City of Modesto

Water Master Plan

Draft Environmental Impact Report

Prepared for:

City of Modesto
P.O. Box 642 (1010 Tenth Street)
Modesto, CA 95353

Prepared by:

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

October 2019

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TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

Abbreviation	*Full Term*
°F	degrees Fahrenheit
A	
A	attainment
AB	Assembly Bill
ACE	Altamont Commuter Express
AF	acre-foot
af/yr	acre-feet per year
ALUCP	Airport Land Use Compatibility Plan
APCD	air pollution control district
ASR	aquifer storage and recovery
ATCM	airborne toxic control measure
AWWA	American Water Works Association
B	
Basin Plan	Water Quality Control Plan
BAU	business as usual
bgs	below ground surface
BMP	best management practice
BMO	best management objective
BP	Business Park
BPS	Best Performance Standards
C	
C	Commercial
CAAQS	California Ambient Air Quality Standards
Cal. Code Regs.	California Code of Regulations
Cal EMA	California Emergency Management Agency
Cal/EPA	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
CCR	California Code of Regulations

Abbreviation	*Full Term*
CCTS	Central California Taxonomic System
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
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
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
D	
dB	decibel
dBA	A-weighted decibel
DBCP	dibromochloropropane
DEIR	draft program environmental impact report
DOF	California Department of Finance
DPM	diesel particulate matter
DPWD	Del Puerto Water District
DRCP	Del Rio Community Plan
DTSC	California Department of Toxic Substances Control

Abbreviation	*Full Term*
DWR	California Department of Water Resources
E	
EIR	environmental impact report
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
F	
FD	federally delisted
FE	federally endangered
FEMA	Federal Emergency Management Agency
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 Order	Water Reclamation Requirements for Recycled Water Use
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
gpm	gallons per minute
GSA	groundwater sustainability agency
GPS	groundwater sustainability plan
Guidance	Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA
GWMP	groundwater management plan
GWP	global warming potential
H	
H_2O	atmospheric water
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HAZCOM	Hazardous Materials Communication

Abbreviation	*Full Term*
HCM	Highway Capacity Manual
HCP	habitat conservation plan
HDD	horizontal directional drilling
HFC	hydrofluorocarbon
HMBP	Hazardous Materials Business Plan
hp	horsepower
HSC	Health and Safety Code
Hz	Hertz
I	
I	Industrial
in/sec	inches per second
IPCC	Intergovernmental Panel on Climate Change
IRGMP	integrated regional groundwater management
K	
km	kilometer
L	
LAFCO	Local Agency Formation Commission
lf	linear feet
L_{dn}	day-night sound level
L_{eq}	equivalent steady-state sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
LS	less than significant
LSM	less than significant with mitigation
LUST	leaking underground storage tank
M	
M	magnitude
MAP	Model Accreditation Plan
MAX	Modesto Area Express
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant level
MEI	Maximally Exposed Individual
MG	million gallons
mgd	million gallons per day
MID	Modesto Irrigation District
MLD	Most Likely Descendent
MMI	Modified Mercalli Intensity Scale

Abbreviation	*Full Term*
MMT CO_2e	million tons of carbon dioxide equivalents
mph	miles per hour
MRWTP	Modesto Regional Water Treatment Plant
MS4	municipal separate storm sewer system
msl	mean sea level
MT	million tons
MT CO_2e	million tons of carbon dioxide equivalents
MU	Mixed Use
N	
NOA	Notice of Availability
N	nonattainment
N	nitrogen
N_2O	nitrous oxide
NA	not available
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
NOA	Notice of Availability
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
O	
O&M	operations and maintenance
O_2	oxygen
O_3	ozone

Abbreviation	*Full Term*
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
PCE	perchloroethylene
PEIR	program environmental impact report
PFC	perfluorocarbon
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	proposed 2017 Water 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
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

Abbreviation	*Full Term*
S	
SAR	Second Assessment Report
SB	Senate Bill
SC (Endangered)	state candidate for listing as endangered
SCADA	supervisory control and data acquisition
SCS	Sustainable Communities Strategy
SCP	Salida Community Plan
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
StanCOG	Stanislaus Council of Governments
ST	state threatened
StaRT	Stanislaus Regional Transit
STRGBA	Stanislaus and Tuolumne Rivers Groundwater Basin Association
SU	significant and unavoidable
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SWSP	Surface Water Supply Project
T	
TAC	toxic air contaminant
TCE	trichloroethyylene
TCP	traditional cultural property
TCR	tribal cultural resource
TDS	total dissolved solids
TGBA	Turlock Groundwater Basin Association

Abbreviation	*Full Term*
TID	Turlock Irrigation District
TMDL	total maximum daily load
TMP	traffic management plan
TRRP	Tuolumne River Regional Park
U	
U	unclassified
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
UWMP	urban water management plan
V	
VdB	vibration velocity in decibels
VELB	valley elderberry longhorn beetle
VOC	volatile organic compound
VR	Village Residential
W	
WAS	waste activated sludge
WMP	2017 Water Master Plan
WSER	Water System Engineer's Report
WSA	water sales agreement

EXECUTIVE SUMMARY

ES.1 Introduction

The City of Modesto (City) has prepared this Draft Program 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 2017 Water Master Plan (WMP 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 Title 14, Section 15000 et seq.).

ES.2 Background and Overview

The WMP is intended to accommodate the existing and future water supply needs through 2050 of the population and land uses of the City, along with the City's other water customers in the outlying service areas of Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock. The City developed the WMP to define the City's long-term water supply and infrastructure needs and guide management of its water service system. The WMP identifies recommended and prioritized capital improvement projects (CIPs) for system-wide implementation needed to deliver safe and reliable water and meet water demand requirements for existing and future City customers through buildout of the City's adopted General Plan. The WMP is described in the *City of Modesto Water Master Plan*, prepared by West Yost Associates (Final Draft September 2017).

ES.2.1 Program Location

The Proposed Program is location in the city of Modesto and other communities in Stanislaus County, California, in the central San Joaquin Valley. Modesto 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. The City's contiguous service area is limited to the current sphere of influence (SOI), Salida, North Ceres, and some unincorporated areas within and adjacent to the SOI including Empire. The outlying service areas include Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock. Collectively, the contiguous service area and outlying service areas constitute the Proposed Program's study area. These areas are shown in **Figure ES-1**.

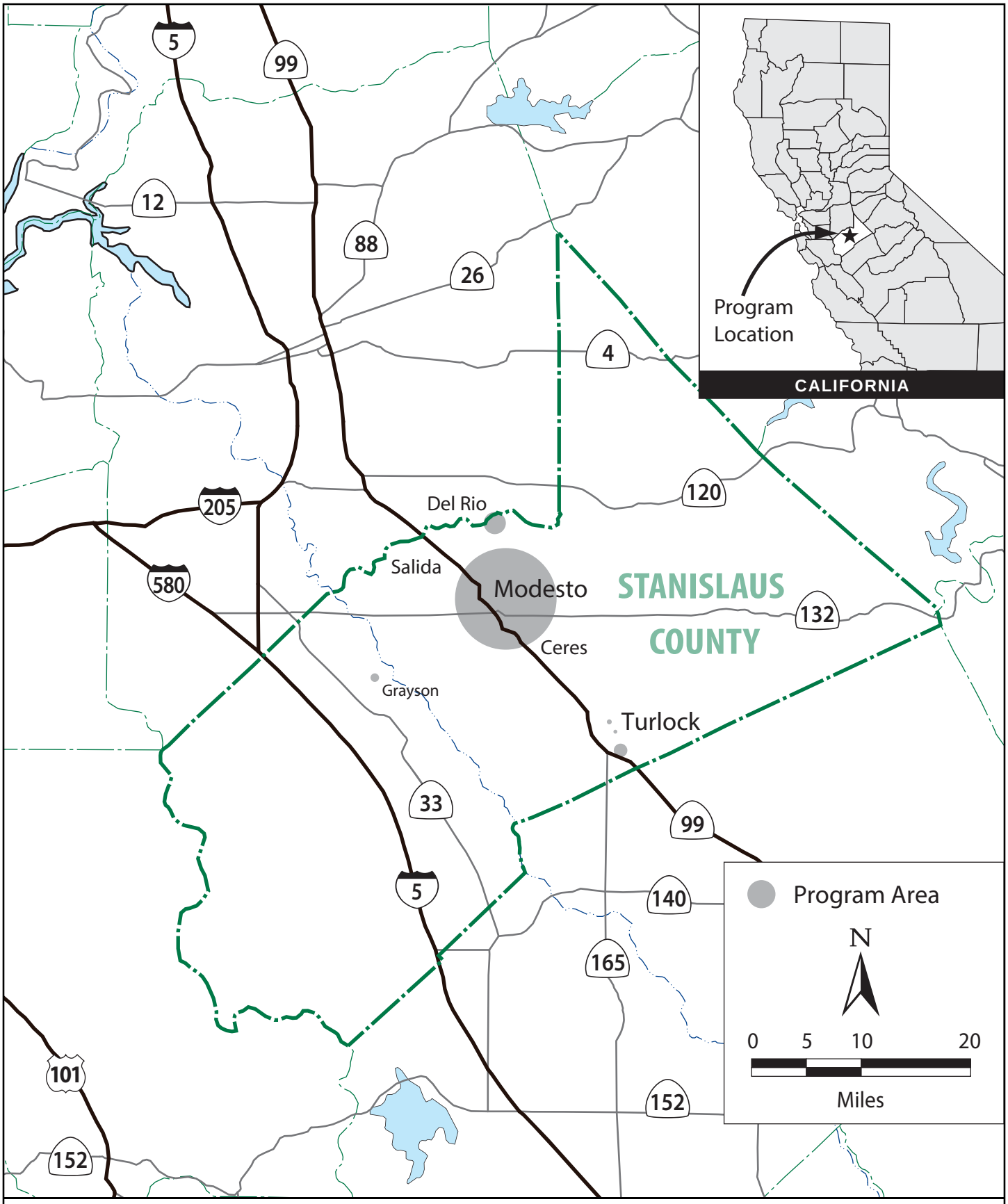

Figure ES-1. Project Location

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

ES.2.2 Program Background

The City has been providing potable water service to its urban area since 1895 through the purchase and acquisition of several private water companies, serving not only the City of Modesto, but also Salida, Ceres (Walnut Manor), Grayson, Del Rio (Hillcrest), and North, South, and Central Turlock. The City of Modesto's water system currently serves a population of approximately 260,000 people in California's Central Valley. The City is currently the largest retail water supplier in Stanislaus County.

In general, water distribution in the City's service area is divided by the Tuolumne River. The area north of the Tuolumne River is referred to as North Modesto, and is within the service area of Modesto Irrigation District (MID). The area south of the Tuolumne River is referred to as South Modesto, and is within the Turlock Irrigation District (TID) service area.

Potable water resources delivered by the City's system to customers originate from two sources: treated surface water purchased from the MID, and groundwater pumped from the many wells located throughout the contiguous service area and the outlying service areas. Water treatment, pumping, storage, and conveyance infrastructure is operated and maintained by the City's Utilities Department, Water Operations Division.

The key components of the City's water system are storage tanks and booster pump stations, groundwater wells, and a transmission/distribution pipeline network. Information about components of the City's existing water supply, storage, and distribution system is provided in Chapter 1, Introduction, of this DEIR.

