar ways to the Proposed Program, potentially leading to cumulative impacts.
Noise and Vibration	Immediate vicinity (i.e., within roughly ¼ mile) of proposed components in the Modesto and Jennings Plant area	Noise impacts from the Proposed Program would be limited to the immediate area of the proposed components. Cumulative impacts could result if other projects were to be constructed at the same time as the proposed components and in same area (i.e., roughly ¼ mile), such that ambient noise levels could increase.
Transportation and Traffic	Immediate vicinity of the proposed components in the Modesto and Jennings Plant area	The Proposed Program would not add substantial numbers of vehicle trips over the long-term. Therefore, the Program's impacts on transportation and traffic would primarily be limited to construction-related effects

Resource	Geographic Scope	Explanation for the Geographic Scope
		(i.e., temporary closures of up to one lane of traffic for installation of pipelines). Cumulative impacts could result if other projects were to be constructed at the same time as the proposed components.
Utilities and Service Systems	Immediate vicinity of Modesto and Jennings Plant and regional landfills that may be used by the Proposed Program	The Proposed Program would not use significant water resources and would improve wastewater collection, conveyance, and treatment. The Proposed Program would require disposal of excavated and demolished material at a local landfill. Other project's in the Modesto area that may require disposal of large volumes of waste at a landfill, in combination with the Proposed Program, could potentially result in cumulative impacts on the capacity of landfill(s) in the area.

Table 18-3 lists projects planned in the study area that could affect resources that would also be affected by the Proposed Program. The locations of these projects are also shown in **Figure 18-1.** The list was developed by reviewing sources available on the City's website, Stanislaus County website, and the Governor's Office of Planning and Research CEQAnet database. While it is unlikely that every potential cumulative project is listed, the list of cumulative projects is considered sufficiently comprehensive and representative of the types of impacts that would be generated by other projects similar to or related to the Proposed Program. The evaluation of cumulative impacts assumes that the impacts of past and present projects are represented by baseline conditions. Cumulative impacts are based on the impacts of the Proposed Program plus impacts of reasonably foreseeable future projects, compared to baseline conditions.

Table 18-4 describes the planning documents containing projections used in the analysis.

Table 18-3. Reasonably Foreseeable Future Projects that Might Cumulatively Affect Resources of Concern for the Proposed Program

No.	Project Title	Brief Project Description	Distance from Study Area
Recreation Projects			
1.	Tuolumne River Regional Park Master Plan	The Tuolumne River Regional Park (TRRP) Master Plan envisions over 500 acres of parkland that would run along 7 river miles of the Tuolumne River. The regional park would extend from the Mitchell Street Bridge east to the Carpenter Road Bridge in Stanislaus County. Five major areas make up the TRRP, including the Legion Park/Airport Area, the Gateway Parcel, Mancini Park, the Dryden Park Golf Course Area, and the Carpenter Road Area. The Sutter Plant overlaps with the Carpenter Road Area. The River Trunk Realignment Project overlaps recreational uses planned on the Gateway Parcel. The City is currently constructing recreational trails on the Gateway Parcel, which would establish a connection to the downtown corridor and existing pathways along the Tuolumne River (including those adjacent to Beardbrook Park and further east toward the Modesto Airport). The new development on the Gateway Parcel includes a backwater channel, additional seating, an outdoor classroom, and pedestrian bridge spanning the mouth of the channel on the bank of Tuolumne River (Ortega pers. comm. 2017).	Overlaps study area
Development and Agricultural Projects			
2.	Bronco Wine Co. 2016 Rezone Application (Stanislaus County)	The application requests Stanislaus County to rezone the entire 118-acre parcel to a new Planned Development, and to expand an existing wine manufacturing facility. The project includes 14 new buildings, totaling 1.4 million square feet, which includes warehousing, office and administrative buildings, and an employee center. The expansion also includes railroad access to the Union Pacific Railroad by constructing two rail spurs, which would minimize traffic impacts in surrounding areas. Access to the facility would be along Bystrum Road. Phase 1 is expected to occur within 5 years of project approval; future phases would be built based upon market demands (Stanislaus County 2016b). The project was approved in May 2017.	Approximately 3 miles east of proposed third outfall pipeline
3.	Modesto Courthouse Project (Stanislaus County)	The State of California Judicial Council, Administrative Office of the Courts is pursuing the construction of a new courthouse in Modesto for the Superior Court of Stanislaus County. The preferred site is located in downtown Modesto in the city block bounded by G and H Streets and 9th and 10th Streets. The new courthouse will serve the public with a modern, secure, integrated, and efficient court facility in downtown Modesto. The new courthouse would occupy approximately 300,000 square feet, consist of 26 courtrooms, and replace seven facilities (City of Modesto 2014). Since 2014, the Court Facilities Advisory Committee authorized negotiations on acquiring the property. The project has been approved but has not yet been constructed.	Overlaps study area

No.	Project Title	Brief Project Description	Distance from Study Area
4.	DB Equipment Staff Approval Permit (Stanislaus County)	Request to establish an orchard tractor cab assembly and installation business on a legal non-conforming property, in two phases. Phase 1 includes the reuse of two existing buildings for shipping, receiving, and general office work. Phase 2 includes construction of a 10,000-square-foot metal building, which would be used for the assembly of the orchard tractor cabs. Project was approved by County staff in October 2016.	Approximately 0.38 miles north of study area
5.	Marketplace Shopping Center Project (City of Modesto)	The project includes the construction of a new shopping center with approximately 170,000 square feet of floor area on approximately 18 acres. The proposed project includes two large buildings in the shopping center that would be partitioned into spaces for various tenants. A Final EIR was published in November 2013 (City of Modesto 2013), and the project was approved in December 2013. Following the resolution of legal challenges, construction began in early 2017 and will be completed in 2018.	Overlaps study area
6.	Trinkler Dairy Farms (Stanislaus County)	The project proposes to increase a dairy herd size from 3,150 to 5,175 animal units, consisting of 3,180 milk cows, 600 dry cows, and 1,395 heifers in the A-2-40 (General Agriculture) zoning district. Expansion would require the construction of a freestall barn, a milk parlor, a calf barn, a feed storage pad, and a wastewater storage pond (lagoon). The 220± acre parcel is located at 7251 Crows Landing Road, at the southwest corner of Crows Landing and West Taylor Roads, in the Ceres area. The Planning Commission adopted a Negative Declaration for this project on December 14, 2016. A Notice of Determination was received on February 27, 2017 (Stanislaus County 2017).	Approximately 2 miles from proposed third outfall pipeline alignment
7.	Blue Diamond Growers Rezone Application (Stanislaus County)	Request to rezone the existing parcels for future expansion of the Blue Diamond facility. Expansion plans would include removal of the storm water basin and construction of an underground storage and percolation system, cold and/or dry storage, and pasteurization buildings (Stanislaus County 2016c). A building permit was issued in May 2017.	Less than 0.5 miles from study area
8.	Art Silva Dairy (Stanislaus County)	Request to increase the milk/dry cows at this facility by 928 head. The facility currently houses 583 milk cows, 60 dry cows, and 390 heifers. With the increase, the totals would be 920 milk cows, 180 dry cows, and 861 heifers. The proposed increase would require construction of an approximately 53,000-square-foot freestall barn within an existing exercise pen area. As per the amended Waste Water Management Plan, the lagoons are sufficiently sized to contain the increased wastewater (Stanislaus County 2015a).	Approximately 1 mile from Program study area

No.	Project Title	Brief Project Description	Distance from Study Area
9.	Derrell's Mini Storage Rezone and Merger Application (Stanislaus County)	This is a request to rezone expired P-D (202) to a new P-D to allow for 100 spaces of RV storage on a 3± acre site. The project site consists of 3 separate parcels of 0.39± acre, 0.36± acre and 2.25± acres but the applicant requests to merge the three parcels into one parcel. The project would include construction and operation of 78 enclosed and 22 open storage spaces, a 20-foot pole sign, fencing and landscaping. The operation would be unstaffed and is anticipated to generate an average of 5-10 vehicle trips per day. A Negative Declaration for this project was considered for adoption during the review period from February 9, 2016 to March 14, 2016 (Stanislaus County 2016d).	Overlaps study area
10.	Kansas Woodland Business Park	The City of Modesto is proposing the development of the Kansas Woodland Business Park located northwest of downtown Modesto. It is bounded by Woodland Avenue to the north, Kansas Avenue to the south, 9th Street on the east, and is on the web by State Route 99. The City aims to attract technology intensive businesses to the park (City of Modesto 2017). The project is currently under development.	Overlaps study area
11.	Fruit Yard Amphitheater	This project would expand an existing Planned Development with an outdoor, fenced, 3,500-person-capacity amphitheater event center, a 5,000-square-foot stage, a 5,000-square-foot roof structure, a 4,000-square-foot storage building, a parking lot to the rear of the stage, and an additional 1,302-space temporary parking area. A maximum of 12 amphitheater events are proposed to take place per year. This use permit also includes a covered seating area of approximately 4,800 square feet and a 1,600-square-foot gazebo in the eastern half of the park area, east of the outdoor amphitheater, and replacement of the existing pylon freestanding pole sign with an electronic reader board sign. An initial study was circulated in March 2017. The project was approved by the Board of Supervisors in May 2017.	Approximately 2.7 miles east of proposed future pipelines
Public Works Projects			
12.	City of Modesto Water Master Plan	The City of Modesto is in the process of developing a Water Master Plan and EIR to guide management of its water service system. The Water Master Plan would include various Capital Improvement Projects (CIPs) collectively intended for system-wide implementation needed to deliver safe and reliable water, which would effectively meet demand requirements under both existing and future buildout conditions. The City proposes to construct and operate the following types of CIPs: new water storage tanks, groundwater wells, pump stations, and pipelines. These CIPs would be constructed within the City of Modesto and other communities in Stanislaus County including Salida, North Ceres, Empire, and outlying service areas including Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock.	Overlaps study area

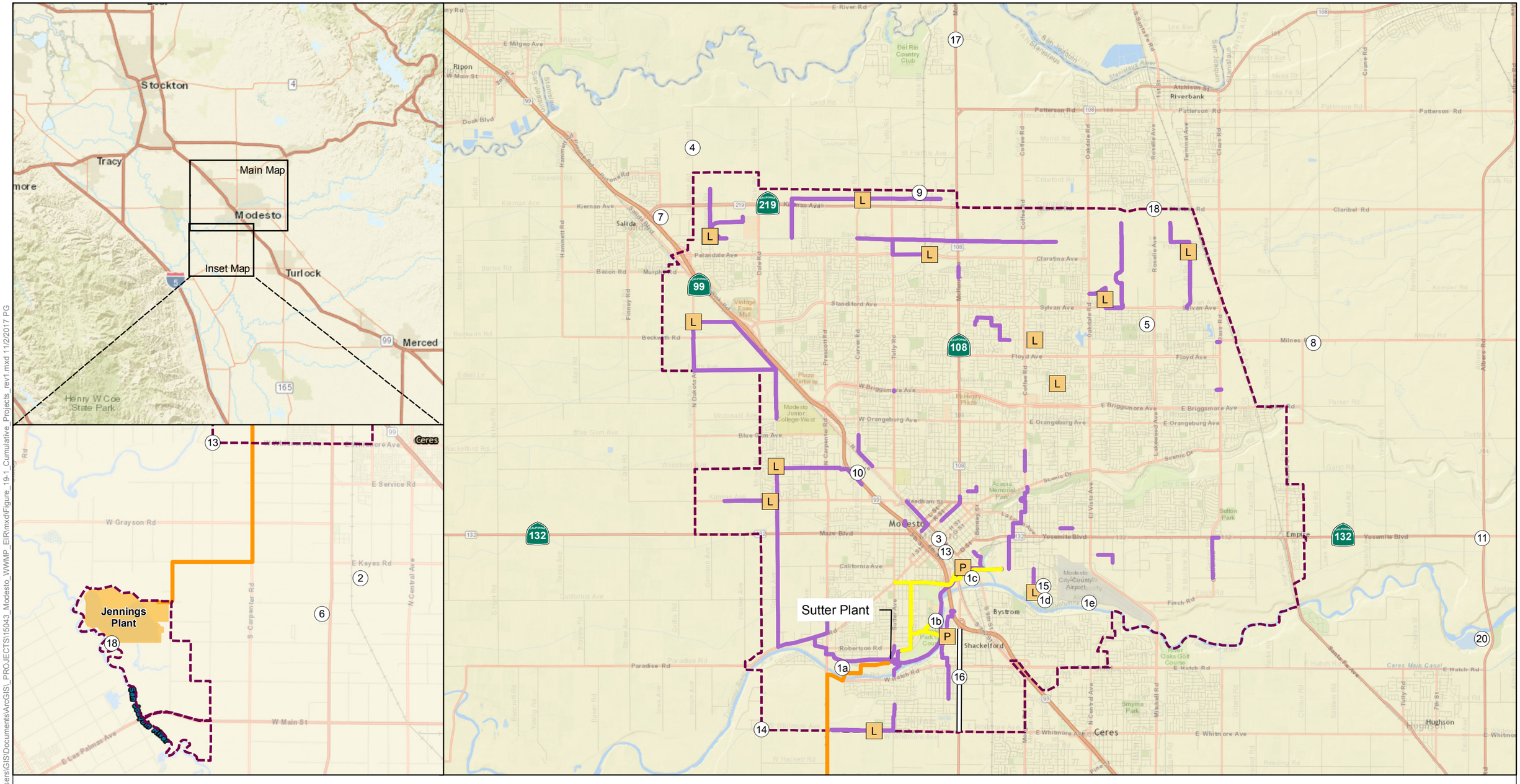
No.	Project Title	Brief Project Description	Distance from Study Area
13.	California High-Speed Rail Passenger Station	The City of Modesto Community and Economic Development Department has prepared a feasibility study for constructing a downtown passenger rail station for the California High-Speed Rail Project. The project is part of Phase 2 of the Proposition 1A High Speed Rail System project, but a specific start date has not been determined. The City has identified a potential site for the rail station, generally bounded by State Route 99 to the west, 9th Street to the east, North Jefferson Street to the northwest, and B Street to the south. This area would overlap the River Trunk Realignment project's boundary to the north (California Department of Transportation 2013).	Overlaps study area
14.	Carpenter Road at Whitmore Avenue Intersection and Bridge Widening (Stanislaus County)	The project includes installation of light signals and widening or replacing the existing Carpenter Road over Turlock Irrigation District Lateral No. 1 Bridge (Stanislaus County N.D.a). This project was approved in 2016 and is in the design phase.	Overlaps study area
15.	Airport Neighborhood Sewer (Phase II) (Stanislaus County)	Phase I of this project was constructed in 2014 and included installation of a gravity sewer system along Kerr Avenue. The County has developed improvement plans for Phase II, which was scheduled to start February 2017 and end in fall 2017. Phase II would include construction of a new gravity sanitary sewer system consisting of approximately 20,000 feet of sewer pipe. The completed project would provide approximately 362 sewer service connections to the residents of the Airport Neighborhood Sewer District (Stanislaus County N.D.b).	Overlaps study area
16.	Crows Landing Road Corridor Improvement Project (Stanislaus County)	This road improvement project is intended to improve safety, help illuminate the corridor, and make pedestrians and cyclists more visible to drivers. The project includes constructing raised medians, street lighting and buffered bike lanes. Crows Landing Road would be resurfaced for buffered bike lanes. Existing signals would be modified and obsolete parts would be removed and salvaged Stanislaus County N.D.c). The project is currently in the design phase.	Overlaps study area

No.	Project Title	Brief Project Description	Distance from Study Area
17.	McHenry Avenue Improvement Project (Stanislaus County)	San Joaquin County, in cooperation with Stanislaus County, has completed engineering work for a project to widen and improve a one-mile segment of McHenry Avenue from Jones Road to 1,700 feet south of River Road, in Stanislaus County. The project would widen and signalize the McHenry Avenue/River Road intersection; widen McHenry Avenue to provide a center left-turn lane; and replace two existing bridges – one across the Stanislaus River, and the other across the SSJID canal. Construction was anticipated to begin in spring 2017; the project is shown as being in the design phase on the County's website as of August 2017 (Stanislaus County N.D.). Environmental studies are underway, and construction of this project would begin in spring 2020.	Overlaps study area
18.	Claribel Road at Roselle Avenue Intersection Road Widening Project (Stanislaus County)	The project includes constructing a signalized intersection at Claribel Road and Roselle Avenue, and right-of-way acquisition, utility relocation, widening the existing two-lane roadway at the intersection to accommodate turn lanes, new signalization, utilities, and drainage improvements. A Mitigated Negative Declaration was published in June 2016 (Stanislaus County 2016e), and the project was approved in August 2016.	Overlaps study area
19	North Valley Regional Recycled Water Program (City of Modesto)	The City of Modesto, City of Turlock, and Del Puerto Water District (DPWD) are partnering on a regional solution to address water supply shortages in DPWD's service area on the west side of the San Joaquin River in San Joaquin, Stanislaus and Merced Counties. The project would deliver 59,000 af/yr of recycled water produced by the Cities of Modesto and Turlock via the Delta-Mendota Canal. Recycled water would be conveyed from Modesto and Turlock through pipelines from their wastewater treatment facilities, crossing the San Joaquin River, and ending at the Delta-Mendota Canal. The purpose of the project is to make the Cities' recycled water available to DPWD for agricultural purposes, to provide an additional source of water south of the Delta, which can be used to meet agricultural uses and support wildlife refuges and wetland areas. Construction of the first phase of this project (in Modesto) was completed in June 2018 (North Valley Regional Recycled Water Program 2016 and 2018).	Modesto Water Quality Control Facility discharge site would overlap with the Jennings Plant. The Harding Drain Bypass Pipeline would be approximately 0.25 miles from the Jennings Plant project site.

No.	Project Title	Brief Project Description	Distance from Study Area
20.	Stanislaus River Regional Water Authority's Surface Water Supply Project	The SWSP would include release of up to 30,000 af/yr of water from Don Pedro Reservoir, downstream diversion from the Tuolumne River through an existing infiltration gallery and newly constructed pump station and raw water pipelines, treatment at a newly constructed water treatment plant, conveyance of the treated water to the Cities of Ceres and Turlock, and connection to the existing potable water system infrastructure of the two cities. The project also includes a minimum annual transfer of 2,000 af of "offset water" from SRWA member agencies to TID, which would increase in dry years. An EIR is in preparation.	The infiltration gallery, pump station, and water treatment plant would be located on the south bank of the Tuolumne River at Geer Road, approximately 4.5 miles southeast of the nearest CIP (Component No. EM-3)

Notes: af/yr = acre-feet per year; CIP = Capital Improvement Project; DPWD = Del Puerto Water District; EIR = environmental impact report; RV = recreational vehicle; SRWA = Stanislaus Regional Water Authority; SSJID = South San Joaquin Irrigation District; SWSP = Surface Water Supply Project; TID = Turlock Irrigation District; TRRP = Tuolumne River Regional Park

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Horizon WATER and ENVIRONMENT

- Major Roads
- River Trunk Realignment Project
- Proposed Third Outfall Alignment
- Sewer Line Upgrade or Rehabilitation
- L — New or Proposed Lift Station Improvement
- P — Proposed Pump Stations

1a, TRRPMP - Carpenter Road Area
1b, TRRPMP - Golf Course Area
1c, TRRPMP - Gateway Parcel
1d, TRRPMP - Legion Park Area
1e, TRRPMP - Airport Area
2, Bronco Wine Co. 2016 Rezone Application
3, Modesto Courthouse Project
4, DB Equipment Staff Approval Permit
5, Marketplace Shopping Center Project
6, Trinkler Dairy Farms
7, Blue Diamond Growers Rezone Application
8, Art Silva Dairy
9, Derrell's Mini Storage Rezone and Merger Application
10, Kansas Woodland Business Park
11, Fruit Yard Amphitheater
12, City of Modesto Water Master Plan (not shown – overlaps WWMP study area)
13, California High-Speed Rail Passenger Station
14, Carpenter Rd. at Whitmore Ave. Intersection and Bridge Widening
15, Airport Neighborhood Sewer (Phase II)
16, Crows Landing Road Corridor Improvement Project
17, McHenry Avenue Improvement Project
18, Claribel Rd. at Roselle Ave. Intersection Road Widening Project
19, North Valley Regional Recycled Water Program
20, Surface Water Supply Project

Figure 18-1
Cumulative Projects

City of Modesto
Wastewater Master Plan EIR

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1 **Table 18-4.** Planning Documents Considered for Cumulative Impact Analysis

Document	Summary
City of Modesto Urban Area General Plan (2019)	▪ The City of Modesto Urban Area General Plan guides land use and development within the City of Modesto. The goals and policies in the General Plan provide an outline for new growth and minimization of possible impacts, while the adopted land use diagram included in the General Plan identifies desired land use types in the City. Adopted in 2019, the City of Modesto Urban Area General Plan updates the previous iteration completed in 2008 and provides a planning horizon to 2040. ▪ The General Plan foresees the majority of future development occurring within an approximately 19,450-acre Planned Urbanizing Area (PUA), which is land within and outside the City's sphere of influence that is predominantly flat, vacant and/or developed with agricultural uses, and minimally, if at all, served with urban services and infrastructure, including roads. The General Plan projects population within the Modesto General Plan boundary to be approximately 390,000. This population is assumed to be reached at some time after the 2040 general plan horizon year (City of Modesto 2019).
Stanislaus County General Plan (2016a)	▪ The Stanislaus County General Plan guides the physical development, preservation and conservation of areas within the unincorporated areas of the County. The General Plan was updated in 2015 to incorporate changes that had occurred in terms of legislation, code, and local standards since the previous version and to provide a planning horizon to 2035 (Stanislaus County 2016a). ▪ The Housing Element of the General Plan anticipates that most of the future residential growth in Stanislaus County to occur within the limits of the incorporated cities. Any concentrated growth in unincorporated Stanislaus County is anticipated to take place in the communities of Denair, Diablo Grande, Keyes, and Salida, which are guided by community or specific plans and are served by special districts which provide sewer and water, necessary to accommodate development. In 2010, the population of unincorporated Stanislaus County was 110,236. This number is projected to increase to 125,879 by 2030 (Stanislaus County 2016f).
City of Ceres General Plan 2035 (2018)	▪ The City of Ceres General Plan formalizes a long-term vision for the physical evolution of Ceres and outlines policies, standards, and programs to guide day-to-day decisions concerning Ceres' development through the year 2035 (City of Ceres 2018). ▪ The General Plan designates land uses for and applies its policies and standards to an area defined as the City's Planning Area, which includes the City's Urban Growth Area. The Planning Area is bounded by the Tuolumne River on the north, Carpenter Road on the east, Grayson Road on the south, and Washington Road on the west, encompassing approximately 14,400 acres (City of Ceres 2018). The Urban Growth Area encompasses all land envisioned for development

Document	Summary
	as part of Ceres through the year 2015. This area is further divided into two phases of development to ensure orderly development and prevent premature conversion of agricultural lands.

Notes: PUA = Planned Urbanizing Area

18.4.2 CUMULATIVE IMPACT SETTING

This section describes the cumulative impact setting for which the Proposed Program could contribute to a cumulative impact.

Aesthetics

The visual setting of Stanislaus County is characterized by a combination of agricultural, rural development, suburban, and open space land uses. Due to the county's flat topography, expansive and long-range views of natural landscapes including the Diablo Range are accessible. Waterways including the Tuolumne River, Stanislaus River, and San Joaquin River, also provide scenic viewing opportunities. Future development in the County and the City could lead to a cumulative degradation in the visual setting and scenic quality in the region.

Agriculture Resources

Stanislaus County is a major agricultural county in California. The County consists of over 425,000 acres of Important Farmland (CDOC 2016) and has over 575,000 acres of farmland under Williamson Act contracts (Stanislaus County 2015b). The success of agriculture in Stanislaus County is largely due to its favorable climate and the flat, fertile soils (Stanislaus County 2016a). However, while overall production trends for leading commodities have continued to grow, the County's agricultural industry is under threat from population growth/urban development and increased production costs. CDOC reports that while the period 2014-2016 saw an overall increase in Important Farmland acreage in Stanislaus County of over 6,700 acres, the County lost over 2,700 acres of Prime Farmland (CDOC 2016).

Biological Resources

Numerous species of plant and animal life are found in Stanislaus County which have aesthetic, recreational, economic, scientific, and educational value to the citizens of the area. Much of the area including Modesto and its surrounding areas is developed for urban and agricultural uses, but the Tuolumne and San Joaquin Rivers provide habitats various species. Most of the special-status wildlife species that have been identified as occurring within the County are associated with these riparian areas, as well as the annual grassland/vernal pool complexes on the eastern side of the county and the lands west of Interstate 5 (Stanislaus County 2016a).

Cultural, Paleontological, and Tribal Resources

A number of archaeological resources have been identified in the Modesto urban area and within Stanislaus County, including habitation sites, burials, and artifacts concentrations located near the Stanislaus and Tuolumne rivers, Dry Creek, and terraces above waterways (City of Modesto 2019). However, information on prehistoric cultural resources in the Modesto area is limited and is often obtained as a result of development or other proposed

activities where archaeological research is required (City of Modesto 2019). Additionally, numerous historic structures and properties within the City of Modesto have been listed on the NRHP, California State Points of Historical Interest, and the City of Modesto Landmark Preservation Sites list (City of Modesto 2019). Within greater Stanislaus County, there are 20 NRHP listings, 5 state landmarks, and 7 points of historical interest (Stanislaus County 2016a, but none are located within the study area. Paleontological resources have been found in the Modesto Formation of Stanislaus County.

Hydrology and Water Quality

The Tuolumne River is the primary watercourse in the Modesto area. Dry Creek also passes through portions of the City before joining the Tuolumne. The San Joaquin River passes through Stanislaus County southeast of Modesto, flowing in a southeast-northwest direction. The Stanislaus River flows roughly east to west north of Modesto and makes up the northern boundary of Stanislaus County. The Tuolumne River in the area of Modesto and the San Joaquin River are designated as impaired for a number of water quality contaminants, as shown in Table 12-2 in Chapter 12, *Hydrology and Water Quality,* likely as a result of urban and agricultural runoff in the watershed. Water quality contaminants include chlorpyrifos, diazinon, mercury, pesticides, among others.

Areas of groundwater contamination have also been identified in the Modesto and Turlock Groundwater Sub-basins due to a combination of declining groundwater levels and more stringent water quality standards. Historically, groundwater levels in the Modesto area have declined over past decades, but completion of the MRWTP in 1994, and subsequent importation of surface water supplies from the Modesto Irrigation District caused groundwater levels to rebound to some degree (STRGBA 2005). More recent data indicates that from 2007 to 2017 groundwater levels in the Modesto area decreased from 0 to 20 feet, with isolated areas of greater reductions (DWR 2017). Some of this decrease may be attributable to the recent drought in California, which lasted in its most severe form from roughly 2013-2014, though moderate drought conditions continued for up to years afterwards in some areas of the state, including in the Modesto area through February 2017.