ES.3 Program Objectives

The objectives of the Proposed Program are as follows:

- To implement and support the City's economic goals and General Plan by planning for and providing water infrastructure in a timely and cost-effective manner to serve new and existing development.
- To clearly define the City's long-term water supply needs (from both groundwater and the Modesto Irrigation District's [MID's] surface water supplies) and identify the associated infrastructure required to deliver these supplies to existing and future customers.
- To provide the flexibility, system redundancy, and reliability at a reasonable cost to accommodate possible changing future conditions (regulatory, climate, additional conservation, etc.).
- To repair and replace aging water infrastructure.
- To ensure adequate water infrastructure and services are available to serve new growth within the General Plan area, the City's sphere of influence (SOI), and the outlying service areas.

- To plan for state-of-the-art facilities that reliably and economically meet changing regulatory requirements.
- To provide safe and reliable water supply by planning for and constructing appropriately sized storage facilities, redundancies, and alternate (back up) power supplies for key facilities.
- To provide adequate storage capacity to meet operational, fire flow, and emergency storage needs.
- To maintain system pressures that meet regulatory requirements and peak demand conditions.
- To provide transmission and distribution pipelines to safely and reliably convey water throughout the water system.
- To provide safe and reliable water that meets regulatory water quality requirements.
- To evaluate a groundwater aquifer storage and recovery program.
- To sustainably utilize and protect groundwater resources.

ES.4 Program Description

The Proposed Program, as analyzed in this EIR, is the collection of CIPs proposed in the *City of Modesto Water Master Plan* (WMP) and the *City of Modesto Water System Engineer's Report* (2016 WSER) (West Yost Associates 2017 and 2016, respectively). Proposed CIPs were determined by evaluating the City's ability to serve current, future, and buildout[1] demands for its contiguous and outlying service areas, and assessing the following system components: groundwater pumping capacity; storage capacity; demands (peak and fire flows), and distribution system needs. In addition, water supply requirements under existing and buildout situations were evaluated.

The City's water system CIPs are divided into 22 categories, which are described in detail in the 2016 WSER (West Yost 2016). These categories are used to group and develop budgets for each of these water system improvements/programs, based on the type of improvement, and to allocate costs between existing and future customers. **Table ES-1** lists the City's water system CIP categories.

[1] **Future** improvements are water facilities that are *required* to be installed by the City (e.g. wells, pumps, replacing deficient water mains). **Buildout** components are facilities to be paid for and constructed by developers for specific development projects (such as extension pipelines) guided by the Land Use Plan (City of Modesto 2019).

Table ES-1. Summary of City of Modesto Water System Capital Improvement Program Categories

Category No.	Project Category	Updated as Part of Water Master Plan or Engineer's Report	Description
1	Modesto Regional Water Treatment Plant Phase II Expansion	Project Complete	This project is complete and provided funding to expand Modesto Irrigation District's capacity from 30 million gallons per day (mgd) to 60 mgd.
2	City-Side Downstream Improvements	Engineer's Report	This project is near completion and provides funding for the Industrial Tank and Booster Pump Station, Codoni Transmission Mains, and the Yosemite Transmission Mains.
3	Improvements for South Modesto	Water Master Plan	Provides funding to increase the delivery reliability to customers in South Modesto, by providing additional transmission mains, distribution mains, tanks, and booster pumping capacity.
4	Water Quality Related Studies	Engineer's Report	Provides funding for system-wide water quality related studies to manage the City's groundwater/ surface water resources.
5	SCADA System Upgrades	Engineer's Report	Provides funding for SCADA system upgrades to improve the City's operation and management of the water system.
6	New Corporation Yard	Engineer's Report	Provides funding for a new Water Division Corporation Yard.
7	Existing Tank Improvements	Engineer's Report	Provides funding for interior and exterior enhancements to water storage tanks to improve efficiency and prolong their useful life.
8	Extend Water Mains	Engineer's Report	Provides funding to extend water mains into developing areas and to complete distribution pipeline "looping".
9	Strengthen and Replace Water System	Water Master Plan	Provides funding to replace and upgrade deficient water mains, which may also include "looping" improvements
10	Install New Wells	Water Master Plan	Provides funding to replace older wells (taken out of service for water quality or production capacity) or construct new wells.

Category No.	Project Category	Updated as Part of Water Master Plan or Engineer's Report	Description
11	Wellhead Treatment	Water Master Plan	Provides funding for wellhead treatment or blending facilities for wells that are offline due to water quality.
12	Purchase & Install New Generators	Water Master Plan	Provides funding to purchase and install new generators to ensure reliable water service throughout the water system.
13	Water System Security Enhancements	Engineer's Report	Provides funding to make security enhancements (e.g. fencing. signage) to facilities identified in the 2003 Water System Vulnerability Assessment.
14	Groundwater Management Program	Engineer's Report	Provides funding to support projects and studies related to managing groundwater resources.
15	Urban Water Management Plan	Engineer's Report	Provides funding to support completion of an Urban Water Management Plan every 5 years to help ensure reliability of water supply.
16	Water Master Plan	Engineer's Report	Provides funding to support completion of future Water Management Plans to evaluate the adequacy of water system to serve existing and future customers.
17	Water System Evaluation	Engineer's Report	Provides funding to support as-needed engineering studies and water system evaluations.
18	New Water Tanks	Water Master Plan	Provides funding to construct new tanks and booster pumping stations and other associated facilities.
19	Water Meters	Engineer's Report	Provides funding to purchase and install new automated meter readers throughout the service area.
21	New or Replacement Pumps	Engineer's Report	Provides funding to replace deficient water pumps at wells and booster pump station that are too costly to repair.
22	Utility Cuts	Engineer's Report	Provides funding to cover costs associated with utility construction (e.g., paving, valve replacement, leak repairs).

Notes:

mgd = million gallons per day; MRWTP = Modesto Regional Water Treatment Plant; SCADA = supervisory control and data acquisition; UWMP = urban water management plan; WMP = water master plan

Categories 1 and 20 are not used for the purposes of this analysis. The WSER category numbers have remained unchanged to be consistent with past WSERs.

Category 1, the Modesto Regional Water Treatment Plant Phase II Expansion, a portion of Category 2, City-side Downstream Improvements Related to MRWTP Expansion, and Category 6, the New Corporation Yard, are not included in the Proposed Program, as these projects are completed or are currently under construction. The Proposed Program encompasses the category components (storage tanks and booster pump stations, groundwater wells, etc.) proposed to be installed or upgraded to alleviate existing deficiencies and accommodate water service demands associated with future development within the contiguous and outlying service areas. The locations of existing facilities needing improvements are known. The exact locations of some new facilities have yet to be finalized; however, in some cases tentative sites have been identified.

Individual facilities/improvements would be designed and constructed on an as-needed basis and as funding becomes available. As final design and locations of Proposed Program components are identified, project-level CEQA review would be completed. All CIPs are evaluated at a program level of detail in this DEIR, since they are improvements that the City would likely construct in the future, but designs of these improvements have not been advanced to a level at which detailed evaluations can be completed. As such, a more general, programmatic analysis of these improvements is included in this DEIR.

ES.5 Public Involvement Process

ES.5.1 Scoping Comment Period

A Notice of Preparation (NOP) for the DEIR was prepared pursuant to the State CEQA Guidelines (Section 15082) and circulated to the Office of Planning and Research's State CEQA Clearinghouse on August 26, 2016. The scoping period continued for 30 days and concluded on September 26, 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 38 copies of the NOP 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, August 26 to September 26, 2016. A scoping meeting was held on September 6, 2016, which one person attended. During the scoping period, one comment letter was received. This comment was considered in the environmental impact evaluation.

ES.5.2 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.

A 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 (NOA). During this period, the City will hold a public meeting. The date, time, and exact location of the public meeting is included in the NOA of this DEIR.

ES.5.3 Submittal of Written Comments

The City is circulating this DEIR for public review and comment for the period specified in the NOA. 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 NOA, which will be posted on the City's website (www.modestogov.com), and in a newspaper notice.

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 NOA, 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.

ES.6 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." To date, while not considered controversial, the following concerns regarding the Proposed Program have been raised during the scoping period:

- SOI boundary. Concerns regarding inclusion of certain areas in the Program's SOI that differ from the City's adopted SOI.
- Study area boundary. Concerns regarding the Beckwith Triangle, Wood Colony, and entire Salida community.

ES.7 Significant Impacts

Significant impacts identified in the DEIR are summarized in **Table ES-2**, Summary of Impacts and Mitigation Measures, at the end of this chapter. Environmental resource topics with the potential for significant environmental impacts and evaluated in detail in this DEIR are as follows:

- Aesthetics and Visual Resources
- Agricultural Resources

- Air Quality
- Biological Resources
- Cultural, Tribal, and Paleontological 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
- 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.

ES.8 Alternatives Considered

The purpose of the alternatives analysis in an Environmental Impact Report (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 reducing or eliminating 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:

- No Program Alternative
- Deferred Implementation Alternative
- Alternative Sources of Water Supply

In addition, a number of alternatives were considered, but ultimately dismissed 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 19.4, “Alternatives Considered and Eliminated,” in Chapter 19, *Alternatives,* for a description of these alternatives.

ES.8.1 No Program Alternative

Under this alternative, no new water supply infrastructure would be constructed or upgraded. Operation of the City’s water treatment, pumping, storage, and conveyance infrastructure would continue similar to existing conditions. The existing storage tanks and booster pump stations,

groundwater wells, and transmission/distribution pipeline network would continue to operate. Facilities that are currently operating in the contiguous service area and the outlying service areas would continue functioning, but capacity issues would not be addressed and would likely increase 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 Proposed Program. No new facility construction or ground-disturbing activities would occur. Essentially, all categories of impacts are anticipated to be reduced with this alternative aside from land use and planning, which would be greater because the failure to provide adequate infrastructure for approved development would result in potential to conflict with land use plans, policies, and regulations.

ES.8.2 Deferred Implementation Alternative

Under the Deferred Implementation Alternative, the schedule for construction of all Program-level WMP components would be delayed by 5 years compared to the schedule for implementation of the Proposed Program.

Under this alternative, new water supply infrastructure would be constructed or upgraded as indicated for the Proposed Program, but at a later date. Similarly, operation of the City's water treatment, pumping, storage, and conveyance infrastructure would be improved and expanded, but at a slower pace. Facilities in the contiguous service area and the outlying service areas would continue to operate, but capacity and pressure issues may not be addressed in a timely manner.

Development in the City's water service area may be delayed to the extent that construction of necessary infrastructure to support such development would be delayed under this alternative. This could also hinder population growth. 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 during this period compared to the Proposed Program. 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. However, the potential exists for fire risk to increase if the extended timeline results in delays in addressing shortfalls or needed expansion of water supply to meet fire flow requirements.

ES.8.3 Alternative Sources of Water Supply

Under this alternative, alternative sources of water supply would be used to address existing system deficiencies and meet increases in demand. This would alter the mosaic of capital improvements needed to deliver water to City customers. This alternative would not ultimately alter the amount of water to be used; however, it would rely on a greater range of sources for that water. It would require different capital facilities to utilize this water throughout the City's service area than those proposed under the program. The actual facilities would depend upon the sources selected, and their relative contributions to the overall supply. Alternative sources of water supply under this alternative could include additional water conservation and revised water shortage contingency plan; additional sources of potable water; development of recycled water options; and additional in-lieu groundwater recharge and aquifer storage and recovery. While this

alternative would accomplish the goals of the project, it would be anticipated to have impacts that are, on the whole, similar to those of the proposed program.