Noise and Vibration

Numerous sensitive land uses (e.g., residential dwellings, schools, hospitals, etc.) are found in the City of Modesto and in proximity to the proposed components. Dominant existing noise and vibration sources vary within the area of the Proposed Program, but include industrial facilities (e.g., canneries), agricultural activities, railroads, air traffic (near the Modesto City-County Airport), and vehicular traffic. Railroad lines operated by multiple companies, as well as Highways 99, 132, 108, and 219, create elevated ambient noise levels in large portions of the study area. In general, ambient noise tends to decrease as one moves outside of the urban areas of Modesto and Ceres.

Transportation and Traffic

Primary transportation routes in the study area include SR 99, SR 132, SR 108, and SR 219. Proposed components would be installed within and along numerous local roads within the City of Modesto and surrounding area. In addition to commute traffic, goods movement is a potential source of congestion on area highways and roads. Transport of agricultural commodities has long been an important function in Stanislaus County, and the County also is an important food processing region for the State (Stanislaus County 2016a). Additionally,

the large urbanized areas of Stanislaus County, such as Modesto, require millions of tons of goods each year to maintain their economic activities (Stanislaus County 2016a). In agricultural areas outside of the City, movement of agricultural equipment on public roadways may also be encountered.

Utilities and Service Systems

The Proposed Program would have little to no impacts on water supply or wastewater, and would not require the construction of new or expanded stormwater facilities or require new water supply entitlements. Therefore, these aspects are not discussed here.

The primary landfill within the Modesto area, and the only active landfill in Stanislaus County, is the Fink Road Sanitary Landfill. This landfill handles nonhazardous municipal solid waste. As of 2012, it had a remaining capacity of over 8 million cubic yards and an estimated closure date of 2023 (CalRecycle 2017).

18.4.3 CUMULATIVE IMPACT ANALYSIS

Impact CUM-1: Cumulative Impacts on Aesthetics (Less than Significant with Mitigation)

Several projects identified in Table 18-3 involve new development throughout Modesto and the County. For example, in southern Modesto, the Tuolumne River Regional Park Master Plan's Gateway Parcel and Legion Park area would occur near the proposed River Trunk pump station and improvements to the Benson Lift Station, respectively, which would be constructed under the Proposed Program. Residences and recreationists located in close proximity to these facilities may have views of both the new stations and park facilities. Depending on the timing of constructing the planned recreational facilities on the Gateway Parcel and Legion Park parcel, recreationists using those facilities may also have views of the new pump and lift station. Additionally, as discussed in Chapter 4, *Aesthetics and Visual Resources,* the Proposed Program would support planned growth in the City's service area which would involve conversion of agricultural lands. Given the limited heights of the proposed new lift and pump stations, and the majority of other Proposed Program facilities being underground, the facilities in combination with projects listed in Table 18-3 and other planned growth, would not substantially alter the Program area's rural and open space landscape. Cumulative impacts on aesthetics and visual resources would be considered significant and the Program's contribution, if left unmitigated, may be considerable.

The proposed components would not substantially affect existing visual quality or characteristics in Modesto or the County. New and rehabilitated sewer pipelines would be underground and therefore would not affect visual resources, while new lift and pump stations would be similar in visual character to existing lift and pump stations. Components at the Sutter Plant would be visually consistent with existing facilities and the proposed components at the Jennings Plant would not be publicly visible. In fact, once the solids and primary treatment facilities have been completed at the Jennings Plant, decommissioning and removing the primary treatment facilities at the Sutter Plant would improve the visual character in the vicinity of the Sutter Plant. Construction of Program components could adversely affect the visual quality and visual character of a particular site in the short-term but Mitigation Measure AES-1 would reduce this impact by requiring that construction staging areas be located away from public areas. Other projects in the Modesto area, particularly new development projects and future water infrastructure projects, would alter

the visual landscape in the study area. However, once constructed, given that most proposed CIPs would not be visible and the relatively small scale of the proposed lift and pump station components, and with the above-referenced mitigation measure, the Proposed Program would not make a considerable contribution to any significant cumulative impacts pertaining to aesthetics and visual resources. Therefore, the Program's contribution to this cumulative impact would be **less than significant with mitigation**.

Impact CUM-2: Cumulative Impacts on Agriculture (Significant and Unavoidable)

Several projects identified in Table 18-3 could result in conversion of agricultural land, including Farmland, to non-agricultural uses. Additionally, buildout of the City of Modesto, Stanislaus County, and City of Ceres General Plans would convert agricultural land to non-agricultural use. As described in Chapter 5, *Agricultural Resources,* the Proposed Program would result in the conversion of approximately 18.6 acres of Farmland to non-agricultural use associated with development of the sludge cake drying beds.

Given the importance of agriculture to Stanislaus County and that loss of Farmland has been occurring in recent years and is an ongoing concern with increasing urban development in the region, the loss of Farmland is a significant cumulative impact, and the Proposed Program's contribution would be considerable.

As described in Chapter 5, LAFCO's Agricultural Preservation Policy (2015) and Policy 2.15 in the *Stanislaus County General Plan*, which require that agricultural land converted to residential use be replaced at a 1:1 ratio, do not apply to the Proposed Program. While the Stanislaus County's Farmland Mitigation Program provides a mechanism for establishing conservation easements, that program is designed to address loss of Farmland resulting from residential development and not public infrastructure projects such as the Proposed Program. Furthermore, the City has determined that the cost of establishing a conservation easement would substantially increase the cost of the Proposed Program and burden on ratepayers which would not be acceptable and purchasing an agricultural easement over off-site agricultural land would not ultimately avoid or reduce the impact of converting Farmland. Additional mitigation (e.g., restoration of Farmland) is not considered feasible. Based on this, no feasible mitigation measures have been identified. This impact of the Proposed Program would be significant and unavoidable at the project level, and a considerable contribution to significant cumulative impacts related to loss of Farmland. Therefore, the Program's contribution to this cumulative impact would be **significant and unavoidable.**

Impact CUM-3: Cumulative Impacts on Biological Resources (Less than Significant with Mitigation)

Construction projects in the Program area, such as those listed in Table 18-3, as well as elsewhere in Stanislaus County would have the potential to impact biological resources. Ground-disturbing construction activities could directly injure or kill wildlife, while development of new areas may result in permanent loss of habitat. Given that many of the special-status species known to occur in Stanislaus County are found in riparian areas, this may be particularly true for projects that are located along the Tuolumne River, Dry Creek, or the San Joaquin River. This is considered a cumulatively significant impact.

The Proposed Program would involve various construction activities that could impact wildlife, plants and fish, which, left unmitigated, would be considered a considerable contribution to this cumulative impact.

However, implementation of **Mitigation Measures BIO-1** through **BIO-15** would avoid and/or minimize impacts. In addition, compliance with the NPDES General Construction Permit, the City of Modesto's Standard Specifications related to erosion control, and implementing **Mitigation Measure HYD/WQ-1** regarding a frac-out contingency plan for trenchless pipeline installation methods would serve to avoid and minimize impacts on water quality that could affect fish and aquatic life. Considering that the Proposed Program would not convert large of areas of sensitive habitat and would avoid or minimize temporary effects to the maximum extent practicable with implementation of the above-mentioned mitigation measures, its contribution to cumulative impacts on biological resources would not be considerable. Therefore, this impact would be **less than significant with mitigation.**

Impact CUM-4: Cumulative Impacts on Cultural, Paleontological Resources, and Tribal Cultural Resources (Less than Significant with Mitigation)

While unlikely, it is possible that construction of WWMP components in the Program area could impact buried cultural or paleontological resources. Any project that would disturb the ground surface would have the potential to disturb buried cultural resources (including TCRs). Therefore, many of the projects listed in Table 18-3, as well as currently unknown projects that may be constructed in accordance with the City of Modesto, City of Ceres, and Stanislaus County General Plans, could impact buried cultural resources (including TCRs). Such projects also could affect above-ground historical structures depending on the nature of the project and location. For these reasons, cumulative impacts on cultural, paleontological, and tribal cultural resources are considered significant.

If the Proposed Program were to impact resources or groups of resources, which are also being impacted by other projects, the Proposed Program's contribution to cumulative impacts, if left unmitigated, would be potentially considerable. However, the Proposed Program would comply with various cultural resources policies in the Modesto Urban Area General Plan and implement **Mitigation Measure CR-1** to avoid and/or minimize impacts to cultural, paleontological, and tribal cultural resources. This would include requirements to conduct cultural resources awareness trainings for construction workers prior to commencing ground-disturbing activities (Mitigation Measure CR-1).

With implementation of these mitigation measures, the Proposed Program would not substantially affect cultural, paleontological, or tribal cultural resources and would not contribute considerably to any cumulative impacts on such resources in the Modesto area or greater Stanislaus County. Therefore, this impact would be **less than significant with mitigation.**

Impact CUM-5: Cumulative Impacts on Hydrology and Water Quality (Less than Significant with Mitigation)

Projects listed in Table 18-3, and those that may be constructed in the future in accordance with the City of Modesto and Stanislaus County General Plans, could adversely affect hydrology and water quality (e.g., via stormwater discharges from construction sites). In particular, projects located near the Tuolumne River, Dry Creek, or San Joaquin River would

have potential to affect water quality in these water courses, which is already substantially compromised. The existing impairments to water quality in the region are considered to be a cumulatively significant impact. The Proposed Program, if left unmitigated, would result in discharges to impaired water bodies and therefore would make a considerable contribution to this impact.

The Proposed Program's impacts to hydrology and water quality would be avoided and/or minimized through compliance with all local, state, and federal regulations concerning hazardous materials; the NPDES General Construction Permit; and the City's Standard Specifications related to erosion control, and implementation of **Mitigation Measure HYD/WQ-1,** which would require preparation and implementation of a frac-out contingency plan for trenchless pipeline installation methods.

While discharges of pollutants to the Tuolumne and San Joaquin Rivers may be considered a contribution to a significant cumulative impact given the existing contamination in these water bodies, the mitigation measures prescribed in the DEIR would avoid or reduce any such discharges to minimal levels. Additionally, although not specifically identified, the sources of the existing contaminants in the Tuolumne and San Joaquin Rivers shown in Table 12-2 in Chapter 12, *Hydrology and Water Quality,* are more likely attributed to agricultural and urban runoff, rather than construction-related stormwater discharges, as many of the contaminants are pesticides.

Operation of the Proposed Program would include tertiary-treated effluent discharges to the San Joaquin River and land application of secondary-treated wastewater, which could directly or indirectly contribute to the existing cumulative water quality impacts of the San Joaquin River and downstream water bodies. However, operation of the City's wastewater treatment system, particularly the Jennings Plant, under the Proposed Program would remove additional pollutants and/or suspended solids from the various discharges compared to the existing treatment and discharge operations. With these improved treatment processes, the Proposed Program would not have a substantial contribution to the existing cumulative water quality impacts of the San Joaquin River and downstream water bodies, and would likely have a beneficial contribution.

Several of the projects listed in Table 18-3 could add impervious surface area to the region or require additional use of groundwater supplies. The Proposed Program's new primary treatment and solids handling facilities at the Jennings Plant would increase impervious surface area by approximately 27 acres and potentially contribute to a reduction in groundwater recharge or storage in the underlying aquifers. However, this new impervious surface area, concentrated largely within or near urban areas, would not substantially affect groundwater recharge because the majority of groundwater recharge within the Modesto and Turlock Subbasins occurs via percolation of irrigation water in the vast agricultural lands in the area.

Following mitigation, the Proposed Program would not contribute considerably to cumulative impacts on hydrology and water quality. This impact would be **less than significant with mitigation.**

Impact CUM-6: Cumulative Impacts related to Noise and Vibration (Significant and Unavoidable)

Other projects in the immediate area of the proposed components could add to, or exacerbate, noise generated by construction and/or operation of the proposed components. Several projects listed in Table 18-3 fit this description. Additionally, projects that may be constructed in the future in accordance with applicable jurisdiction's general plans could be located in immediate proximity to the proposed CIP projects. Because the schedule for the projects listed in Table 18-3 and that for specific CIP projects under the Proposed Program (other than the River Trunk Realignment Project) is unknown and/or is subject to change, this analysis makes the conservative assumption that overlaps would occur, potentially producing significant cumulative noise effects.

As described in Chapter 14, *Noise,* Proposed Program construction and operation would not generate noise in excess of standards established in the local general plan or noise ordinance, depending on the specific characteristics of the proposed components. Stanislaus County and the City of Modesto Municipal Codes also contain some exemptions for noise from construction and maintenance activities performed by or for public utilities and facilities. **Mitigation Measures NOI-1** through **NOI-4** would reduce these effects through a variety of means. Additionally, implementation of **Mitigation Measure NOI-5** would avoid or minimize groundborne vibration impacts from the Proposed Program.

However, as discussed in Chapter 14, for the River Trunk Project, temporary construction noise associated with operating equipment and periodic truck traffic would likely exceed FTA noise thresholds (90 dB) at individual sensitive receptors along the pipeline alignment even after implementation of Mitigation Measures NOI-1 and NOI-2, resulting in a significant and unavoidable impact. Of the projects listed in Table 18-3, the TRRMP is located closest to the River Trunk Realignment Project. The City is currently constructing recreational trails on the Gateway Parcel, which would establish a connection to the downtown corridor and existing pathways along the Tuolumne River. Because it is possible that construction of the River Trunk Project could overlap with construction of the TRRMP, temporary or periodic increases in ambient noise levels caused by the River Trunk Project could be exacerbated by construction and operation activities for such other projects, contributing considerably to significant cumulative noise impacts. No feasible mitigation beyond that described above exists to reduce this impact; therefore, this impact is considered to be **significant and unavoidable.**

Impact CUM-7: Cumulative Impacts related to Transportation and Traffic (Less than Significant)

Depending on the timing of construction activities, other projects located in the immediate vicinity of the proposed components listed in Table 18-3 or included in general plans could overlap in duration with Program construction activities, exacerbating temporary effects on transportation and traffic. These projects, as well as other development that may be constructed in accordance with the City of Modesto, City of Ceres, or Stanislaus County General Plans could add substantial vehicle trips associated with residential and commercial uses, which could contribute to a long-term reduction in LOS and operating conditions on roads and highways in the area, creating a significant cumulative impact.

As described in Chapter 16, *Transportation and Traffic,* the Proposed Program would include trenching within the roadway for installation of new and rehabilitated sewer lines, as well as off-hauling of construction debris and spoils to the landfill. These activities could temporarily create congestion on local streets, which would be largely confined to the immediate area of the proposed components. However, preparation and implementation of a construction traffic management plan, which specifically requires that the City and/or its contractor coordinate with appropriate public safety about construction detours, lane closures, and other major deliveries, is required by City Standard Specifications. As a result, the City would be required to coordinate with other local agencies (e.g., local fire and police departments) about construction schedules and develop plans to minimize effects on traffic.

Because the Proposed Program would not add substantial vehicle trips over the long term and its impacts on transportation and traffic would be temporary, it would not contribute considerably to cumulative impacts on transportation and traffic. Therefore, this impact would be **less than significant.**

Impact CUM-8: Cumulative Impacts on Utilities and Service Systems (Beneficial)

During construction, measures would be implemented to avoid any interruptions to utilities and service systems. Over the long-term, the Proposed Program would not generate the need for additional stormwater or water infrastructure or increased solid waste disposal needs. Additionally, the Proposed Program would provide necessary wastewater collection and treatment infrastructure to support planned development. As such, the Proposed Program is anticipated to be beneficial from the standpoint of cumulative impacts related to utilities and service systems.

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Chapter 19
ALTERNATIVES

19.1 OVERVIEW

This chapter describes the CEQA requirements related to evaluation of alternatives in an EIR, presents the alternatives development process for the Proposed Program, describes the alternatives considered and those considered but eliminated from detailed analysis, provides environmental impact analysis of the alternatives considered, presents a comparison of alternatives, and identifies the environmentally superior alternative.

19.2 CEQA REQUIREMENTS

CEQA requires that an EIR evaluate a reasonable range of potentially feasible alternatives to the Proposed Program, including the No Program Alternative. The No Program Alternative allows decision-makers to compare the impacts of approving the action against the impacts of not approving the action. Although no clear rule exists for determining a reasonable range of alternatives to a Proposed Program, the CEQA Guidelines provide guidance that can be used to define the range of alternatives for consideration in the environmental document.

The alternatives described in an EIR must feasibly accomplish most of the basic project objectives, should avoid or substantially lessen one or more of the significant impacts of the Proposed Program, and must be potentially feasible (State CEQA Guidelines Section 15126.6[a]). In determining whether alternatives are potentially feasible, Lead Agencies are guided by the general definition of feasibility found in State CEQA Guidelines Section 15364: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." In accordance with State CEQA Guidelines Section 15126.6(f), the Lead Agency should consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, and jurisdictional boundaries in determining the feasibility of alternatives to be evaluated in an EIR. An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the Lead Agency relied on in making the selection. It also should identify any alternatives that were considered by the Lead Agency but were rejected as infeasible during the scoping process and briefly explain the reason for their exclusion (State CEQA Guidelines Section 15126.6[c]).

An EIR's analysis of alternatives is required to identify the environmentally superior alternative among all those considered (State CEQA Guidelines Sections 15126.6(a) and (e)(2). If the "no project" alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative amongst the other alternatives.

These guidelines were used in developing and evaluating the alternatives as described below.

19.3 ALTERNATIVES DEVELOPMENT PROCESS

The Proposed Program's purpose and objectives, as well as its significant environmental impacts, were considered while developing alternatives. In accordance with the requirements of CEQA, alternatives were developed to achieve most of the Proposed Program's basic objectives while avoiding or substantially lessening one or more of its significant adverse environmental impacts. Alternatives development was also based on potential feasibility. A reasonable range of potentially feasible alternatives is presented in Section 19.4, "Alternatives Considered," describing their impacts as well as benefits.

19.3.1 PROJECT OBJECTIVES

As stated in Chapter 2, *Program Description,* the objectives of the Proposed Program as a whole are as follows:

- To implement the City's economic goals and General Plan by planning for, and providing, sewer infrastructure in a timely and cost-effective manner to serve new and existing development.
- To repair and replace aging wastewater infrastructure.
- To ensure adequate wastewater infrastructure and services are available to serve new growth within the General Plan and City's SOI, and planned wastewater demands.
- To plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

For collection system improvements, the objectives of the Proposed Program are:

- To extend service to new customers.
- To increase sewer capacity to convey peak wet weather flows for a 10-year storm event, and where required, to serve future customers.
- To reduce wet weather flow volumes by removing cross connections with stormwater sewers.
- To replace, repair, or rehabilitate existing trunk sewers, and to reduce infiltration and inflow of stormwater into the sanitary sewers.
- To improve sewer collection reliability by providing new and redundant infrastructure improvements, including sewer trunk lines and lift stations, in known deficient areas at critical areas within the existing system.

For treatment plant improvements, the objectives are:

- To reduce flooding impacts at the Sutter Plant site and increase treatment process operational flexibility and efficiencies.
- To increase the capacity of the outfall connecting the primary and secondary treatment plants, and to provide increased reliability for the existing outfall.
- To increase treatment systems efficiency, reliability, and functionality for both domestic and cannery process stream flows.

- To increase or modify treatment systems to remain in compliance with existing Central Valley RWQCB's NPDES requirements and plan for potential future permitting regulations.

19.3.2 SIGNIFICANT ENVIRONMENTAL IMPACTS PRIOR TO MITIGATION

A number of impacts have been identified as significant, but would be mitigated to a level of less-than-significant through implementation of mitigation measures. These impacts are listed in Table ES-1 in the *Executive Summary* of this DEIR.

19.3.3 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS

The following impacts have been identified as significant and unavoidable:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-agricultural Use (Impact AG-1)
- Conflict with or Obstruct Implementation of an Applicable Air Quality Plan (Impact AQ-1)
- 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 AQ-3)
- Generate a Substantial Amount of GHG Emissions (Impact GHG-1)
- Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs (Impact GHG-2)
- Substantial Temporary or Periodic Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Program and River Trunk Realignment Project (Impact NOI-4)
- Cumulative Impacts on Agriculture (Impact CUM-1)
- Cumulative Impacts related to Noise and Vibration (Impact CUM-7)

19.4 ALTERNATIVES CONSIDERED

The following alternatives were considered for the Proposed Program:

- Alternative 1: No Program Alternative
- Alternative 2: Deferred Implementation Alternative
- Alternative 3: Primary Treatment and Solids Handling Facilities to the North of the Jennings Plant Alternative
- Alternative 4: River Trunk Realignment Project Design Alternative 4A
- Alternative 5: River Trunk Realignment Project Design Alternative 1

The Primary Treatment and Solids Handling Facilities to the North of the Jennings Plant Alternative (Alternative 3), River Trunk Realignment Project Alternative 4a (Alternative 4), and River Trunk Realignment Project Design Alternative 1 (Alternative 5) were identified in the context of the set of potentially feasible sites identified during the design process, and the significant impacts of the Proposed Program. **Table 19-1** at the end of this chapter summarizes the alternatives considered and compares them to the Proposed Program.

19.4.1 ALTERNATIVE 1: NO PROGRAM ALTERNATIVE

Characteristics of this Alternative

Under this alternative, no new wastewater infrastructure would be constructed or upgraded. Operation of the City's collection system and treatment facilities would continue similar to existing conditions. Under this alternative, the existing collection system and treatment facilities would continue to operate. Existing sewer mains, trunk lines, and lift stations that are currently under capacity would continue functioning but capacity issues may increase over time. This alternative would not meet any of the Program objectives.

Impact Analysis

Aesthetics

This alternative would have no impacts on visual character or quality. No new wastewater infrastructure would be constructed or operated; therefore, there would be no new impacts on views or visual character of sites.

Agricultural Resources

This alternative would have no impacts on Important Farmland or agricultural resources. No new wastewater infrastructure would be constructed or operated; therefore, there would be no effects on Important Farmland, lands zoned for agricultural uses, or Williamson Act contracts.

Air Quality

This alternative would have no conflicts with applicable air quality plans, violation of air quality standards, and cumulatively considerable net increases in criteria pollutants. No new wastewater infrastructure would be constructed or operated; therefore, there would be no new emissions of criteria air pollutants or toxic air contaminants. However, existing odor issues at the Sutter Plant and the Beard Park Siphon would not be addressed and may worsen without implementation of the Proposed Program.

Biological Resources

This alternative would have no impacts on biological resources from construction or operation of new wastewater infrastructure. However, the existing issues with the River Trunk (e.g., degradation of the pipeline, erosion of surrounding riverbank) and system capacity issues would not be addressed, leading to potential releases of sewage during overflow events, which could adversely affect/impact aquatic species in the Tuolumne River or other biological resources.

Cultural, Paleontological, and Tribal Cultural Resources

This alternative would have no impacts on cultural, paleontological, and tribal cultural resources due to trenching and ground excavation for installation of new wastewater infrastructure.

Geology, Soils, and Seismicity

This alternative would have no impacts related to geology, soils, and seismicity. No new pump stations, pipelines, or treatment plant improvements would be included so there is no potential for facilities to be constructed on unstable or expansive soils, such as to expose people or structures to substantial risks.

Greenhouse Gas Emissions and Energy Resources

This alternative would result in no new emissions of greenhouse gases, as no construction equipment would be operated to install new facilities, and there would be no long-term operation of new pump stations or treatment plant facilities. Greenhouse gas emissions and energy demand of the City's wastewater infrastructure would be similar to existing conditions.

Hazards and Hazardous Materials

This alternative would have no impacts related to routine transport, use, or disposal of hazardous materials; upset and accident conditions; interference with an emergency response plan, or exposure to wildfire.

Hydrology and Water Quality

This alternative would have no impacts related to violation of water quality standards, drainage patterns, groundwater recharge, siltation, runoff, and flooding directly caused by installation of Program facilities. No construction equipment would be operated and no ground disturbance would occur, so there would be no potential for spills of hazardous materials contained in construction or discharges of sediment-laden stormwater runoff from construction sites. However, as mentioned above, the No Program Alternative would not address existing deficiencies in the City's wastewater collection and treatment systems, which may lead to sanitary sewer overflows or releases of sewage from deteriorating infrastructure (e.g., River Trunk). Such occurrences could result in degradation of water quality in the Tuolumne River and violation of water quality standards. Additionally, the Sutter Plant treatment facilities would remain in the 100-year floodplain without adequate flood-proofing; as a result, these facilities could be subject to damage during a 100-year flood event and sewage also could be released to the environment during such an event.

Land Use and Planning

This alternative would have no impacts related to land use and planning. It is assumed that the City would not approve development which would result in demand for wastewater service that cannot be met under the No Program Alternative. As such, this alternative may impede attainment of the City's land use plans and policies which rely upon wastewater service capacity that would be provided by the Proposed Program.

Noise and Vibration

This alternative would have no impacts related to increases in ambient noise levels, groundborne noise or vibration levels, and other noise and vibration impacts. No construction equipment would be operated and no long-term operation of pump stations, lift stations or other infrastructure associated with the Proposed Program would occur. Thus, no sensitive receptors would be affected by new sources of noise or vibration.

Population and Housing

This alternative would not result in long-term inducement of substantial population growth or secondary impacts from growth. No new wastewater collection and treatment infrastructure would be constructed, so new development and population growth within the City will occur only to the extent that the City's existing collection and wastewater treatment systems' capacity can support it.

Transportation and Traffic

This alternative would have no impacts on transportation and traffic. No trenching for installation of new or rehabilitated sewer pipelines or hauling of waste spoils and construction materials would occur; therefore, there would be no short-term effects on traffic conditions in the area of proposed WWMP components. Also, to the extent that population growth and development is inhibited due to lack of wastewater system capacity, long-term increases in vehicle trips and congestion may not occur.

Utilities and Service Systems

This alternative would have no impacts related to solid waste disposal, and need for additional permitted landfill capacity. No demolition of structures or excavation of material would occur; therefore, there would be no need to dispose debris at the landfill. However, as described previously, the No Program Alternative could over time exacerbate the existing need for additional wastewater collection and treatment capacity in the City.

19.4.2 ALTERNATIVE 2: DEFERRED IMPLEMENTATION ALTERNATIVE

Characteristics of this Alternative

Under the Deferred Implementation Alternative, the schedule for construction of some program-level WWMP components would be deferred by 5 years, compared to the schedule for implementation of the Proposed Program. The City would revisit the list of CIPs and prioritize those that should be constructed in the near-term and determine which could be delayed by up to 5 years. Under this alternative, new wastewater collection and treatment infrastructure would be constructed or upgraded as indicated for the Proposed Program, but some CIPs would be implemented at a later date. Construction or upgrades of pump stations, lift stations, sewer pipelines, and wastewater treatment facilities would continue, but at a slower pace. Maintenance of existing collection and wastewater treatment facilities would continue, but some shortfalls in the City's collection system and treatment capacity or pressure flows may result from the delay in implementation of identified CIPs. In addition, development in the City's sewer service area may be delayed to the extent that construction of necessary infrastructure to support such development would be delayed under this alternative.