ES.8.4 Environmentally Superior Alternative

The No Program Alternative is considered environmentally superior as, with one exception, it would reduce or avoid the impacts of the Proposed Program. This alternative, however, would result in increased impacts related to land use and planning as growth planned by the City would not be able to proceed because necessary infrastructure to support development would not be constructed.

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. Therefore, the Deferred Implementation Alternative, has been selected as environmentally superior; this alternative would avoid impacts during the interim period during which the program would be delayed (although the impacts would eventually occur). The Deferred Implementation Alternative would result in increased impacts related to land use and planning as growth planned by the City would not be able to proceed in the interim period while necessary infrastructure to support development is not completed. As such, the Deferred Implementation Alternative would not as effectively meet program objectives, as necessary infrastructure to address system deficiencies and support planned development would be delayed.

The Alternative Sources of Water Supply Alternative is not considered to be environmentally superior because, while it would reduce some impacts through use of alternative water supplies, it would be anticipated to have impacts that are, on the whole, similar to those of the Proposed Program.

For this reason, the Proposed Program has been selected for implementation, as it would have the same impacts over the long term and would more fully meet Program objectives.

ES.9 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-2 summarizes the impacts, mitigation measures, and levels of significance identified in this document.

Table ES-2. Summary of Potential Impacts and Mitigation Measures

Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Aesthetics and Visual Resources			
Impact AES-1: Adverse Effects on Scenic Vistas	NI	NI	None required
Impact AES-2: Damage to Scenic Resources	LS	LS	None required
Impact AES-3: Degradation of Visual Character or Quality of Site and Surroundings During Construction	S	LSM	**Mitigation Measure AES-1:** Locate Staging Areas Away from Public Areas and Install Screening
Impact AES-4: Degradation of Visual Character of Quality of Site and Surroundings During Program Operations	S	LSM	**Mitigation Measure AES-2:** Incorporate Aesthetic Considerations into Design for Storage Tanks, Pump Stations, Groundwater Well Buildings, and Other Above-ground Facilities to Be Consistent with Surrounding Setting
Impact AES-5: Permanent Source of Substantial Light or Glare	S	LSM	Mitigation Measure AES-2
Agricultural Resources			
Impact AG-1: Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to Non-agricultural Use	S	SU	No feasible mitigation is available
Impact AG-2: Conflict with Existing Zoning for Agricultural Use or a Williamson Act Contract	LS	LS	None required

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

Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
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	S	SU	No feasible mitigation is available
Air Quality			
Impact AQ-1: Conflict with or Obstruct Implementation of an Applicable Air Quality Plan	S	SU	No feasible mitigation is available
Impact AQ-2: Violate Any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation	S	LSM	**Mitigation Measure AQ-1.** Implement SJVAPCD Regulation VIII Control Measures for Construction Emissions of PM10 **Mitigation Measure AQ-2.** Implement Enhanced Control Measures for Construction Emissions of PM10 **Mitigation Measure AQ-3**. Implement Control Measures for Operational Emissions of PM10 and for Ozone Precursors (ROG and NOx)
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	S	SU	Mitigation Measures AQ-1, AQ-2, and AQ-3
Impact AQ-4: Expose Sensitive Receptors to Substantial Pollutant Concentrations	S	LSM	Mitigation Measures AQ-1, AQ-2, and AQ-3

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact AQ-5: Create Objectionable Odors Affecting a Substantial Number of People	LS	LS	None required
Biological Resources			
Specific biological resources-related impacts and applicable mitigation measures of the Proposed Program may differ by CIPs, specifically for future grid pipelines (FTGRID-01 and FTGRID-04) that cross water bodies. Where measures are applicable for these future grid CIPs and not for other Program components, these distinctions have been indicated. Regardless of these limited mitigation measure differences, the impact significance conclusions prior to and after mitigation measure implementation were identical for the Proposed Program overall, future grid pipelines (FTGRID-01 and FTGRID-04), and other Proposed Program components.			
Impact BIO-1: Impacts on Special-status Plants	S	LSM	**Mitigation Measure BIO-1:** Perform Focused Surveys for Special-status Plant Species **Mitigation Measure BIO-2:** Avoid, Minimize, and Compensate for Impacts on Special-status Plant Species
Impact BIO-2: Impacts on Vernal Pool Branchiopods and Western Spadefoot	S	LSM	**Mitigation Measure BIO-3:** Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat **Mitigation Measure BIO-4:** Minimize and Compensate for Impacts on Branchiopods, Western Spadefoot, and Their Habitat

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact BIO-3: Impacts on Valley Elderberry Longhorn Beetle	S	LSM	**Mitigation Measure BIO-5:** Avoid Impacts on VELB Habitat **Mitigation Measure BIO-6:** Implement VELB Compensatory Mitigation, if Necessary **Mitigation Measure BIO-7:** Transplant Elderberry Shrubs if Avoidance Is Not Feasible
Impact BIO-4: Impacts on Special-status Fishes	S	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods (only FTGRID-01 and FTGRID-04)
Impact BIO-5: Impacts on Western Pond Turtle	S	LSM	**Mitigation Measure BIO-8:** Conduct Preconstruction Surveys for and Minimize Impacts on Western Pond Turtle
Impact BIO-6: Impacts on Burrowing Owl	S	LSM	**Mitigation Measure BIO-9:** Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas if Necessary
Impact BIO-7: Impacts on Golden Eagle and Bald Eagle	LS	LS	None required
Impact BIO-8: Impacts on Raptors, Including Special-status Species	S	LSM	**Mitigation Measure BIO-10:** Avoid, Minimize, or Compensate for Impacts on Raptors, including Special-status Species **Mitigation Measure BIO-11:** Compensate for Loss of Raptor Foraging Habitat

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact BIO-9: Impacts on Special-status Passerine Species and Birds Protected under the MBTA	S	LSM	**Mitigation Measure BIO-12:** Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas if Necessary
Impact BIO-10: Impacts on Special-status Mammals	LS	LS	None required
Impact BIO-11: Impacts on Riparian Habitat and Other Sensitive Natural Communities.	S	LSM	Mitigation Measures HYD/WQ-1, BIO-3, and BIO-4
Impact BIO-12: Impacts on Federally Protected Wetlands	S	LSM	**Mitigation Measure BIO-13:** Avoid and Minimize Impacts on Federally Protected Wetlands **Mitigation Measure BIO-14:** Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State Mitigation Measure HYD/WQ-1
Impact BIO-13: Impacts on Wildlife Movement, Established Wildlife Corridors, or the Use of Native Wildlife Nursery Sites	S	LSM	Mitigation Measures BIO-8, BIO-9, BIO-10, BIO-11, and BIO-12 **Mitigation Measure BIO-15:** Install Temporary Trench Plates over Open Trenches
Impact BIO-14: Conflict with Local Ordinances or Policies Protecting Biological Resources	S	LSM	Mitigation Measures BIO-1 through BIO-15

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Cultural, Tribal, and Paleontological Resources			
Impact CR-1: Impacts on Known Historic, Archaeological or Tribal Resources	LS	LS	None required
Impact CR-2: Impacts on Previously Undiscovered Archaeological Resources	S	LSM	**Mitigation Measure CR-1:** Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work
Impact CR-3: Disturb Any Human Remains, Including Those Interred Outside of Dedicated Cemeteries	S	LSM	Mitigation Measure CR-1
Impact CR-4: Impacts on Paleontological Resources	S	LSM	Mitigation Measure CR-1
Impact CR-5: Potential for a Substantial Adverse Impact on Tribal Cultural Resources	S	LSM	Mitigation Measure CR-1
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	None required
Impact GEO-2: Result in Risk to Property and Life from Expansive Soils	LS	LS	None required
Impact GEO-3: Result in Substantial Soil Erosion or Loss of Topsoil	LS	LS	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact GEO-4: Result in Subsidence, Liquefaction, or Collapse Due to Seismic Activity or an Unstable Geologic Unit or Soil	LS	LS	None required
Greenhouse Gas Emissions and Energy Resources			
Impact GHG-1: Generate a Substantial Amount of GHG Emissions	S	SU	No feasible mitigation is available
Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing Emissions of GHGs	S	SU	No feasible mitigation is available
Impact GHG-3: Cause Wasteful, Inefficient, and Unnecessary Consumption of Energy During Construction, Operation, and/or Maintenance	LS	LS	None required
Impact GHG-4: Cause a Substantial Increase in Energy Demand and the Need for Additional Energy Resources	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	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
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	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	None
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	None required
Impact HAZ-5: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste within One-Quarter Mile of an Existing or Proposed School	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	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
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	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	None required
Impact HAZ-9: Expose People or Structures, Either Directly or Indirectly, to a Significant Risk of Loss, Injury, or Death Involving Wildland Fires	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	S	LSM	**Mitigation Measure HYD/WQ-1:** Prepare and Implement a Frac-Out Contingency Plan for Trenchless Pipeline Installation Methods
Impact HYD/WQ-2: 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	S	SU	No feasible mitigation is available
Impact HYD/WQ-3: 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	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact HYD/WQ-4: 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	None required
Impact HYD/WQ-5: Place Within a 100-year Flood Hazard Area Structures Which Would Impede or Redirect Flood Flows	LS	LS	None required
Impact HYD/WQ-6: 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	None required
Land Use and Planning			
Impact LU-1: Divide an Established Community	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	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
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	S	LSM	**Mitigation Measure NOI-1:** Employ Noise-Reducing Construction and Maintenance Practices **Mitigation Measure NOI-2:** Limit Nighttime Construction Noise **Mitigation Measure NOI-3:** Employ Noise-Reducing Methods During Operations
Impact NOI-2: Expose Persons to Excessive Groundborne Vibration or Groundborne Noise Levels	S	LSM	**Mitigation Measure NOI-4:** Implement Vibration Reduction Measures
Impact NOI-3: Substantial Temporary, Periodic, or Permanent Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program	S	LSM	Mitigation Measures NOI-1 and NOI-3
Impact NOI-4: Expose People Residing or Working in the Study Area to Excessive Noise Levels Associated with a Public Airport	LS	LS	None required
Population and Housing			
Impact PH-1: Induce Substantial Population Growth, Both Directly and Indirectly, During Construction	LS	LS	None required

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

Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
Impact PH-2: Displace Substantial Numbers of People or Existing Housing, Necessitating the Construction of Replacement Housing Elsewhere	LS	LS	None required
Impact PH-3: Long-term Inducement of Substantial Population Growth, Both Directly and Indirectly	S	LSM	The policies contained in general and community plans, in particular Policy No. V.C.4[b], as well as the mitigation measures contained in this DEIR, would reduce the secondary effects of growth to a level of insignificance.
Transportation			
Impact TR-1: Conflict with an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System	LS	LS	None required
Impact TR-2: Conflict with an Applicable Congestion Management Program	LS	LS	None required
Impact TR-3: Substantially Increase Hazards Due to a Design Feature or Incompatible Uses	LS	LS	None required
Impact TR-4: Result in Inadequate Emergency Access	LS	LS	None required

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Impact	Level of Significance of Impact		Mitigation Measure
	Before Mitigation	After Mitigation	
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	None required
Utilities and Service Systems			
Impact UTL-1: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board	LS	LS	None required
Impact UTL-2: 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	None required
Impact UTL-3: Require New or Expanded Water Supply or Entitlements	NI	NI	None required
Impact UTL-4: Require Additional Permitted Landfill Capacity to Accommodate the Project's Solid Waste Disposal Needs	LS	LS	None required
Impact UTL-5: Comply with Federal, State, and Local Statutes and Regulations Related to Solid Waste	LS	LS	None required

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

Chapter 1
Introduction

The City of Modesto (City) has prepared this Draft Program 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 2017 Water Master Plan (Proposed Program). The Water Master Plan is intended to accommodate the existing and future water supply needs through 2050 of the population and land uses of the City, along with the City's other water customers in the outlying service areas of Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock.

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

1.1 Overview of CEQA Requirements

The basic purposes of CEQA (State CEQA Guidelines Section 15002[a]) are to:

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 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 and of the Proposed Program, as well as the significant effects of the Proposed Program's capital improvement projects (CIPs) on the environment. 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.

This DEIR evaluates the environmental impacts of the Proposed Program at a programmatic 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), 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.

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 August 26, 2016. The scoping period continued for 30 days and concluded on September 26, 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 38 copies of the NOP were mailed to a range of stakeholders including state, federal, and local regulatory agencies and jurisdictions, non-profit organizations. A notice was placed in the local newspaper on August 26, 2016. The NOP is included in this DEIR in Appendix A, *Scoping Materials*.

1.2.2 Scoping Comments and Meetings

The City accepted written comments during the 30-day scoping period, August 26 to September 26, 2016. A scoping meeting was held on September 6, 2016 at which one person attended the meeting. During the scoping period, one comment letter was received. This comment was considered in the environmental impact evaluation.

1.2.3 Draft Program 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 is included in the Notice of Availability (NOA) of this DEIR.

1.2.5 Final EIR

Written 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 Proposed Program, a description of the issues of concern, Program 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 DEIR and its preparation, review, and certification process. This chapter also provides some background on the Proposed Program and describes the City's existing water supply system.

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

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 DEIR.

Chapters 4–17 describe the environmental resources and environmental impacts of the Proposed 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 Proposed Program's environmental impacts. Each of these chapters also provides mitigation measures to reduce, where feasible, the adverse effects of significant impacts.

Chapter 18, *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 19, *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 20, *Report Preparation*, lists the individuals involved in preparing this DEIR.

Chapter 21, *References*, provides a bibliography of printed references, websites, and personal communications used in preparing this DEIR.

Appendix A, *Scoping Materials*. This appendix contains the NOP issued by the City, materials from the scoping process, and copies of all comments submitted.

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

Appendix C contains the supporting documentation for the evaluation of cultural resources.

Appendix D contains the draft Mitigation Monitoring and Reporting Program.

1.4 Submittal of Comments

The City is circulating this DEIR for public review and comment for the period specified in the NOA. 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 these

meetings will be provided in the NOA, which will be posted on the City's website (www.modestogov.com), and in a newspaper notice.

This CEQA document is available for review at the City's website: www.modestogov.com. In addition, 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 NOA, 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 and several locations within Stanislaus County, California (Figure 1-1). The study area encompasses two distinct customer location categories: (1) the contiguous service area, and (2) outlying service areas. Together, the contiguous service area and outlying service areas constitute this DEIR's "study area." The City's contiguous service area is primarily defined by the current Sphere of Influence (SOI), Salida, North Ceres, and some unincorporated Stanislaus County "islands" within and adjacent to the SOI (Empire is within the SOI). The outlying service areas include Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock. (Figure 1-2).

More specifically, outlying service areas include the unincorporated community of Del Rio, located approximately 2 miles north of the City's SOI boundary; Ceres (Walnut Manor) located roughly 0.5 mile south of the City's SOI boundary; the unincorporated community of Grayson, located approximately 14 miles west of the City's SOI boundary; and a portion of the City of Turlock, located approximately 7 miles southeast of the City's SOI boundary.

In general, water distribution in the portion of the service area in and contiguous to the City is divided by the Tuolumne River. The area north of the Tuolumne River is referred to as North Modesto, and is within the service area of Modesto Irrigation District (MID). The area south of the Tuolumne River is referred to as South Modesto, and is within the Turlock Irrigation District (TID) service area.

1.6 Background and Existing Water System

The City has been providing potable water service to its urban area since 1895 through the purchase and acquisition of several private water companies and, as a result, has become the primary domestic water purveyor in Stanislaus County, serving not only the City of Modesto, but also Salida, Ceres (Walnut Manor), Grayson, Del Rio (Hillcrest), and North, South, and Central Turlock. The City implements a Water Conservation Program, which combines a strong education program with watering restrictions and prohibition of water waste. In the early 1990s, the City, MID, and the Del Este Water Company formed a partnership to use a portion of MID's surface water rights for municipal uses. Today, the water is stored in Don Pedro Reservoir, which is jointly owned by MID and TID. 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. From Modesto Reservoir, MID may release water to its Lower Main Canal for irrigation purposes or to the Modesto Regional Water Treatment Plant (MRWTP) for municipal and industrial purposes, largely through City facilities (MID 2017).

The MID-owned and operated MRWTP was developed as the result of the partnership that was formed between MID, the City and the Del Este Water Company, and became operational in 1995. Construction of the MRWTP allowed the City to purchase treated surface water from MID, which greatly reduced the City's reliance on groundwater pumping and addressed an increasing local groundwater overdraft condition that was emerging at the time (City of Modesto 2016). The MRWTP delivers treated surface water to the City's service area to combine with groundwater sources to meet the City's water supply needs for those municipal customers within the City's SOI north of the Tuolumne River (southern boundary of MID's service area), including the communities of Salida and Empire. Areas served by the City of Modesto that lie outside the MID water service boundary (i.e., south of the Tuolumne River), including the community 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 MRWTP, in addition to storage and delivery facilities, initially provided 30 million gallons per day to the City. For a number of years, the City and MID have been working together on the MRWTP Phase Two Expansion, which became operational in 2017, and expanded the capacity of the plant to provide the City with up to an additional annual average of 30 million gallons per day (mgd), for a total annual average of up to 60 mgd.

Water treatment, pumping, storage, and conveyance infrastructure is operated and maintained by the City's Utilities Department, Water Operations Division. Potable water resources delivered by the City's system to customers originate from two sources: treated surface water purchased from the MID, and groundwater pumped from the many wells located throughout the contiguous service area and the outlying areas.

The key components of the City's water system are storage tanks and booster pump stations, groundwater wells, and a transmission/distribution pipeline network. These facilities in the contiguous service area are described below and shown in Figure 1-3; while facilities in the outlying service areas are shown in **Figure 1-4, 1-5, 1-6, and 1-7**.