This alternative would delay the City's ability to meet Program objectives and thus would not fully meet objectives aimed to provide sewer infrastructure in a timely and cost-effective manner to serve new and existing development and provide adequate wastewater infrastructures and services to serve new growth within the General Plan and City's SOI.

Impact Analysis

Aesthetics

This alternative would have similar aesthetics impacts as the Proposed Program, but these impacts would occur later in time. Over the long term, the alternative would result in the same impacts on existing visual character and quality due to the new wastewater treatment infrastructure, although the intensity of impacts may be reduced by spreading them out over time.

Agricultural Resources

This alternative would have similar agriculture and forestry impacts as the Proposed Program, but these impacts would occur later in time. Like the Proposed Program, this alternative would result in direct conversion of Important Farmland associated with the new facilities at the Jennings Plant and other Program facilities.

Air Quality

This alternative would have similar air quality impacts as the Proposed Program, but these impacts would occur later in time. The same conflicts with applicable air quality plans, violation of air quality standards, and cumulatively considerable net increases in criteria pollutants may occur from operation of construction equipment and Program facilities. However, impacts could be increased or reduced by shifting them out further in time, either due to shifting standards, changes in air quality conditions, or use of improved equipment/ technology with lower emissions, and the intensity of impacts may be reduced by spreading them out over time.

Biological Resources

This alternative would have similar biological resources impacts as the Proposed Program, but these impacts would occur later in time. Extending the timeframe for implementation of CIPs could allow additional flexibility in timing for site-specific improvements that would allow avoidance of special-status species.

Cultural, Paleontological, and Tribal Cultural Resources

This alternative would have similar cultural, paleontological, and tribal cultural resources impacts as the Proposed Program, but these impacts would occur later in time. The alternative would involve the same trenching and ground excavation for installation of improvements, which may encounter unknown buried artifacts and other cultural resources.

Geology, Soils, and Seismicity

This alternative would have similar impacts related to geology, soils, and seismicity as the Proposed Program, but these impacts would occur later in time. The alternative would involve construction of the same pipelines, pump stations, and treatment facilities and

compliance with the City's Standard Specifications would prevent substantial impacts related to location on unstable or expansive soils from occurring.

Greenhouse Gas Emissions and Energy Resources

This alternative would have similar greenhouse gas emissions impacts as the Proposed Program, but these impacts would occur later in time. The alternative would use the same construction equipment to install proposed facilities and the same Program facilities may be operated following construction, which could emit greenhouse gases. However, increased fuel efficiency and other standards to reduce GHG emissions are expected to occur over time; therefore, delaying construction and operation of various Program components could result in use of newer technology with lower emissions, which could have the result of reducing impacts overall.

Hazards and Hazardous Materials

This alternative would have similar hazards and hazardous materials impacts as the Proposed Program, but these impacts would occur later in time. The alternative would involve use of the same construction equipment containing hazardous materials installation of emergency generators that would store fuel, which could create opportunities for accidental releases of hazardous materials to the environment, although the intensity of impacts may be reduced by spreading them out over time.

Hydrology and Water Quality

This alternative would have similar hydrology and water quality impacts as the Proposed Program, but these impacts would occur later in time. Like the Proposed Program, this alternative could result in discharges of stormwater from construction sites or frac-outs during trenchless pipeline installation techniques, although the intensity of impacts may be reduced by spreading them out over time.

Land Use and Planning

By delaying construction of facilities, this alternative may not fully meet the City's land use plans, which could result in greater impacts than under the Proposed Program.

Noise and Vibration

This alternative would have similar noise and vibration impacts as the Proposed Program, but these impacts would occur later in time. The alternative would involve use of the same construction equipment and operation of the same Program facilities, which would generate the same levels of noise and vibration in the same locations, but these effects would occur on an extended timeline, which may reduce the intensity of impacts.

Population and Housing

This alternative would have similar population and housing impacts as the Proposed Program, but these impacts would occur on an extended timeline. The alternative would result in the same long-term inducement of substantial population growth, and related secondary impacts, but these effects would be delayed as growth may be impeded by the lack of adequate wastewater service capacity.

Transportation and Traffic

This alternative would have similar transportation and traffic impacts as the Proposed Program, but these impacts would occur at a later time. The alternative would result in the same temporary congestion caused by construction traffic and lane closures during installation of CIPs, although the intensity of impacts may be reduced by spreading them out over time.

Utilities and Service Systems

This alternative would have similar utilities and service systems impacts as the Proposed Program, but these impacts would occur later in time. This alternative would involve the same hauling of excavated materials spoils and construction debris from demolished structures to the landfill, which could adversely affect landfill capacity, although the intensity of impacts may be reduced by spreading them out over time.

19.4.3 Alternative 3: Primary Treatment and Solids Handling Facilities to the North of Jennings Plant Alternative

Characteristics of this Alternative

This alternative was evaluated in the City's Wastewater Treatment Master Plan (Carollo Engineers 2016) and entails purchasing of approximately 50 acres of land to the north of the Jennings Plant. Instead of constructing the new primary treatment facilities east of the BNR/tertiary treatment facilities, as proposed under the Proposed Program, these facilities would be constructed on purchased land to the north of the Jennings Plant along the alignment of the two existing outfall pipelines (see **Figure 19-1**).

Compared to the Proposed Program, this alternative would use a less complex yard piping arrangement because the new primary treatment and solids handling facilities would be sited adjacent to the existing outfall pipelines and could more directly tie into the secondary treatment facilities. All other WWMP components, including collection system CIPs and CIPs planned at the Sutter Plant, would be constructed under this alternative. This alternative would meet all of the Program objectives.

Impact Analysis

Aesthetics

This alternative would have similar aesthetics impacts as the Proposed Program. The Jennings Plant is not in a scenic vista, and the alternative site location would not substantially change the effects on scenic views or the visual quality or character of the site compared to the site proposed under the Proposed Program.

Agricultural Resources

As shown on Figure 19-1, this alternative would involve development of primary treatment and solids handling facilities on agricultural land. This land is designated as Important Farmland; therefore, this alternative would result in a larger amount of permanent loss of Farmland than under the Proposed Program, and mitigation would be insufficient to reduce the impact to less than significant.

Air Quality

This alternative could have somewhat reduced criteria air pollutant emissions compared to the Proposed Program due to the simpler piping scheme. As described above, this alternative would site the primary treatment and solids handling facilities along the alignment of the existing outfall pipelines north of the Jennings Plant, which would allow for a less complex piping arrangement. This simpler arrangement could result in less use of construction equipment and materials during construction, which could lead to fewer emissions. In the context of the entire Proposed Program, however, this would be a small reduction and would be unlikely to reduce emissions below significance thresholds.

Biological Resources

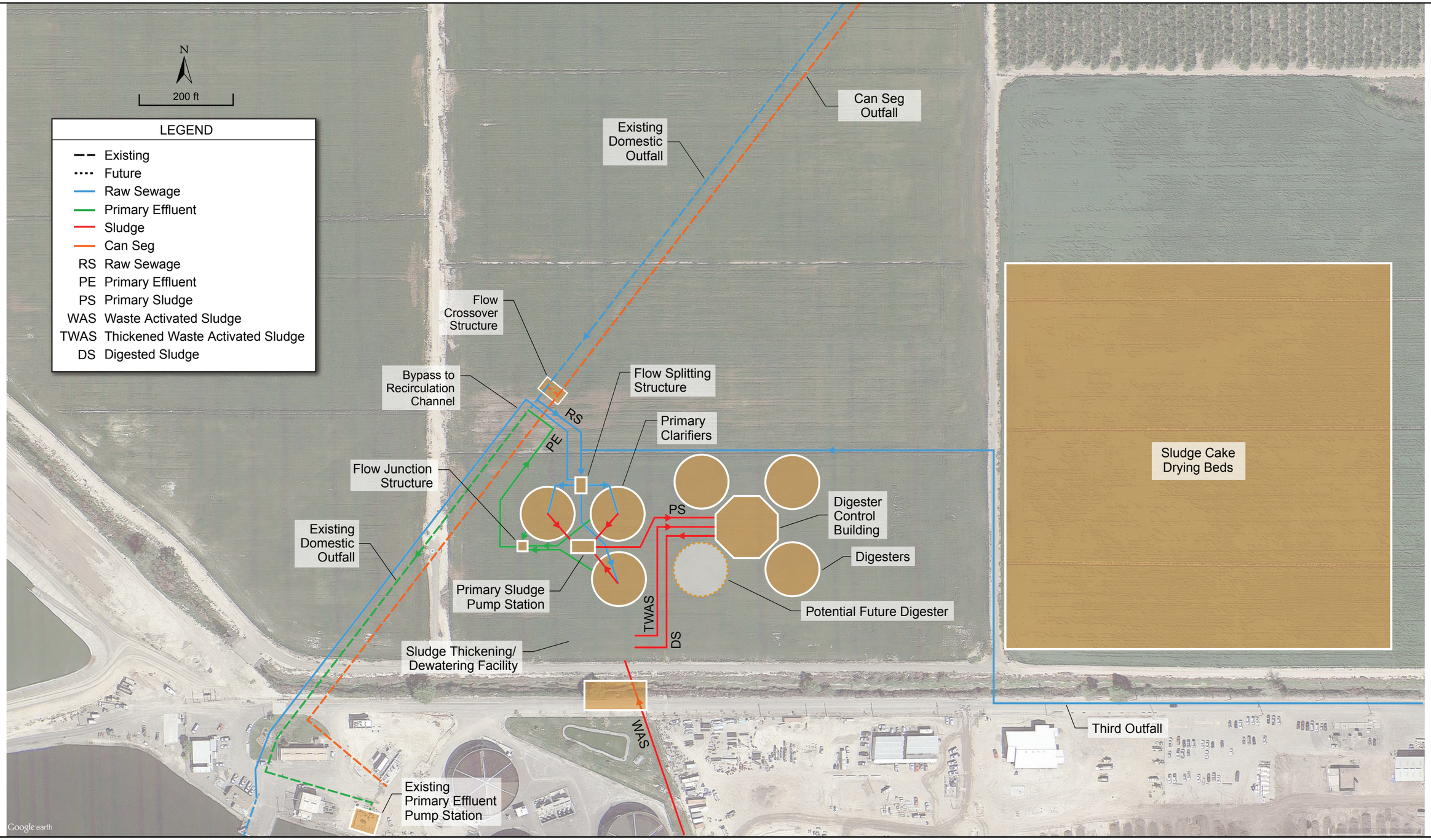
This alternative would have similar biological resources impacts to those of the Proposed Program. The alternative site location for the primary treatment and solids handling facilities at the Jennings Plant is adjacent to the proposed site (to the north), and has similar land cover/habitat characteristics. Special-status plants or animals would not be more likely to occur at this alternative site location than at the proposed site. Therefore, the impacts of this alternative would be comparable to those of the Proposed Program.

Cultural, Paleontological, and Tribal Cultural Resources

This alternative would have similar cultural, paleontological, and tribal cultural resources impacts to those of the Proposed Program. This alternative would involve similar ground disturbing activities to install the Jennings Plant primary treatment and solids handling facilities, which could expose unknown buried cultural (including tribal) or paleontological resources, but these possible effects would occur at an alternate site to the north. Given the less complex piping scheme under this alternative and location of facilities nearer to the existing pipeline outfalls, it is possible that this alternative may reduce the amount of trenching that would be required for pipeline installation, and thus reduce potential for discovery of archaeological resources. This difference would be minimal, however, and overall the alternative would have similar impacts to those of the Proposed Program.

Geology, Soils, and Seismicity

This alternative would have similar geology, soils, and seismicity impacts to those of the Proposed Program. Nothing about the alternate site (see Figure 19-1), which is currently an agricultural field, suggests that it would be more susceptible to geologic hazards, such as unstable or expansive soils, or landslides. Additionally, as described for the Proposed Program, the City would be required under its Standard Specifications to prepare a soil report and abide by the recommendations of a licensed geotechnical engineer prior to and during construction of the facilities. As a result, this impact would be less than significant, similar to the Proposed Program.



Source: Carollo 2016

Figure 19-1.
Site Layout for Alternative 3

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Wastewater Master Plan EIR

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Greenhouse Gas Emissions and Energy Resources

This alternative would have similar, if not slightly less severe, greenhouse gas emission impacts to those of the Proposed Program. As described above, under "Air Quality," owing to the less complex piping arrangement and location of facilities closer to the existing outfall pipelines, this alternative may require less trenching and use of construction equipment, potentially resulting in fewer construction emissions such as greenhouse gases. This difference would be relatively minimal, however, especially with respect to the overall Program, and would be unlikely to reduce greenhouse gas emissions below applicable significance thresholds.

Hazards and Hazardous Materials

This alternative would have similar hazards and hazardous materials impacts to those of the Proposed Program. The alternative would involve generally the same construction methods to install the primary treatment and solids handling facilities, although the less complex piping arrangement for this alternative could result in less use of construction equipment and thereby reduce potential for spills of hazardous materials contained in equipment. This difference would be minor, however, and impacts would generally be similar to those for the Proposed Program.

Hydrology and Water Quality

This alternative would have similar hydrology and water quality impacts to those of the Proposed Program. The alternative would involve the same ground-disturbing construction methods to install the primary treatment and solids handling facilities, which could discharge stormwater from the construction site causing water quality impacts. As for the Proposed Program, these impacts would be reduced to less than significant with adherence to the City's Standard Specifications.

Land Use and Planning

This alternative may introduce conflicts with existing zoning, as the parcel on which the alternative site is located is zoned for agriculture by Stanislaus County. The facilities may be subject to a conditional use permit, but there is greater potential for conflict than for the Proposed Program; under the Proposed Program, the primary treatment and solids handling facilities would be located on City-owned land.

Noise and Vibration

This alternative would have similar noise and vibration impacts to those of the Proposed Program. The alternative would use the same construction equipment to install the primary treatment and solids handling facilities, and the same facilities would be operated following construction, all of which could generate noise and vibration. As discussed under previous resource topic headings, the less complex piping arrangement associated with this alternative may decrease to some degree the amount of construction activity, thereby decreasing noise, but this would not be a significant difference. In general, the area surrounding the Jennings Plant is relatively undeveloped and few, if any, sensitive receptors exist in the area.

Population and Housing

This alternative would have the same impacts related to population and housing as the Proposed Program. This alternative would provide the same amount of additional capacity at the Jennings Plant as the proposed primary treatment and solids handling facilities, and thus would accommodate population growth to the same degree.

Transportation and Traffic

This alternative would have similar transportation and traffic impacts to those of the Proposed Program. The alternative site is located adjacent to the proposed site and is not next to or near any public roadways. Construction vehicles and haul trucks would use the same routes to access the alternative site as they would the proposed site, and there would be no new trenching within a public roadway. Therefore, this alternative would have the same impacts as the Proposed Program.

Utilities and Service Systems

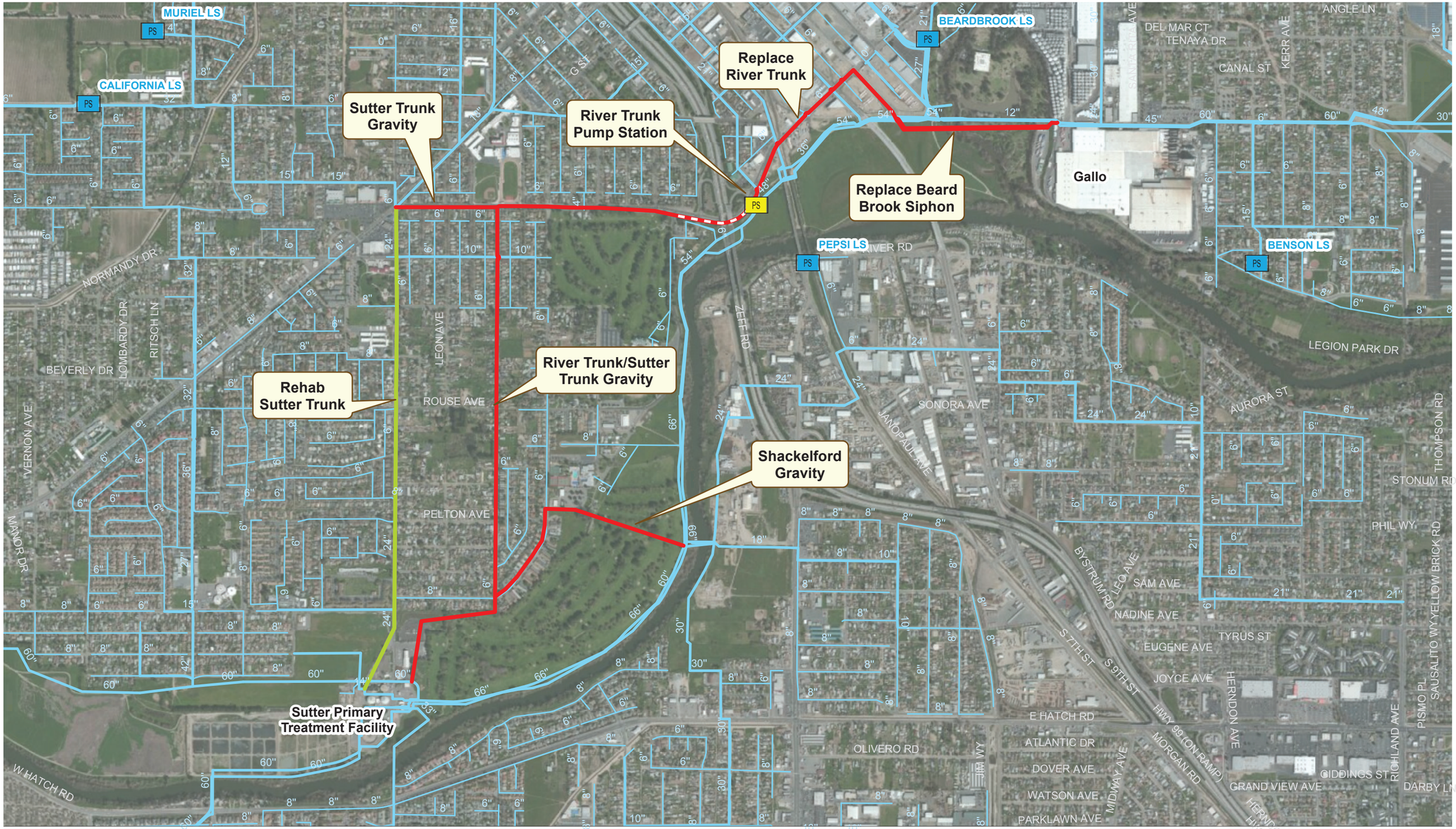
This alternative would have similar utilities and services impacts compared to the Proposed Program. This alternative may use slightly less materials and require slightly less construction activity due to the simpler piping arrangement, but this difference would not be substantial and overall the alternative would have similar energy demands and may dispose of similar amounts of material at the landfill.

19.4.4 Alternative 4: River Trunk Realignment Project Design Alternative 4A

Characteristics of this Alternative

Carollo Engineers evaluated a number of design alternatives to the River Trunk Realignment Project (Carollo Engineers 2015). Alternative 4A from the Preliminary Design Report (referred to as "Alternative 4" hereafter) is carried forward for analysis in this EIR because it would achieve most of the Program objectives and would reduce one or more significant environmental impacts. Alternative 4 would follow largely the same alignment as the proposed River Trunk Realignment Project, but would not involve construction of the Shackelford Pump Station. Rather, the existing pipeline that would otherwise tie into the Shackelford Pump Station under the Proposed Program, would tie into existing sewer lines that cross the Tuolumne River. Additionally, Alternative 4 would include rehabilitation of the Sutter Trunk within Sutter Avenue, and also would involve constructing the River Trunk Pump Station at a slightly different location than under the Proposed Program, between Highway 99 and 7th Street. **Figure 19-2** shows the proposed alignment and components of the River Trunk Realignment Project Design Alternative 4A.

Compared to the Proposed Program, this alternative would involve less overall construction by rehabilitating the Sutter Trunk instead of constructing the Shackelford Pump Station. The River Trunk Pump Station would also be constructed in a slightly different location.



Source: Carollo 2015

Prepared by: Horizon WATER and ENVIRONMENT

Legend

- Proposed Gravity Sewer
- Proposed Force Main
- Proposed Rehabilitation
- Other Pipelines
  - 8" and Smaller
  - Greater than 8"
- Proposed Junction Structure
- Proposed Lift Station (PS)
- Other Lift Stations (PS)

N

1,000 500 0 1,000

Feet

Figure 19-2.
Alternative 4 Alignment

City of Modesto
Wastewater Master Plan EIR

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Impact Analysis

Aesthetics

This alternative would not have substantially different aesthetics impacts than the alignment included in the Proposed Program. Placing the River Trunk Pump Station to the east of 7th Street could make this facility more visible from Highway 99, potentially degrading visual quality of views from this location during the construction period. As Highway 99 is not a scenic highway and because views would be fleeting, constructing the pump station at the 7th Street location would not result in a significant impact on sensitive viewers. For similar reasons, following construction, views would not be substantially affected by the pump station. Not constructing the Shackelford Pump Station on the southeast bank of the Tuolumne River could reduce aesthetic impacts in this area, but there are relatively few sensitive receptors in the area of the proposed pump station that are likely to be affected by the project as described under the Proposed Program. Similar to the River Trunk Realignment Project as described in Chapter 2, *Program Description*, most of the aesthetics impacts of this alternative would be temporary during construction, and views would remain relatively unchanged following construction.

Agricultural Resources

Like the Proposed Program, this alternative would have no impacts on agricultural resources, as all of the land on which components would be constructed is either urban/built-up land or vacant land not being used for agriculture. None of the land is designated Farmland.

Air Quality

This alternative could have somewhat reduced criteria air pollutant emissions compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station would avoid a substantial amount of emissions associated with construction equipment and materials, as well as operation of the pump station over the long term. However, rehabilitation of the Sutter Trunk under this alternative would introduce emissions that would not otherwise occur under the River Trunk Realignment Project. Such rehabilitation would require use of construction equipment to expose the existing pipeline and implement rehabilitation techniques (see Chapter 2, *Program Description)*. It is believed that the reduction in emissions from not constructing the pump station would more than offset the increase in emissions from the additional component of rehabilitating the Sutter Trunk, leading to a modest overall reduction in emissions.

Biological Resources

This alternative would have slightly reduced biological resources impacts compared to the Proposed Program owing to the avoidance of the need to construct the Shackelford Pump Station. Not constructing this pump station would avoid possible impacts on habitat from ground disturbance and construction activity, as well as reduce potential for adverse biological resources impacts from discharges of stormwater from the construction site that could occur under the Proposed Project. The alternate location of the River Trunk Pump Station would not likely have a substantial effect on biological resources, and the rehabilitation of the Sutter Trunk would not introduce substantial new impacts, as this work would occur within an existing street. Thus, the alternative would have an overall reduced

impact on biological resources compared to the River Trunk Realignment Project as described in Chapter 2 and the Proposed Program.

Cultural, Paleontological, and Tribal Cultural Resources

Not constructing the Shackelford Pump Station under this alternative also would reduce potential for cultural, paleontological, and tribal cultural resources impacts, as there would be less ground disturbance/excavation. Under the River Trunk Realignment Project as described in Chapter 2, which would construct a Shackelford Pump Station, there would be greater potential to encounter buried, unknown cultural resources (including tribal cultural resources), potentially resulting in adverse impacts. The alternate location of the River Trunk Pump Station under this alternative would not substantially change potential for cultural resources impacts compared to the River Trunk Realignment Project as described in Chapter 2. The rehabilitation of the Sutter Trunk also would have low likelihood to result in cultural resources impacts, as it would involve relatively minimal ground disturbance within an existing street. Nonetheless, the potential to encounter unknown cultural resources during Sutter Trunk rehabilitation activities still exist and implementation of mitigation measures described in Chapter 8, *Cultural Resources,* would still apply. As such, overall, this alternative would somewhat reduce cultural, paleontological, and tribal cultural resources impacts compared to the River Trunk Project as described in Chapter 2, and the overall Proposed Program.

Geology, Soils, and Seismicity

This alternative would have somewhat reduced geology, soils, and seismicity impacts compared to the River Trunk Realignment Project as described in Chapter 2. By not constructing the Shackelford Pump Station, this alternative would create less potential for the project to construct facilities on unstable or expansive soils, although this impact would be less than significant for the River Trunk Project covered in the WWMP due to compliance with the City's Standard Specifications including preparation of a soils report. Constructing the River Trunk Pump Station in an alternate location would not substantially change geology, soils, and seismicity impacts, and rehabilitation of the Sutter Trunk would not result in substantial impacts because it would involve work on existing facilities within a street. Therefore, this alternative would reduce potential for geology, soils, and seismicity impacts to some degree compared to the Proposed Program.

Greenhouse Gas Emissions and Energy Resources

For similar reasons as described under "Air Quality" above, this alternative would likely reduce greenhouse gas emissions to some degree compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station would reduce greenhouse gas emissions associated with operation of construction equipment, haul-truck and employee vehicle trips, and operation of the pump station facilities following construction. Locating the River Trunk Pump Station in an alternate location would not substantially change the level of greenhouse gas emissions. Rehabilitating the Sutter Trunk would involve operation of construction equipment that would emit greenhouse gases, but these increased emissions would likely be outweighed by the reductions associated with the Shackelford Pump Station.

Hazards and Hazardous Materials

This alternative would have somewhat reduced potential for hazards and hazardous materials impacts compared to the River Trunk Realignment Project as described in Chapter 2 due to not constructing the Shackelford Pump Station. The alternative would avoid potential for construction equipment used to construct the Shackelford Pump Station to be improperly stored or accidentally release hazardous materials to the environment, although this impact would be less than significant under the River Trunk Realignment Project as described in Chapter 2. Constructing the River Trunk Pump Station at an alternate location would not substantially change potential for hazardous materials impacts. Rehabilitation of the Sutter Trunk could increase impacts from use of hazardous materials in construction equipment, emissions of TACs from equipment, but it is believed that these increased impacts would be outweighed by the reductions from not constructing the Shackelford Pump Station.

Hydrology and Water Quality

This alternative would have somewhat reduced potential for hydrology and water quality impacts compared to the River Trunk Realignment Project as described in Chapter 2. By not constructing the Shackelford Pump Station, this alternative would avoid potential discharges of contaminants from the pump station construction site, which would be located on the bank of the Tuolumne River, as well as accidental spills of hazardous materials contained in construction equipment. The alternate location of the River Trunk Pump Station and rehabilitation of the Sutter Trunk under this alternative would not introduce new significant impacts. Therefore, overall, this alternative would have somewhat less hydrology and water quality impacts compared to the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Land Use and Planning

This alternative would provide the same level of capacity and address existing deficiencies in the City's wastewater system. As such, it would provide for growth and development in accordance with the City's General Plan and would not inhibit development of land use planning/policies. This alternative would have the same impacts related to land use and planning as the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Noise and Vibration

This alternative would have somewhat reduced noise and vibration impacts compared to the River Trunk Realignment Project as described in Chapter 2. The alternative would not construct the Shackelford Pump Station, and therefore would avoid noise and vibration at this location associated with use of heavy construction equipment. Operational noise associated with this pump station also would be avoided, but these impacts would be less than significant for the River Trunk Realignment Project as described in Chapter 2. The alternate location of the River Trunk Pump Station would not substantially change noise impacts, but would change the location of the impacts. The rehabilitation of the Sutter Trunk could introduce some new noise impacts from operation of construction equipment to accomplish this task, but it is believed these increased impacts would be outweighed by the reductions from Shackelford Pump Station. Overall, this alternative would have somewhat less noise and vibration impacts compared to the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Population and Housing

This alternative would provide the same level of capacity and address existing deficiencies in the City's wastewater system. As such, it would provide for population growth and development in accordance with the City's General Plan to a similar degree and extent as the River Trunk Realignment Project as described in Chapter 2. This alternative would have the same impacts related to population and housing as the River Trunk Realignment Project covered in Chapter 2.