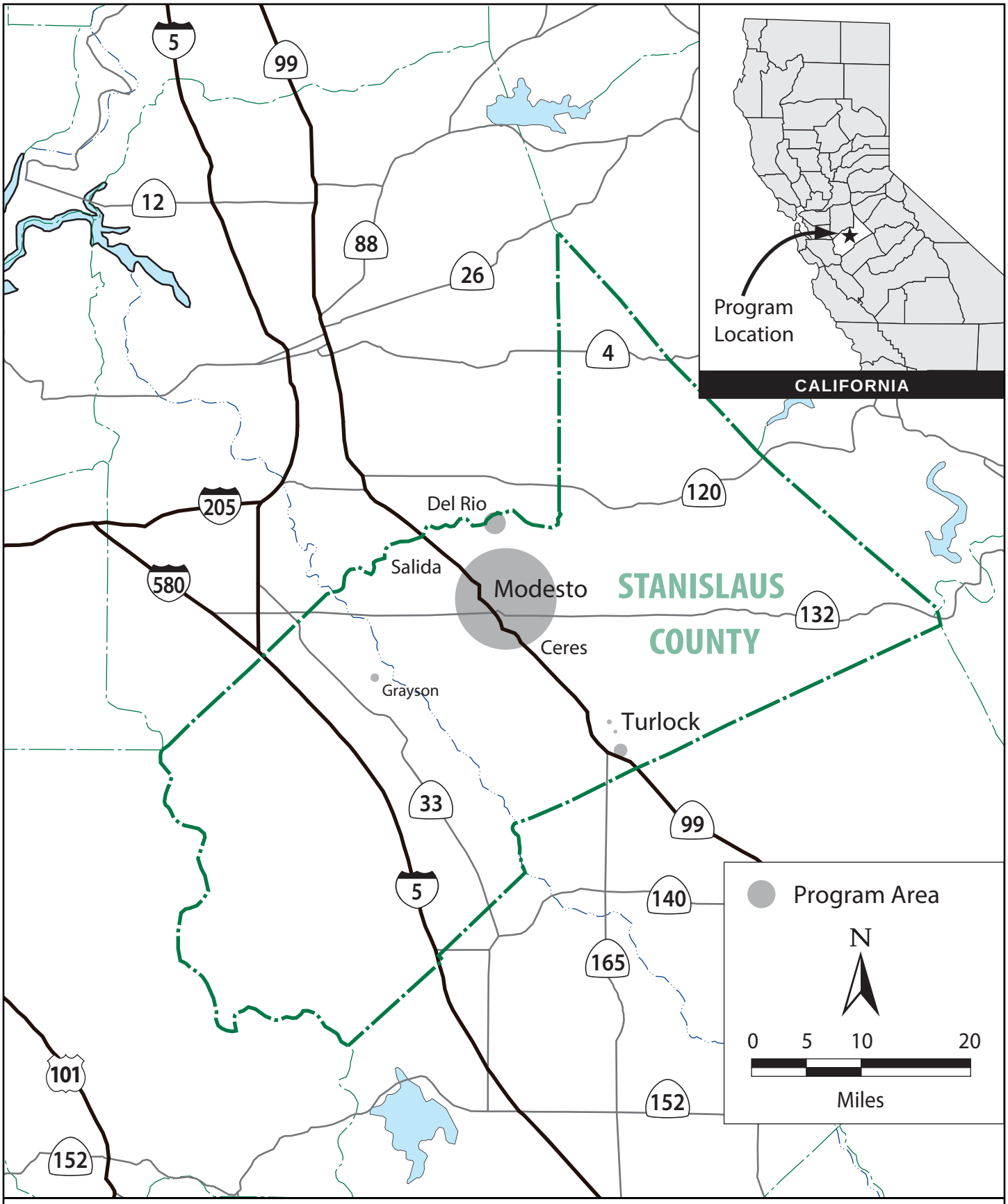

Figure 1-1.
Project Location

Prepared by:
Horizon
WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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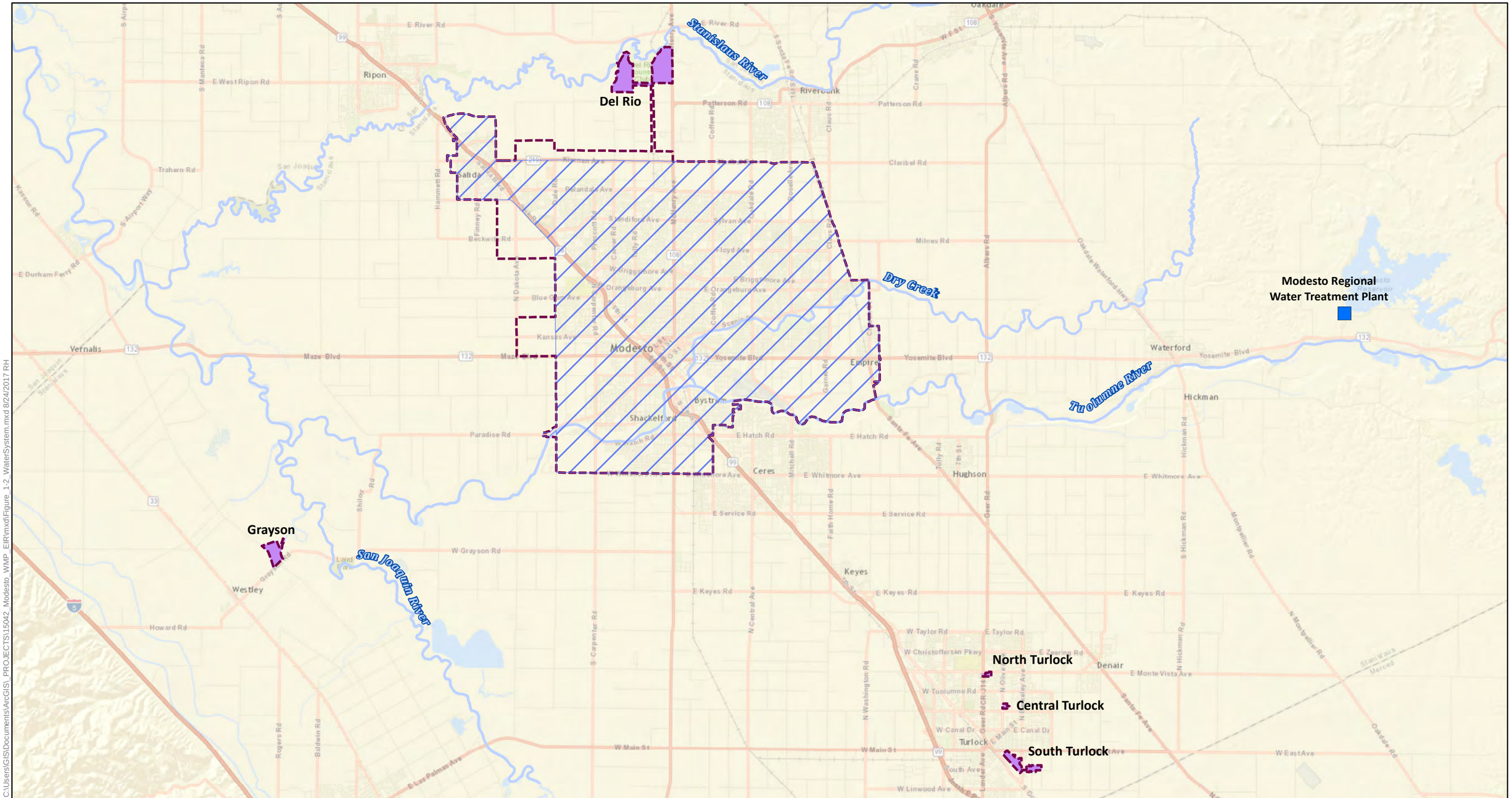

N

0 1 2 4
Miles

WMP Study Area

Continguous Service Area

Outlying Service Areas

Figure 1-2
Overview of Contiguous and Outlying Service Areas

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

C:\Users\GIS\Documents\ArcGIS_PROJECTS\15042_Modesto_WMP_EIR\mxd\Figure_1-2_WaterSystem.mxd 8/24/2017 RH

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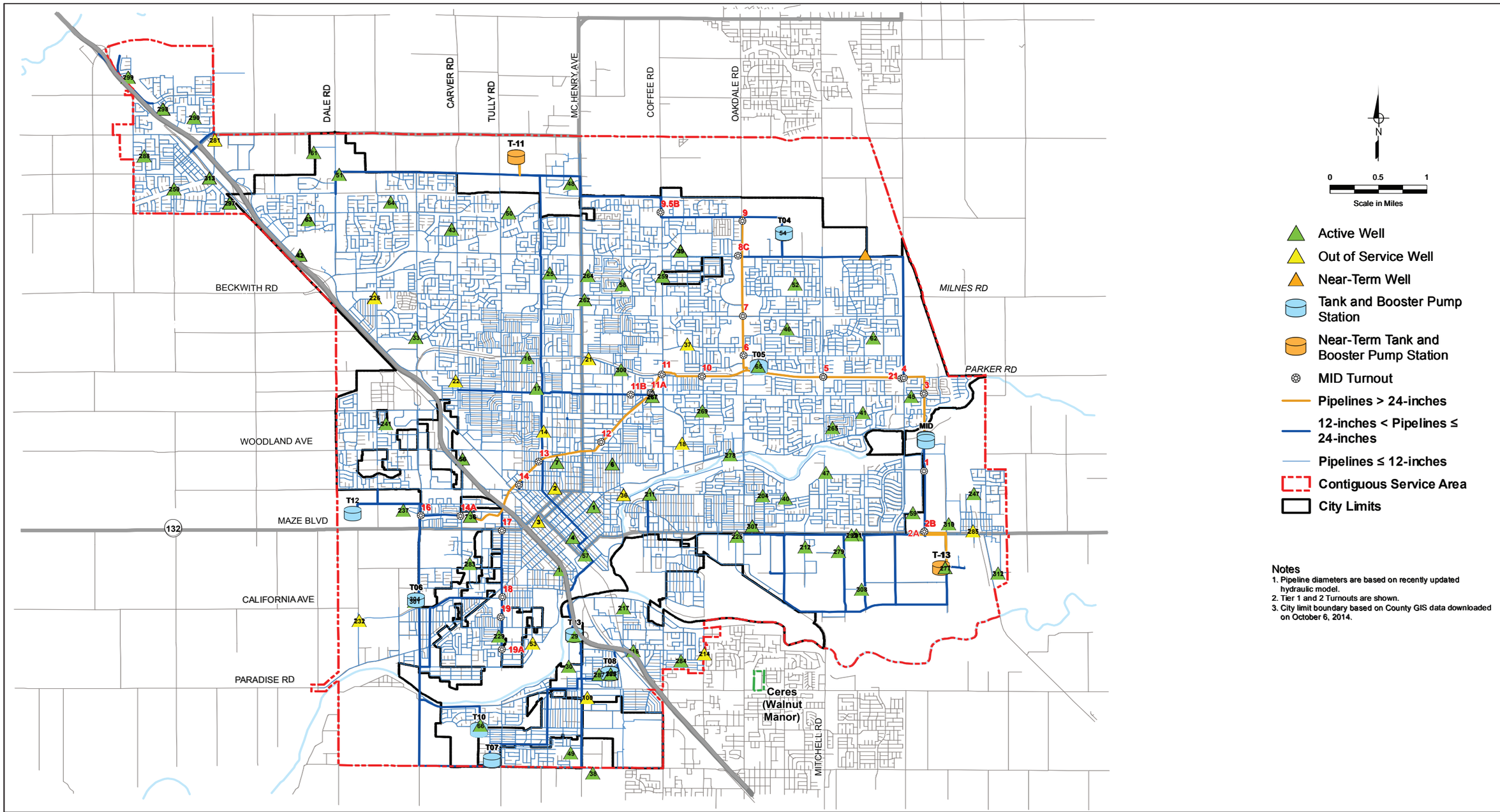

Source: West Yost 2016

Figure 1-3.
Existing Contiguous Service Area Water System Facilities

Prepared by:
Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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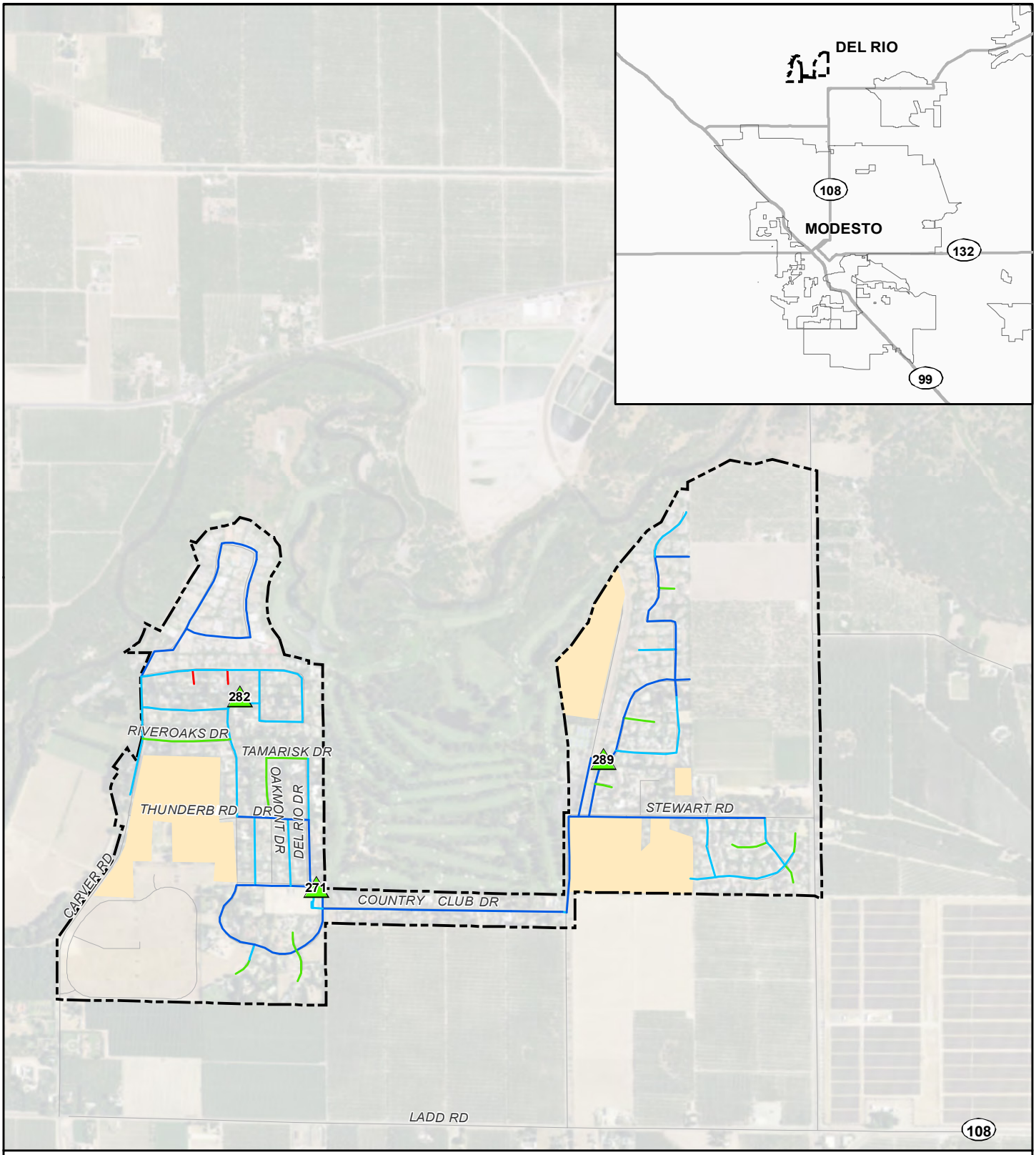

Source: West Yost 2017

N

0 750 1,500

Scale in Feet

Active Well

4-inch Pipeline

6-inch Pipeline

8-inch Pipeline

10-inch Pipeline

Existing Parcel Not Currently Served by City

Del Rio Service Area

Figure 1-4
Existing Del Rio Water Facilities

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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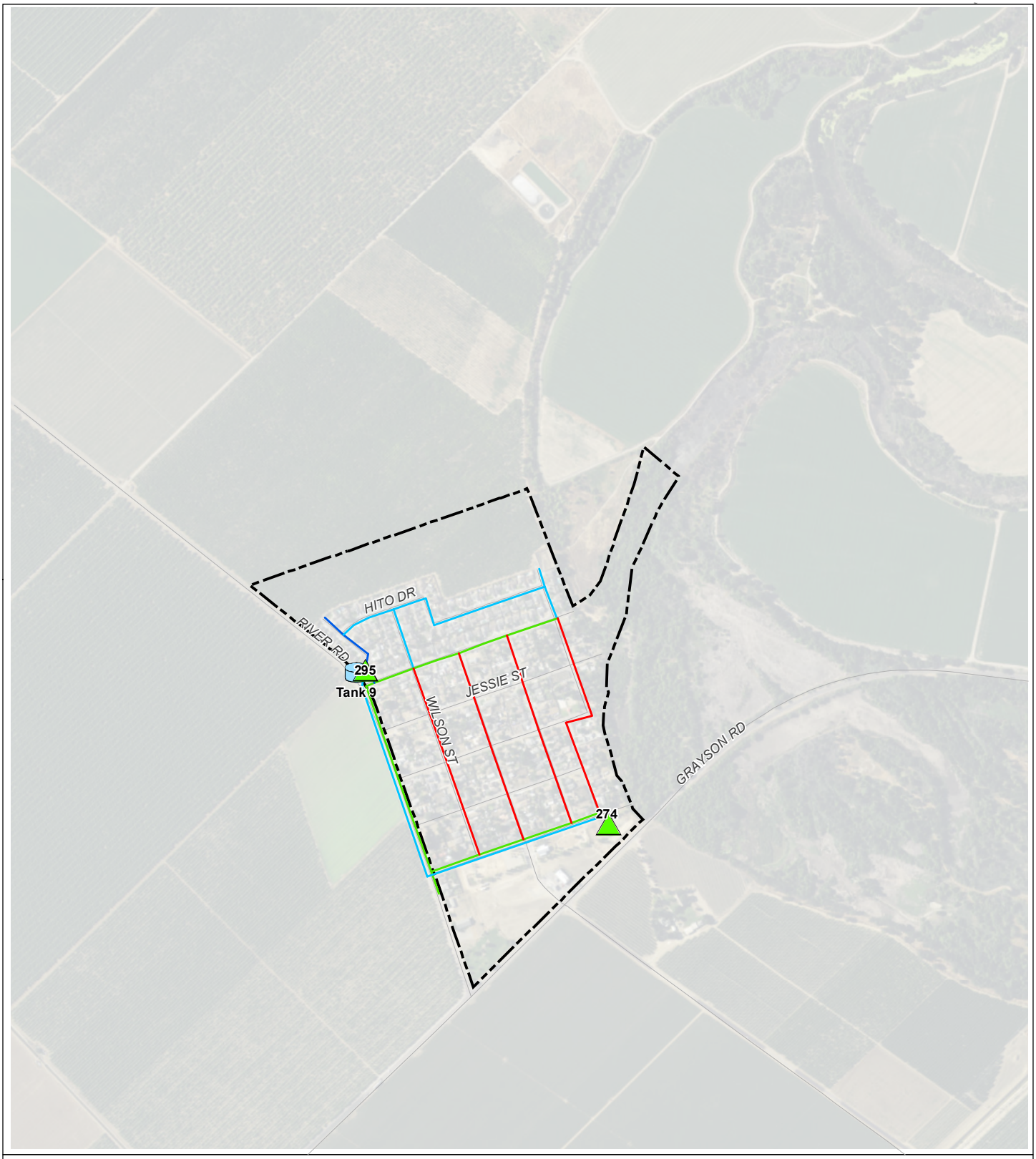

Source: West Yost 2017

N

0 500 1,000

Scale in Feet

Active Well

4-inch Pipeline

6-inch Pipeline

8-inch Pipeline

10-inch Pipeline

Existing Tank and BPS

Grayson Service Area

Figure 1-5
Existing Grayson Water Facilities

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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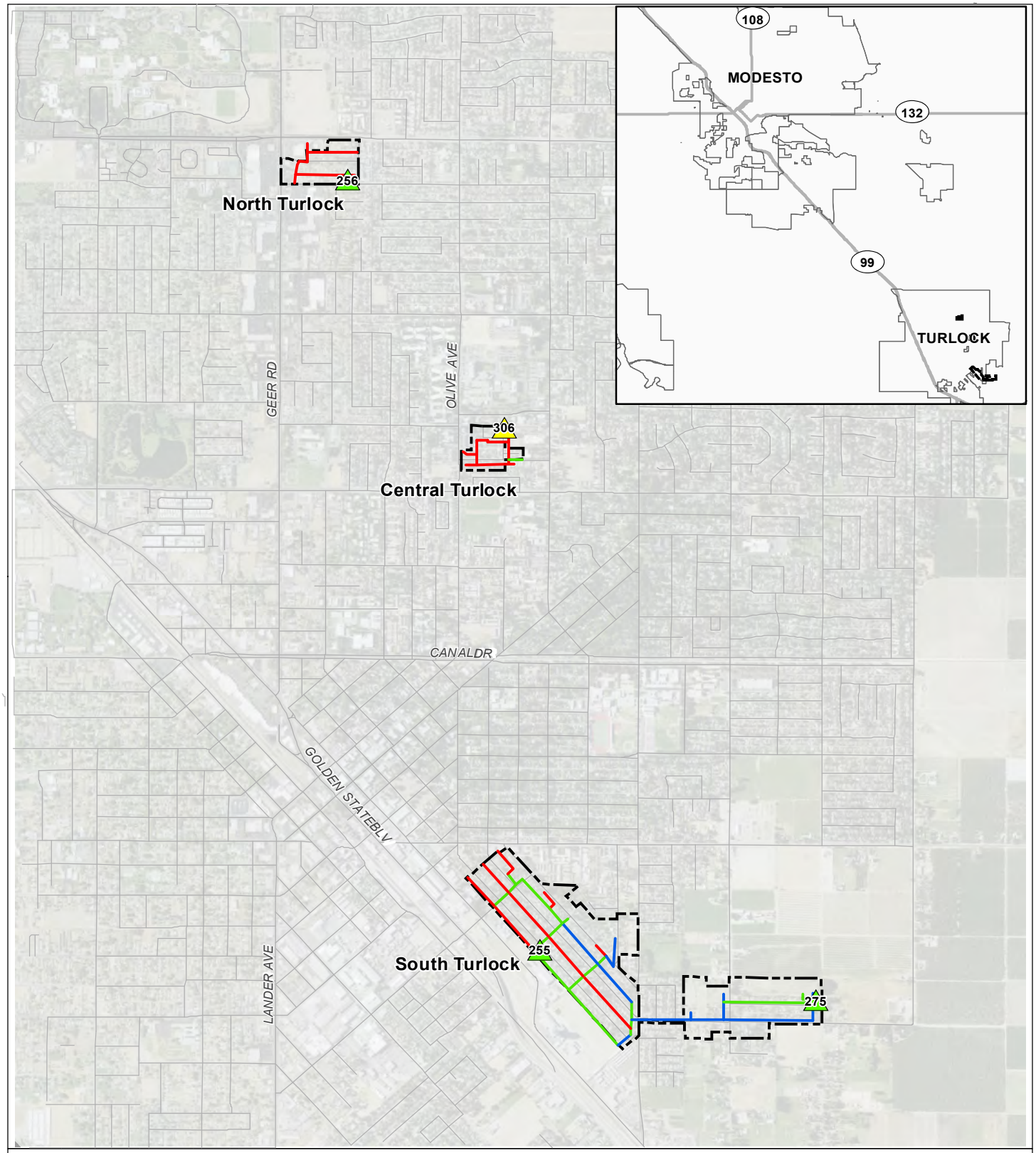

Source: West Yost 2017

N

0 1,000 2,000

Scale in Feet

Active Well

Out of Service Well

4-inch Pipeline

6-inch Pipeline

8-inch Pipeline

Turlock Service Area

Figure 1-6
Existing Turlock Water Facilities

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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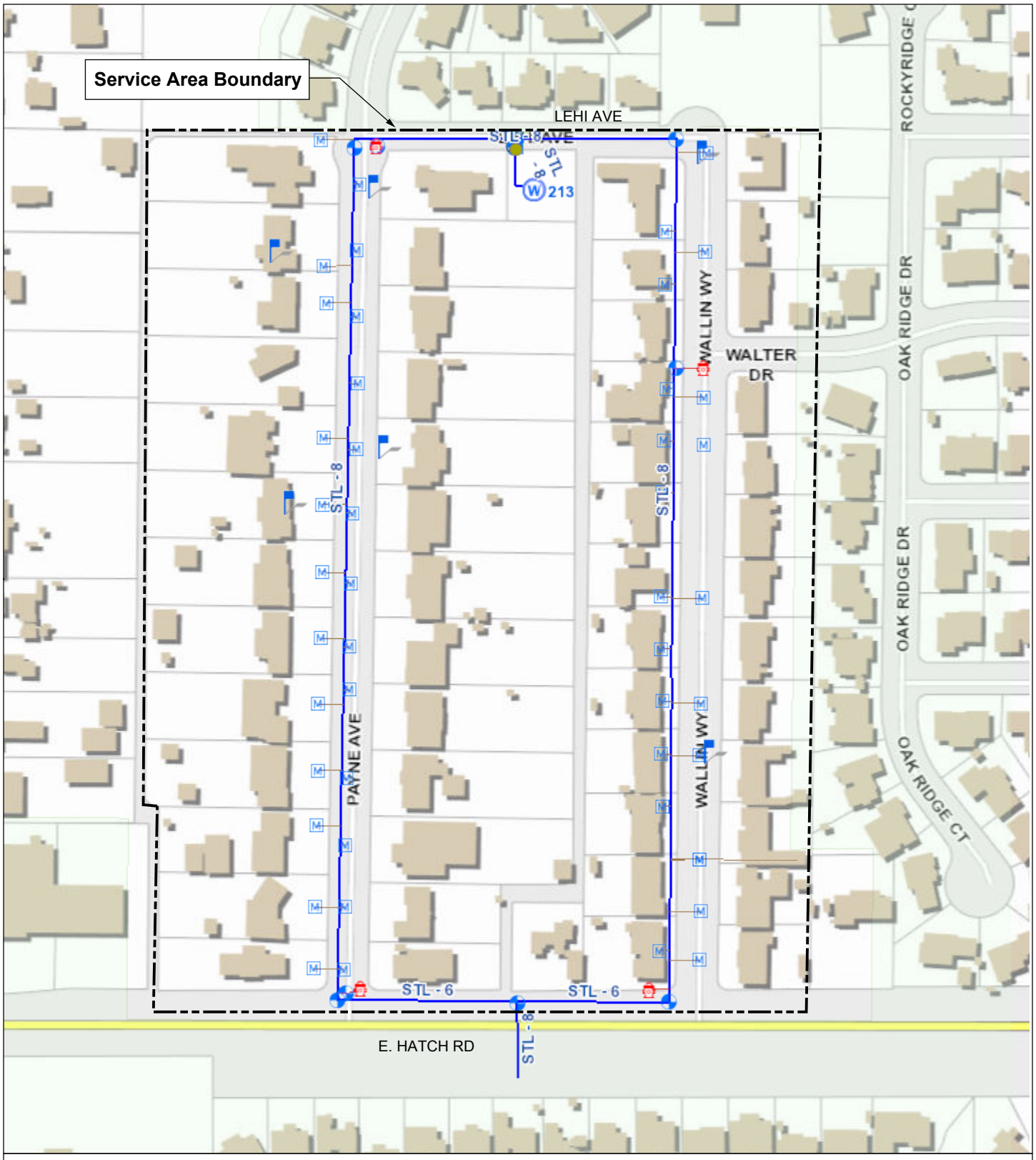

Source: City of Modesto 2019

N

0 100 200

Scale in Feet

PRV

GPS Main Lines

<all other values>

<Null>

ABANDONED

ACTIVE

GPS Leaks

GPS Lateral Lines

GPS Fire Lines

GPS_PressurePt

GPS Wells

Active

Inactive

GPS Valves

ABANDONED

Figure 1-7
Existing Ceres (Walnut Manor) Water Facilities

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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1.6.1 Existing Storage Tanks and Booster Pump Stations

The contiguous service area contains 10 at-grade storage tanks; eight of which are owned and operated by the City, and two owned and operated by MID. The total existing storage capacity in the contiguous service area is approximately 22.1 million gallons (MG).