Transportation and Traffic

This alternative would have somewhat less transportation and traffic impacts to those of the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station would avoid haul-truck and employee vehicle trips associated with construction of this pump station, reducing potential congestion on streets in this area. Rehabilitation of the Sutter Trunk under this alternative would introduce new transportation and traffic impacts, as these activities may involve operation of construction equipment on Sutter Avenue or temporary closure of one lane of traffic. Overall, the reduction in traffic impacts attributable to not constructing the Shackelford Pump Station would outweigh the increased impacts caused by the Sutter Trunk rehabilitation. As a result, this alternative would have somewhat less transportation and traffic impacts compared to the Proposed Project.

Utilities and Service Systems

This alternative would have roughly similar utilities and services impacts compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station could lead to less disposal of construction debris at a landfill, but rehabilitation of the Sutter Trunk may generate some debris that would require disposal. Any difference with respect to the Proposed Project would have a minimal effect on existing landfill capacity. Therefore, this alternative would have the same impacts on utilities and service systems as the River Trunk Realignment Project as described in Chapter 2.

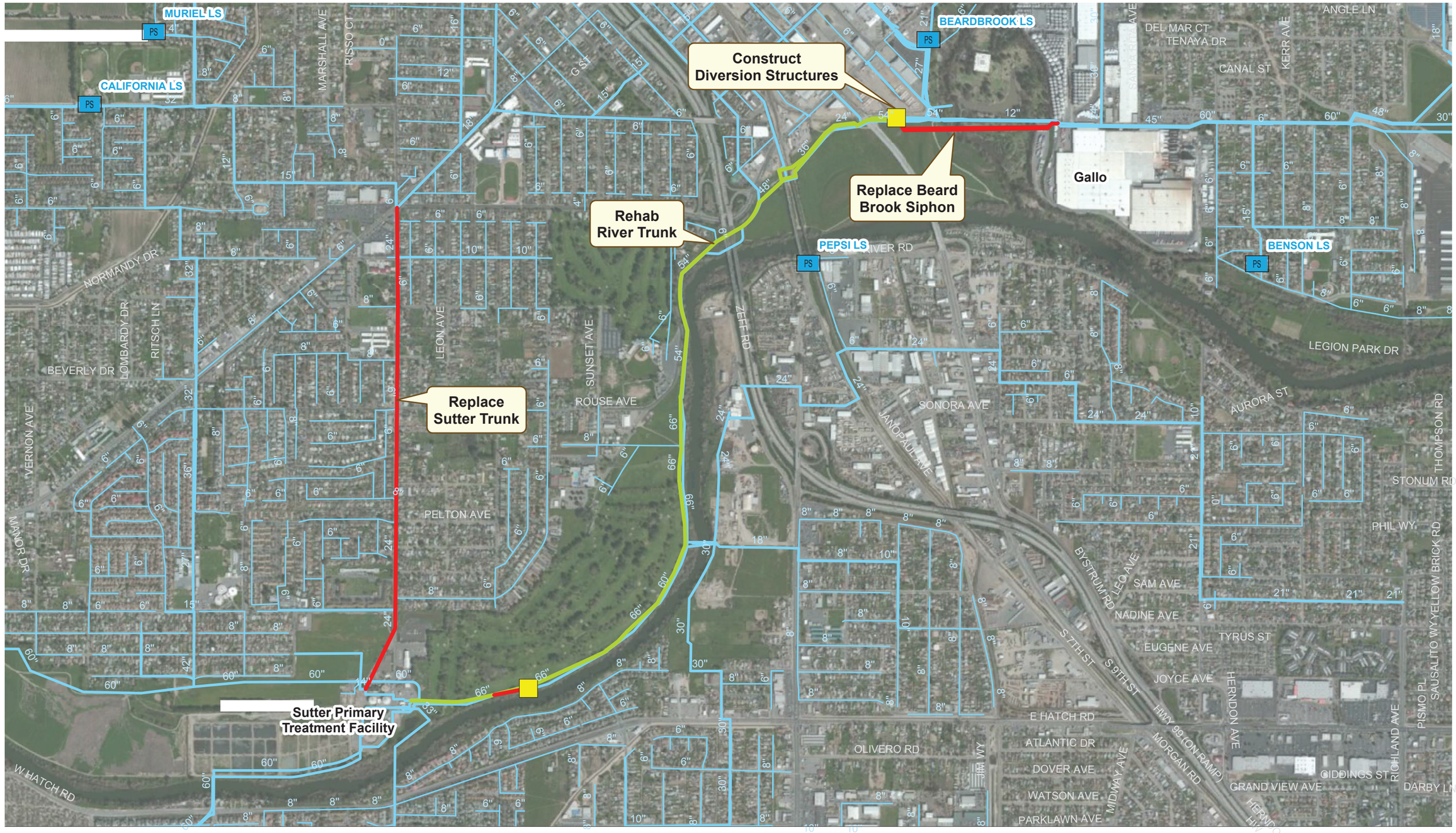
19.4.5 Alternative 5: River Trunk Realignment Project Design Alternative 1

Characteristics of this Alternative

This alternative was based on the recommendations documented in the 2007 Wastewater Master Plan. The alternative would replace the Beard Brook Siphon with an 1,800-linear-foot, triple barrel inverted siphon. Capacity deficiencies in the River Trunk would be mitigated by constructing a peak-flow diversion structure that diverts flows to the Cannery Segregation Line (CSL) during wet weather events, such that capacity in the CSL can be used to convey peak domestic wastewater flows. A second diversion structure would be constructed upstream of the Sutter Plant to divert the flows back to the River Trunk for primary treatment. The CSL would be flushed after the diversions multiple times prior to returning to normal canning season operation. Additionally, the alternative would mitigate capacity deficiencies in the Sutter Trunk by replacing the existing sewer with a new 24-inch diameter gravity sewer. The existing River Trunk also would be rehabilitated to correct its deteriorating condition. **Figure 19-3** shows the alignment and components of the River Trunk Realignment Project Design Alternative 1.

While this alternative would meet many of the Program objectives by addressing existing capacity issues and repairing aging wastewater infrastructure, it was identified as not meeting many of the important design goals (Carollo Engineers 2015). Specifically, the alternative may create treatment plant impacts from comingled flows, may create or fail to address CSL peak-flow limitations, and would not correct existing problems with operations and maintenance access and vulnerability issues of the River Trunk and CSL (e.g., erosion) by being located along the Tuolumne River.

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Source: Carollo 2015

Prepared by: Horizon Water and Environment

Legend

- Proposed Gravity Sewer
- Proposed Force Main
- Proposed Rehabilitation
- Other Pipelines: 8" and Smaller; Greater than 8"
- Proposed Diversion Structure
- Proposed Lift Station (PS)
- Other Lift Stations (PS)

N

1,000 500 0 1,000

Feet

Figure 19-3.
Alternative 5 Alignment

City of Modesto
Wastewater Master Plan EIR

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Impact Analysis

Aesthetics

This alternative would have less aesthetics impacts than the River Trunk Realignment Project as described in Chapter 2. By not constructing the River Trunk Pump Station and Shackelford Pump Station, or replacing sewer lines along Tuolumne Boulevard, Colorado Avenue, and other streets, this alternative would avoid impacts on views and visual quality during construction of these components. Rehabilitation of the River Trunk and construction of the diversion structures would likely be less involved and resulting in less aesthetics impacts than the River Trunk Realignment Project described in Chapter 2 and the overall Program.

Agricultural Resources

Like the Proposed Program, this alternative would have no impacts on agricultural resources, as all of the land on which components would be constructed is either urban/built-up land or vacant land not being used for agriculture. None of the land is designated Farmland.

Air Quality

This alternative would result in less criteria air pollutant emissions compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station or River Trunk Pump Station would avoid a substantial amount of emissions associated with construction equipment and materials, as well as operation of the pump station over the long term. Not replacing sewers in Tuolumne Boulevard, Colorado Avenue, and other streets also would avoid emissions, and rehabilitation of the River Trunk and construction of diversion control structures would involve less construction activity than River Trunk Realignment Project components as described in Chapter 2. Installation of the new Sutter Trunk would introduce new emissions from operation of construction equipment, but these emissions would be off-set by reductions elsewhere. Overall, this alternative would have less air quality impacts compared to the River Trunk Realignment Project described in Chapter 2 and the overall Program.

Biological Resources

This alternative would have reduced biological resources impacts compared to the Proposed Program owing to the avoidance of the need to construct the Shackelford Pump Station and River Trunk Pump Station. Not constructing these pump station would avoid possible impacts on habitat from ground disturbance and construction activity, as well as reduce potential for adverse biological resources impacts from discharges of stormwater from the construction site that could occur under the River Trunk Realignment Project described in Chapter 2. Rehabilitation of the River Trunk and construction of diversion control structures along the Tuolumne River could introduce new impacts to aquatic species and other biological resources in the riparian area, but these increased impacts would likely be outweighed by reductions due to not constructing the pump stations. The replaced Sutter Trunk would not introduce new substantial impacts because it would take place within an existing street. Overall, this alternative would have less biological resources impacts compared to the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Cultural, Paleontological, and Tribal Cultural Resources

Not constructing the Shackelford Pump Station or River Trunk Pump Station under this alternative also would reduce potential for cultural, paleontological, and tribal cultural resources impacts, as there would be less ground disturbance/excavation. Under the River Trunk Realignment Project as described in Chapter 2, which would construct these pump stations, there would be greater potential to encounter buried, unknown cultural resources (including tribal cultural resources), potentially resulting in adverse impacts. Rehabilitation of the River Trunk and installation of diversion control structures would likely not result in impacts because the activities would occur along the existing pipeline alignment. Overall, this alternative would have less cultural, paleontological, and tribal cultural resources impacts compared to the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Geology, Soils, and Seismicity

This alternative would have somewhat reduced geology, soils, and seismicity impacts compared to the River Trunk Realignment Project described in Chapter 2. By not constructing the Shackelford Pump Station and River Trunk Pump Station, this alternative would create less potential for the project to construct facilities on unstable or expansive soils (although this impact would be less than significant for the River Trunk Realignment Project described in Chapter 2 due to compliance with the City's Standard Specifications including preparation of a soils report). Rehabilitation of the River Trunk and replacement of the Sutter Trunk would not substantially change the level of geologic hazard these facilities might be exposed to in comparison to existing conditions. Therefore, this alternative would reduce potential for geology, soils, and seismicity impacts to some degree compared to the River Trunk Realignment Project as described in Chapter 2 and the overall Program.

Greenhouse Gas Emissions and Energy Resources

For similar reasons as described under "Air Quality" above, this alternative would reduce greenhouse gas emissions to some degree compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station would reduce greenhouse gas emissions associated with operation of construction equipment, haul-truck and employee vehicle trips, and operation of the pump station facilities following construction. Locating the River Trunk Pump Station in an alternate location would not substantially change the level of greenhouse gas emissions. Rehabilitating the Sutter Trunk would involve operation of construction equipment that would emit greenhouse gases, but it is believed these increased emissions would be outweighed by the reductions associated with the Shackelford Pump Station.

Hazards and Hazardous Materials

This alternative would involve less potential for hazards and hazardous materials impacts compared to the River Trunk Realignment Project as described in Chapter 2 due to not constructing the Shackelford Pump Station, River Trunk Pump Station, and replacement sewer lines along various streets. The alternative would avoid potential for construction equipment used to construct these facilities to be improperly stored or accidentally release hazardous materials to the environment, although this impact would be less than significant under the River Trunk Realignment Project as described in Chapter 2. Rehabilitation of the River Trunk along the bank of the Tuolumne River would introduce potential for impacts, but due to the reduced effort for this activity, it is believed that these new impacts would be

outweighed by the reductions in impacts described above. Overall, this alternative would have less hazards and hazardous materials impacts than the River Trunk Realignment Project as described in Chapter 2.

Hydrology and Water Quality

This alternative would have somewhat reduced potential for hydrology and water quality impacts compared to the River Trunk Realignment Project as described in Chapter 2. By not constructing the Shackelford Pump Station and River Trunk Pump Station, this alternative would avoid potential discharges of contaminants from the pump station construction sites, as well as accidental spills of hazardous materials contained in construction equipment. Rehabilitation of the River Trunk and installation of the diversion control structures would introduce potential for discharges of stormwater and contaminants to the Tuolumne River, but these impacts would likely not be severe as those impacts that would be avoided by not constructing the pump stations. Additionally, while the alternative would rehabilitate the River Trunk, it would not move the existing alignment of the River Trunk, leaving it potentially vulnerable to erosive high flows during a storm or flood event, although it is believed that the alternative would meet immediate concerns regarding rupture of the deteriorated existing pipeline resulting in discharges of sewage to the Tuolumne River. Overall, this alternative would have somewhat less hydrology and water quality impacts compared to the River Trunk Realignment Project as described in Chapter 2.