Each tank operated by the City is equipped with its own booster pump station. MID's two storage tanks are served by one booster pump station and are collectively known as the MID Terminal Reservoirs facility. Thus, there are a total of nine existing booster pump stations in the contiguous service area. Each booster pump station has multiple pumps, with the largest unit reserved as a standby unit at each pump station. Additionally, each booster pump station is equipped with a generator for backup power. The total existing and near-term booster pumping capacity is approximately 212 mgd.

No water storage tanks or booster pump stations currently exist in the outlying service areas of Del Rio or Turlock. However, one water storage tank was recently installed to service the Del Rio area. The Del Rio water storage tank was included in the City's 2010 Water System Engineer's Report (WSER) and was the subject of a separate EIR (City of Modesto 2017).

In Grayson, the City system includes one at-grade storage tank, which receives and stores groundwater from the area's two wells and whose booster pump station is equipped with two pumps and a backup generator. The location of this storage tank is shown in **Figure 1-3**. This tank was constructed in the early 1990s and has been well maintained.

Table 1-1 provides a summary of the existing storage tanks and booster pumps in the City's water service area.

Table 1-1. Existing Storage Tanks and Booster Pumps

Location	No. of Storage Tanks	Storage Capacity (MG)	No. of Booster Pump Stations	Booster Pump Capacity (gpm)
Contiguous Area	10	22.1	9	119,375
Del Rio	0	—	0	—
Ceres (Walnut Grove)	—	—	—	—
Grayson	1	0.22	1	900
Turlock	0	—	0	—

Notes: gpm = gallons per minute; MG = million gallons

1.6.2 Existing Groundwater Wells

The contiguous service area contains 77 active groundwater wells (out of a total of 92 existing groundwater wells), as shown in Figure 1-3, with a total well capacity of 99 mgd. A new

well (Well 67 Grogan Park) is anticipated to be completed in 2017. Some wells have been decommissioned as a result of arsenic, uranium, perchloroethylene (PCE), trichloroethylene (TCE), dibromo-chloropropane (DBCP) or nitrate concentrations in excess of drinking water regulatory maximum contaminant levels (MCLs). The active wells have production capacities ranging from 275 to 2,400 gallons per minute (gpm). The base source of water supply within the contiguous service area is treated water from the MRWTP. The groundwater wells supply water from the groundwater basin as needed to help meet operational, emergency, and/or fire-flow demand. They also provide water supply to the area south of the Tuolumne River, which is outside of MID's service area and hence not served by the MRWTP. Groundwater wells are equipped with pumps that discharge water into the distribution system as needed. Thirty-one of the 77 active wells in the contiguous service area are equipped with generators for backup power (West Yost 2017a). The City is in the process of replacing Wells 226 and 229.

In addition to the contiguous service area wells, the City has a total of 18 groundwater wells (17 are active wells) in the outlying service areas. Groundwater well locations in the outlying service areas are shown on Figures 1-4 through 1-7. In most of the outlying areas, groundwater wells are directly connected to the distribution system because there are no storage tanks, with the exception of Grayson as discussed below. The City system currently includes three groundwater wells in Del Rio and four in Turlock. The Del Rio Tank and Wells Project includes a new well (Well 68), and a replacement well (Well 271). As previously noted, these two wells were included in the City's 2010 WSER and are the subject of a separate EIR that was recently completed. In Grayson, the City system includes two groundwater wells that pump directly to the storage tank (Tank 9). One of these wells is equipped with a generator for backup power. The City is in the process of replacing Well 274.

Table 1-2 summarizes the quantities of active and inactive groundwater wells and the production capacity range for wells in the City's service areas.

Table 1-2. Existing Groundwater Wells

	No. of Active Groundwater Production Wells	No. of Inactive Groundwater Production Wells	Range of Production Capacity (gpm)
Contiguous Area	77	15	275 to 2,400
Del Rio	3	0	395 to 800
Ceres (Walnut Grove)	1	0	242
Grayson	2	0	200 and 350
Turlock	4	1	209 to 350

Notes: gpm = gallons per minute.

1.6.3 Existing Transmission and Distribution Pipelines

The contiguous service area contains approximately 914 miles of underground pipeline, with pipes ranging in size from 2 to 60 inches in diameter. Pipelines within the City are generally

classified as transmission mains (12 to 24 inches in diameter) or the smaller distribution pipelines (2 to 12 inches in diameter), which transport water supplies from the transmission mains to water users. The material type of the pipelines varies depending on the age of the pipeline but include polyvinyl chloride (PVC) and asbestos cement (for most distribution pipelines), or cast iron, welded steel, ductile iron, and reinforced concrete pipe for older pipelines. In addition to the City's pipelines, there are MID-owned transmission mains (24 to 60 inches in diameter) that transfer treated surface water supplies from the MRWTP into the City's water distribution system. The City can control these surface water supplies into its water distribution system via 25 active turnouts within the contiguous service area that each have a hydraulically operated control valve. The existing pipeline grid in the contiguous service area is shown in **Figure 1-3**.

Pipelines located in the outlying service areas are shown in **Figure 1-4** through **Figure 1-7**. The Del Rio service area includes approximately 39,900 linear feet of City-owned distribution pipeline, ranging from 4 to 10 inches in diameter. The Grayson service area includes approximately 16,700 linear feet of City-owned pipeline, including pipes running between the two wells and the storage tank. Pipes located in the Grayson service area range from 4 to 10 inches in diameter. The Turlock service area includes approximately 23,600 linear feet of City-owned distribution pipeline, ranging in size from 4 to 8 inches in diameter.

Table 1-3 summarizes the transmission and distribution pipeline lengths and diameters for the City's contiguous and outlying service area review.

Table 1-3. Existing Transmission and Distribution Pipeline

	Total Length (miles)	Range of Size (inched in diameter)
Contiguous Area	914	2 to 60
Del Rio	7.6	4 to 10
Ceres (Walnut Grove)	0.7	6 to 8
Grayson	3.1	4 to 10
Turlock	4.5	4 to 8

Source: West Yost 2017b.

1.6.4 Relationship to 2010 Water System Engineer's Report

The 2017 Water Master Plan and the City's 2016 WSER, which is described further in Chapter 2, *Program Description*, are separate and distinctly different documents from the City's 2010 WSER. The CIPs in the 2010 WSER were evaluated in the EIR certified in 2010 (State Clearinghouse #2008092095) (City of Modesto 2009).

Since the 2010 WSER was prepared, the City has constructed some of the water infrastructure facilities identified in it. As previously mentioned, two planned groundwater wells and a water storage tank for the Del Rio area were included in the 2010 WSER and were also evaluated in a separate tiered EIR. The 2017 Water Master Plan and the City's 2016 WSER includes CIPs previously identified in the WSER and newly identified CIPs.

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Chapter 2
PROGRAM DESCRIPTION

2.1 Overview

This chapter describes the 2017 Water Master Plan (WMP; Proposed Program) and discusses its purpose and objectives, location, proposed capital improvement projects (CIPs), construction methods and schedule, and necessary permits and approvals. Background reports used to prepare this chapter include the following:

- *City of Modesto Water Master Plan,* prepared by West Yost Associates. Final Draft (September 2017a);
- *City of Modesto Water System Engineer's Report* (WSER), prepared by West Yost Associates. Final Draft (May 2016); and
- 2010 Water System Engineer's Report Draft Program Environmental Impact Report (City of Modesto, December 2009).

2.2 Purpose and Objectives

The City has developed a proposed WMP whose underlying purpose is to define the City's long-term water supply and infrastructure needs, and guide management of its water service system. The WMP identifies recommended and prioritized CIPs for system-wide implementation that are needed to deliver safe and reliable water and that would effectively meet water demand requirements for existing and future City customers through buildout of the City's adopted General Plan.

The objectives of the proposed WMP are as follows:

- To implement and support the City's economic goals and General Plan by planning for and providing water infrastructure in a timely and cost-effective manner to serve new and existing development.
- To clearly define the City's long-term water supply needs (from both groundwater and the Modesto Irrigation District's [MID's] surface water supplies) and identify the associated infrastructure required to deliver these supplies to existing and future customers.
- To provide the flexibility, system redundancy, and reliability at a reasonable cost to accommodate possible changing future conditions (regulatory, climate, additional conservation, etc.).
- To repair and replace aging water infrastructure.

- To ensure adequate water infrastructure and services are available to serve new growth within the General Plan area, the City's sphere of influence (SOI), and the outlying service areas.
- To plan for state-of-the-art facilities that reliably and economically meet changing regulatory requirements.
- To provide safe and reliable water supply by planning for and constructing appropriately sized storage facilities, redundancies, and alternate (back up) power supplies for key facilities.
- To provide adequate storage capacity to meet operational, fire flow, and emergency storage needs.
- To maintain system pressures that meet regulatory requirements and peak demand conditions.
- To provide transmission and distribution pipelines to safely and reliably convey water throughout the water system.
- To provide safe and reliable water that meets regulatory water quality requirements.
- To evaluate a groundwater aquifer storage and recovery program.
- To sustainably utilize and protect groundwater resources.

2.3 Program Location

The Proposed Program is located in the city of Modesto and other communities 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. The City's contiguous service area is limited to the current SOI, Salida, North Ceres, and some unincorporated areas within and adjacent to the SOI including Empire. The outlying service areas include Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock. Collectively, the contiguous service area and outlying service areas constitute the Proposed Program's study area. These areas are shown in **Figure 2-1**.

2.4 Service Areas

2.4.1 Contiguous Service Area

The City has been providing potable water service to its urban area since 1895 through the purchase and acquisition of several private water companies. The City of Modesto water system currently serves a population of approximately 260,000 people in California's Central Valley. The City is currently the largest retail water supplier in Stanislaus County. **Table 2-1** provides a 35-year population forecast for the contiguous and outlying service areas. This forecast is also included in Chapter 15, *Population and Housing*, of this EIR. Water demands for the City's contiguous water

service area at buildout (year 2050) would be approximately 100,000 acre-feet/year (af/yr), based on the projected estimates from the City's WMP (West Yost 2017a). Available City water supplies at the year 2050 would be approximately 115,000 af/yr (West Yost 2017a).

2.4.2 Del Rio

Del Rio is located approximately 4 miles north of the City of Modesto. The Del Rio service area is approximately 540 acres, primarily residential, and is considered 57 percent developed. Currently, there are no interconnections with any other water systems; the City's contiguous water system is within 4 miles. The future areas of development in the Del Rio service area are located primarily in the east and southwest with a small amount of infill development. The Del Rio service area was originally provided with water service by the Del Este Water Company, but in the mid-1990s the City acquired the Del Este Water Company and began providing water service.