Land Use and Planning

This alternative would provide a similar level of capacity for domestic wastewater flows (albeit less capacity for Cannery Segregation flows) and address existing deficiencies in the City's wastewater system. As such, it would provide for growth and development in accordance with the City's General Plan and would not inhibit development of land use planning/policies. This alternative would have the same impacts related to land use and planning as the River Trunk Realignment Project as described in Chapter 2.

Noise and Vibration

This alternative would have reduced noise and vibration impacts compared to the River Trunk Realignment Project as described in Chapter 2. The alternative would not construct the Shackelford Pump Station or River Trunk Pump Station, or replacement sewer lines along Tuolumne Boulevard, Colorado Avenue, and other streets, and therefore would avoid noise and vibration impacts at these locations associated with use of heavy construction equipment. Operational noise associated with the pump stations also would be avoided, but these impacts would be less than significant for the River Trunk Realignment Project as described in Chapter 2. Rehabilitation of the River Trunk, construction of diversion structures, and replacement of the sewer line along Sutter Avenue would introduce new noise and vibration impacts at these locations, but it is believed that these increased impacts would be outweighed by reductions in impacts achieved elsewhere. Overall, this alternative would less noise and vibration impacts compared to the River Trunk Realignment Project as described in Chapter 2.

Population and Housing

This alternative would provide a similar level of capacity for domestic wastewater flows (albeit less capacity for Cannery Segregation flows) and address existing deficiencies in the City's wastewater system. As such, it would provide for population growth and development

in accordance with the City's General Plan to a similar degree and extent as the River Trunk Realignment Project as described in Chapter 2. This alternative would have the same impacts related to population and housing as the River Trunk Realignment Project as described in Chapter 2.

Transportation and Traffic

This alternative would have less transportation and traffic impacts compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station and River Trunk Pump Station would avoid haul-truck and employee vehicle trips associated with construction of these pump stations, reducing potential congestion on streets in this area. Additionally, not installing new or replacement sewer lines along Tuolumne Boulevard, Colorado Avenue, and other streets would reduce traffic impacts associated with required lane closures during construction. Increased vehicle trips and congestion associated with rehabilitation of the River Trunk and replacement of the Sutter Trunk would be outweighed by reductions in impacts described above. Overall, this alternative would have less transportation and traffic impacts compared to the River Trunk Realignment Project as described in Chapter 2.

Utilities and Service Systems

This alternative would have roughly similar utilities and services impacts compared to the River Trunk Realignment Project as described in Chapter 2. Not constructing the Shackelford Pump Station and River Trunk Pump Station could lead to less disposal of construction debris at a landfill, but rehabilitation of the River Trunk and replacement of the Sutter Trunk may generate some debris that would require disposal. Any difference with respect to the River Trunk Realignment Project as described in Chapter 2 would have a minimal effect on existing landfill capacity. Therefore, this alternative would have the same impacts on utilities and service systems as the River Trunk Realignment Project as described in Chapter 2.

19.4.6 Comparison of Alternatives

Table 19-1, at the end of this chapter, compares the various alternatives considered in this analysis to the Proposed Program and River Trunk Realignment Project.

19.4.7 Alternatives Considered and Eliminated

The following alternatives were considered, but ultimately eliminated from further analysis for one or more of the following reasons: (1) they would not sufficiently meet most of the Proposed Program objectives; (2) they were determined to be infeasible; or (3) they would not avoid or substantially lessen one or more significant impacts of the Proposed Program.

- **River Trunk Alternative Construction Methods.** Instead of utilizing open trench methods to install the gravity pipelines along Colorado Boulevard, this alternative would employ trenchless methods in effort to reduce community impacts such as traffic disruption and congestion, noise and pollutant emissions. During the planning phase, this alternative construction method was eliminated from further consideration due to the high costs associated with the trenchless methods (an increase in cost of 50% or more), which would render the alternative economically infeasible.

- **Secondary/Cannery Segregation Treatment Alternatives.** As part of WWMP planning process, the City evaluated several alternatives to accommodate an anticipated 5 mgd of additional cannery segregation flows. Such alternatives were evaluated against the proposed CIPs described in Chapter 2 (see JP-3.1, JP-3.2, JP-3.3, JP-3.4, and JP-3.5), which include upgrading the existing secondary treatment infrastructure in order to accommodate additional cannery segregation flows. As described in Chapter 2, Section 2.5.3, the City plans to install new aerators in the recirculation channel, install new chemical feed pumps and storage tanks, construct a berm in the effluent channel to keep effluent from designated domestic pond (Facultative Treatment Pond No. 3) separate from the Cannery Segregation ponds (Facultative Treatment Ponds No. 1 and 2), dredge the digestion pits of the facultative ponds, and install new aerators in the facultative ponds.

Alternative processes considered relative to the CIPs included in the Proposed Program involved:

- Option 1. Constructing dedicated Cannery Segregation treatment facilities,
- Option 2. Converting Facultative Pond No. 1 to an anaerobic pond which would require construction of new methane gas system facilities
- Option 3. Expanding the City's agricultural land application area to avoid the need for treating additional cannery segregation flows.

The latter option would have required acquisition of an additional 619 acres of agricultural land and was ultimately eliminated due to the high cost of land. Due to feasibility constraints, the City eliminated the other two treatment alternatives. For example, the first option would have required use of some existing Ranch lands as additional space would be needed to construct dedicated Cannery Segregation facilities, and from an operations standpoint, it would require additional staff attention. The second option would require more frequent removal of digested solids, pond liner, and cover.

In addition, neither of the secondary/cannery segregation treatment options would avoid or substantially lessen any of the Proposed Program impacts. Therefore, this alternative was eliminated from further consideration.

19.4.8 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Of the alternatives evaluated in detail above, the No Program Alternative is considered environmentally superior as, with one exception, it would reduce or avoid most impacts of the Proposed Program. However, note that the No Project Alternative would not address deficiencies in the City's wastewater collection and treatment systems, which could result in sanitary sewer overflows. The Sutter Plant facilities would remain in the 100-year floodplain, the facilities of which could be subject to damage during a 100-year flood event. It also may impede attainment of the City's land use plans and policies which rely upon wastewater service capacity that would be provided by the Proposed Program. This alternative would also not meet any of the City's objectives to plan for and provide sewer infrastructure in a timely and cost-effective manner to serve new and existing development; repair and replace aging wastewater infrastructure; ensure adequate wastewater infrastructure and services

are available to serve new growth within the General Plan and City's SOI; or plan for state-of-the-art facilities that reliably and economically meet the changing regulatory requirements.

Under CEQA, if the "no project" alternative is identified as environmentally superior, the EIR shall also identify an environmentally superior alternative among the other alternatives.

Both Alternatives 4 and 5 would have less environmental impacts than the proposed River Trunk Realignment Project. Between the two different River Trunk Project alternatives (Alternatives 4 and 5), Alternative 5 would be environmentally superior because it would result in less environmental impacts than Alternative 4. Construction and operation impacts associated with Alternative 5 would be less than Alternative 4 primarily because it would entail less new pipeline construction and would not involve new pump station construction. As shown in Table 19-1 and described in Section 19.4, by not installing new pump stations or realigning the River Trunk line, Alternative 5 would result in less construction-related disturbance to sensitive receptors including noise and vibration effects, air pollutant and GHG emissions, and traffic impacts. Similarly, since the construction footprint would be smaller in scope relative to Alternative 4, construction-related impacts on biological resources, cultural (including tribal cultural) and paleontological resources, and aesthetics would be less in comparison to Alternative 5 as well. Operation and maintenance effects of Alternative 4 would generally be less than Alternative 5 as the River Trunk Pump Station would not be installed; therefore, noise and air pollutant emissions that would be generated under Alternative 5 would not be realized under Alternative 4. Note that the rehabilitated River Trunk line under Alternative 5 would continue to be subject to certain vulnerabilities including erosion due to its adjacency to the Tuolumne River which could result in adverse water quality effects. Based on the above, Alternative 5 would be environmentally superior.

In comparing impacts of Alternative 3 (Primary Treatment and Solids Handling Facilities to the North of the Jennings Plant) and Alternative 2 (Deferred Implementation Alternative) to the Proposed Program, Alternative 2 would be environmentally superior because, on the whole, this alternative would reduce construction impacts at a given time since some CIPs would be delayed (although the impacts would eventually occur). Under Alternative 3, the construction timeframe for all collection system components would be the same as the Proposed Program and, therefore, would result in greater construction impacts collectively when compared to Alternative 2. For example, it is anticipated that construction-related air pollutant and GHG emissions, traffic, and noise impacts associated with Alternative 3 would be greater in comparison to Alternative 2 at a given time because a greater number of CIPs would be constructed at a given period within the overall 25-year construction schedule.

Table 19-1. Summary of Alternatives in Comparison to the Proposed Program

Impact Category	Proposed Program	Proposed Program Alternatives			River Trunk Realignment Project	River Trunk Realignment Project Alternatives	
		Alternative 1: No Program Alternative	Alternative 2: Deferred Implementation Alternative	Alternative 3: Primary Treatment and Solids Handling Facilities to the North of Jennings Plant Alternative		Alternative 4: Design Alternative 4A	Alternative 5: Design Alternative 1
Aesthetics and Visual Resources	Short-term degradation of visual character or quality during construction activities	Less	Delayed	Same	Short-term degradation of visual character or quality during construction activities	Same	Less
Agricultural Resources	Direct or indirect conversion of Important Farmland	Less	Delayed	Greater	No impacts	Same	Same
Air Quality	Conflict with applicable air quality plans; violate air quality standards; cumulatively considerable net increase in criteria pollutants; expose sensitive receptors to substantial pollutant concentrations	Less	Somewhat less	Somewhat less	Conflict with applicable air quality plans; violate air quality standards; cumulatively considerable net increase in criteria pollutants; expose sensitive receptors to substantial pollutant concentrations	Somewhat less	Less
Biological Resources	Impacts on special-status plants, vernal pool branchiopods, VELB, special-status fishes, western pond turtle, burrowing owl, raptors including special-status species, passerine species and birds protected under the MBTA, riparian habitat and other sensitive natural communities, federal protected wetlands, wildlife movement, local ordinances or policies	Less	Delayed	Same	Impacts on special-status plants, vernal pool branchiopods, VELB, special-status fishes, western pond turtle, raptors including special-status species, passerine species and birds protected under the MBTA, riparian habitat and other sensitive natural communities, federal protected wetlands, wildlife movement, local ordinances or policies	Somewhat less	Less
Cultural, Paleontological, and Tribal Cultural Resources	Impacts on historical, archaeological, tribal, or paleontological resources or human remains	Less	Delayed	Similar	Impacts on historical, archaeological, tribal, or paleontological resources or human remains	Somewhat less	Less
Geology, Soils, and Seismicity	Impacts from expansive soils; erosion; or subsidence, liquefaction, or collapse	Less	Delayed	Same	Impacts from expansive soils; erosion; or subsidence, liquefaction, or collapse	Somewhat less	Less
Greenhouse Gas Emissions and Energy Resources	Substantial GHG emissions or conflict with applicable plan or150 policy	Less	Somewhat less	Somewhat less	Substantial GHG emissions or conflict with applicable plan or policy	Somewhat less	Less
Hazards and Hazardous Materials	Upset and accident conditions involving the release of hazardous materials	Less	Delayed	Somewhat less	Upset and accident conditions involving the release of hazardous materials	Somewhat less	Less

Impact Category	Proposed Program	Proposed Program Alternatives			River Trunk Realignment Project	River Trunk Realignment Project Alternatives	
		Alternative 1: No Program Alternative	Alternative 2: Deferred Implementation Alternative	Alternative 3: Primary Treatment and Solids Handling Facilities to the North of Jennings Plant Alternative	River Trunk Realignment Project	Alternative 4: Design Alternative 4A	Alternative 5: Design Alternative 1
Hydrology and Water Quality	Violate water quality standards or otherwise degrade water quality; deplete groundwater supplies; alter drainage patterns	Less construction-related impacts. By not addressing existing wastewater collection and treatment system deficiencies, the potential for sanitary sewer overflows and subsequent water quality impacts may increase. Sutter Plant facilities would continue to be subject to damage during a 100-year flood event.	Delayed	Similar	Violate water quality standards or otherwise degrade water quality; deplete groundwater supplies; alter drainage patterns	Somewhat less	Somewhat less; however, the rehabilitated River Trunk line would still be vulnerable to erosion, which could result in water quality impacts
Land Use and Planning	No significant impacts	Greater (potential to conflict with land use plans, policies, and regulations)	Greater (potential to conflict with land use plans, policies, and regulations)	Same	No significant impacts	Same	Same
Noise and Vibration	Violate noise standards; excessive groundborne vibration or noise; increase in ambient noise levels	Less	Delayed and somewhat less	Same	Violate noise standards; excessive groundborne vibration or noise; increase in ambient noise levels	Somewhat less	Less
Population and Housing	Inducement of substantial population growth	Less	Delayed	Same	Inducement of substantial population growth	Same	Same
Transportation and Traffic	Increased congestion during construction activities; potential degradation of LOS during construction activities	Less	Delayed and somewhat less	Same	Increased congestion during construction activities; potential degradation of LOS during construction activities	Same	Less
Utilities and Service Systems	Effects on landfill capacity	Less	Delayed	Same	Effects on landfill capacity	Same	Same

1

Chapter 20
REFERENCES

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CHAPTER 20. REFERENCES

None cited.

CHAPTER 21. REPORT PREPARATION

None cited.

Chapter 21
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