The Del Rio water system currently requires a new storage tank (and associated pump station), new well, replacement well, backup generators, and pipelines to correct existing supply deficiencies. The City's Utilities Department has conducted environmental review on these improvements, collectively known as the Del Rio Tank and Wells Project (City of Modesto 2017), which was certified by the City Council on September 5, 2017, and is expected to be completed in 2019.

The future Del Rio service area would include additional acreage that would expand the service area to the north, east, and southwest. According to the *Del Rio Community Plan* (Stanislaus County 1992), "future planned development land use" (primarily residential) is proposed for the northwest and eastern portions of the service area, while development in the southwestern area would be residential. Full buildout of the service area would require additional pipelines and pumping capacity, as recommended, to provide adequate water service to meet the anticipated demand of 1,480 af/yr at buildout (2050 or before) (West Yost 2017b). The current Del Rio Tank and Wells project includes improvements needed to address existing water system deficiencies, and does not include the improvements needed for future buildout.

2.4.3 Grayson

The town of Grayson is located approximately 14 miles west of Modesto along County Road J16 (Grayson Road). Due to water quality issues at the existing groundwater wells, pumped groundwater has historically been treated through an ion exchange system at Well 295, then stored in Tank 9 prior to being pumped into the distribution system. The Grayson water system requires a new production well, a replacement well, backup generators, replacement tank, additional booster pumps, and pipelines to correct existing supply deficiencies (West Yost 2017c). It has not been determined if the replacement well (Well 274) would require treatment. The Grayson system has no interconnections with other water systems, and there are no nearby water utilities with potential for interconnection.

The Grayson service area is approximately 120 acres, primarily residential, and is considered to be mostly developed, with approximately 30 acres remaining to be developed. The capital improvements recommended to address the current deficiencies would also adequately serve the buildout demand of 258 af/yr (West Yost 2017c).

Table 2-1. Population Projections for the City of Modesto's Contiguous and Outlying Water Service Areas

Year	Contiguous Service Areas				Outlying Service Areas				Total Contiguous Service Area [1]	Total Contiguous and Outlying Service Area [2]
	City of Modesto	Salida	Empire	North Ceres (Bystrom)	Del Rio	Ceres (Walnut Manor)	Grayson	Turlock (Portions)		
2015	218,375	13,750	4,189	4,008	1,021	154	960	1,146	255,906	259,187
2020	232,943	14,667	4,189	4,008	1,233	154	996	1,146	271,392	274,920
2025	248,483	15,646	4,189	4,008	1,444	154	1,032	1,146	287,910	291,686
2030	265,060	16,690	4,189	4,008	1,656	154	1,068	1,146	305,531	309,555
2035	282,743	17,803	4,189	4,008	1,868	154	1,104	1,146	324,327	328,599
2040	301,605	18,991	4,189	4,008	2,079	154	1,140	1,146	344,377	348,896
2045	321,726	20,258	4,189	4,008	2,291	154	1,176	1,146	365,765	370,352
2050	343,189	21,609	4,189	4,008	2,502	154	1,212	1,146	388,579	393,594

Notes:

[1] The Total Contiguous Service Area population includes the population of the contiguous communities shown above as well as the populations of Bret Harte, Shackelford, and West Modesto, which are county areas served by the City. The Bret Harte, Shackelford, and West Modesto communities are built out and have populations, respectively, of 5,152, 4,750, and 5,682.

[2] The Total Contiguous and Outlying Service Area populations includes the contiguous and outlying service area populations of the communities shown above as well as the additional communities Bret Harte, Shackelford, and West Modesto in the contiguous service area.

Source: West Yost 2017a.

2.4.4 Turlock

The City's outlying water service area in Turlock is made up of three small, separate service area islands (North, Central, and South) located within the City of Turlock. The Turlock service area is located approximately 14 miles south of Modesto. The entire Turlock service area contains approximately 130 acres, primarily residential, and is considered fully developed (built out). The Turlock service area has two existing emergency water supply connections to the City of Turlock water system in the North and Central service area islands. The South service area island currently has no emergency interconnections with the City of Turlock water system. The Turlock water system currently requires rehabilitation or replacement of a well, backup generators, and pipelines to correct existing supply deficiencies, upsizing of existing system emergency connections, and one new emergency intertie (West Yost 2017d). The Turlock service area is already fully built out and has a projected buildout demand of 293 af/yr (West Yost 2017d).

2.5 Proposed CIP Improvements

The Proposed Program, as analyzed in this EIR, is the collection of CIPs proposed in the WMP and the 2016 WSER. Proposed CIPs were determined by evaluating the City's ability to serve current, future, and buildout[1] demands for its contiguous and outlying service areas, and assessing the following system components in a hydraulic evaluation within the WMP (West Yost 2017a): groundwater pumping capacity; storage capacity; demands (peak and fire flows); and distribution system needs. In addition, water supply requirements under existing and buildout situations were evaluated.

The City's water system CIPs are divided into 22 categories, which are described in detail in the 2016 WSER (West Yost 2016). These categories are used to group and develop budgets for each of these water system improvements/programs, based on the type of improvement, and to allocate costs between existing and future customers. **Table 2-2** lists the City's water system CIP categories.

[1] **Future** improvements are water facilities that are *required* to be installed by the City (e.g. wells, pumps, replacing deficient water mains). **Buildout** components are facilities to be paid for and constructed by developers for specific development projects (such as extension pipelines) guided by the Land Use Plan (City of Modesto 2019).

Table 2-2. Summary of CIP Categories

Category No.	Project Category	Updated as Part of Water Master Plan or Engineer's Report	Description
1	MRWTP Phase II Expansion	Project Complete	This project is complete and provided funding to expand MID's MRWTP capacity from 30 million gallons per day (mgd) to 60 mgd.
2	City-Side Downstream Improvements	Engineer's Report	This project is near completion and provides funding for the Industrial Tank and Booster Pump Station, Codoni Transmission Mains, and the Yosemite Transmission Mains.
3	Improvements for South Modesto	Water Master Plan	Provides funding to increase the delivery reliability to customers in South Modesto by providing additional transmission mains, distribution mains, tanks, and booster pumping capacity.
4	Water Quality Related Studies	Engineer's Report	Provides funding for system-wide water-quality-related studies to manage the City's groundwater/ surface water resources.
5	SCADA System Upgrades	Engineer's Report	Provides funding for SCADA system upgrades to improve the City's operation and management of the water system.
6	New Corporation Yard	Engineer's Report	Provides funding for a new Water Division Corporation Yard.
7	Existing Tank Improvements	Engineer's Report	Provides funding for interior and exterior enhancements to water storage tanks to improve efficiency and prolong their useful life.
8	Extend Water Mains	Engineer's Report	Provides funding to extend water mains into developing areas and to complete distribution pipeline "looping."

Category No.	Project Category	Updated as Part of Water Master Plan or Engineer's Report	Description
9	Strengthen and Replace Water System	Water Master Plan	Provides funding to replace and upgrade deficient water mains, which may also include "looping" improvements.
10	Install New Wells	Water Master Plan	Provides funding to replace older wells (taken out of service for water quality or production capacity) or construct new wells.
11	Wellhead Treatment	Water Master Plan	Provides funding for wellhead treatment or blending facilities for wells that are offline due to water quality.
12	Purchase & Install New Generators	Water Master Plan	Provides funding to purchase and install new generators to ensure reliable water service throughout the water system.
13	Water System Security Enhancements	Engineer's Report	Provides funding to make security enhancements (e.g. fencing. signage) to facilities identified in the 2003 Water System Vulnerability Assessment.
14	Groundwater Management Program	Engineer's Report	Provides funding to support projects and studies related to managing groundwater resources.
15	Urban Water Management Plan	Engineer's Report	Provides funding to support completion of a UWMP every 5 years to help ensure reliability of water supply.
16	Water Master Plan	Engineer's Report	Provides funding to support completion of future WMPs to evaluate the adequacy of water system to serve existing and future customers.
17	Water System Evaluation	Engineer's Report	Provides funding to support as-needed engineering studies and water system evaluations.

Category No.	Project Category	Updated as Part of Water Master Plan or Engineer's Report	Description
18	New Water Tanks	Water Master Plan	Provides funding to construct new tanks and booster pumping stations and other associated facilities.
19	Water Meters	Engineer's Report	Provides funding to purchase and install new automated meter readers throughout the service area.
21	New or Replacement Pumps	Engineer's Report	Provides funding to replace deficient water pumps at wells and booster pump station that are too costly to repair.
22	Utility Cuts	Engineer's Report	Provides funding to cover costs associated with utility construction (e.g., paving, valve replacement, leak repairs).

Notes:

mgd = million gallons per day; MID = Modesto Irrigation District; MRWTP = Modesto Regional Water Treatment Plant; SCADA = supervisory control and data acquisition; UWMP = urban water management plan; WMP = water master plan

Category 20 was a project that had been completed and is no longer an active category for the purposes of this analysis. The WSER category numbers have remained unchanged to be consistent with past WSERs.

Improvements can be grouped into three primary types to meet the Proposed Program's objectives:

- ***Existing Water System Improvements*:** The WMP identifies CIP improvements that are recommended to improve the City's capability of meeting existing water demands. These CIPs are referred to as "Existing System CIPs." These projects would meet existing demands and would be implemented to address any issues with the City's existing water system infrastructure, storage deficiencies, or distribution needs. Thus, they would generally involve improvements, upgrades, or replacements of existing City water system facilities.

- ***Future and Buildout Water System Project Improvements*:** These projects would be implemented in phases, at the appropriate time to address future development needs within the City's water service area based on growth planned by the City and local governments in the outlying service areas. Future improvements identified in this document are new water facilities that the City would be required to install to address future planned development (within its service area), as described in the City's General Plan (City of Modesto 2019). The Proposed Program supports a buildout of the City's SOI.

Proposed system improvement projects to meet water demands in 2050 as described in the WMP are referred to as "Buildout System CIPs." Buildout CIPs are similar to future CIPs in that they support planned future development as opposed to existing development. However, buildout facilities are those that are needed at buildout of the land use plan, and that would be funded by the developer of a particular area (not the City) to support water service to those specific new development areas since the facilities are exclusively required to support those new development areas.

- ***Program Improvements*:** These improvements would occur more periodically and over time (e.g., updating the WMP, updating the Urban Water Management Plan). Additionally, efforts that are regional in nature are included in this category (e.g., the Aquifer Storage and Recovery [ASR] Program).

The CIPs proposed in the WMP and 2016 WSER include new water storage tanks, improvements to existing tanks, new and replacement groundwater wells, groundwater monitoring wells, pump stations, transmission mains, distribution pipelines, supervisory control and data acquisition (SCADA) system upgrade, water quality related studies, wellhead treatment, emergency generators, water system security enhancements, groundwater management, water master plan updates, maintaining and calibrating a hydraulic model of the water system, evaluations of the water system, and water meters for the contiguous water service area and/or outlying water service areas. Each of these types of improvements is summarized below and discussed further in Section 2.5, "Proposed CIP Improvements." The ASR Program is described in Section 2.6. The CIPs would be implemented within the City's contiguous and outlying service areas, as described in Section 2.5, below.

CIPs planned in each of the service areas are shown in Figure 2-1 and **Figure 2-2** and discussed further below.

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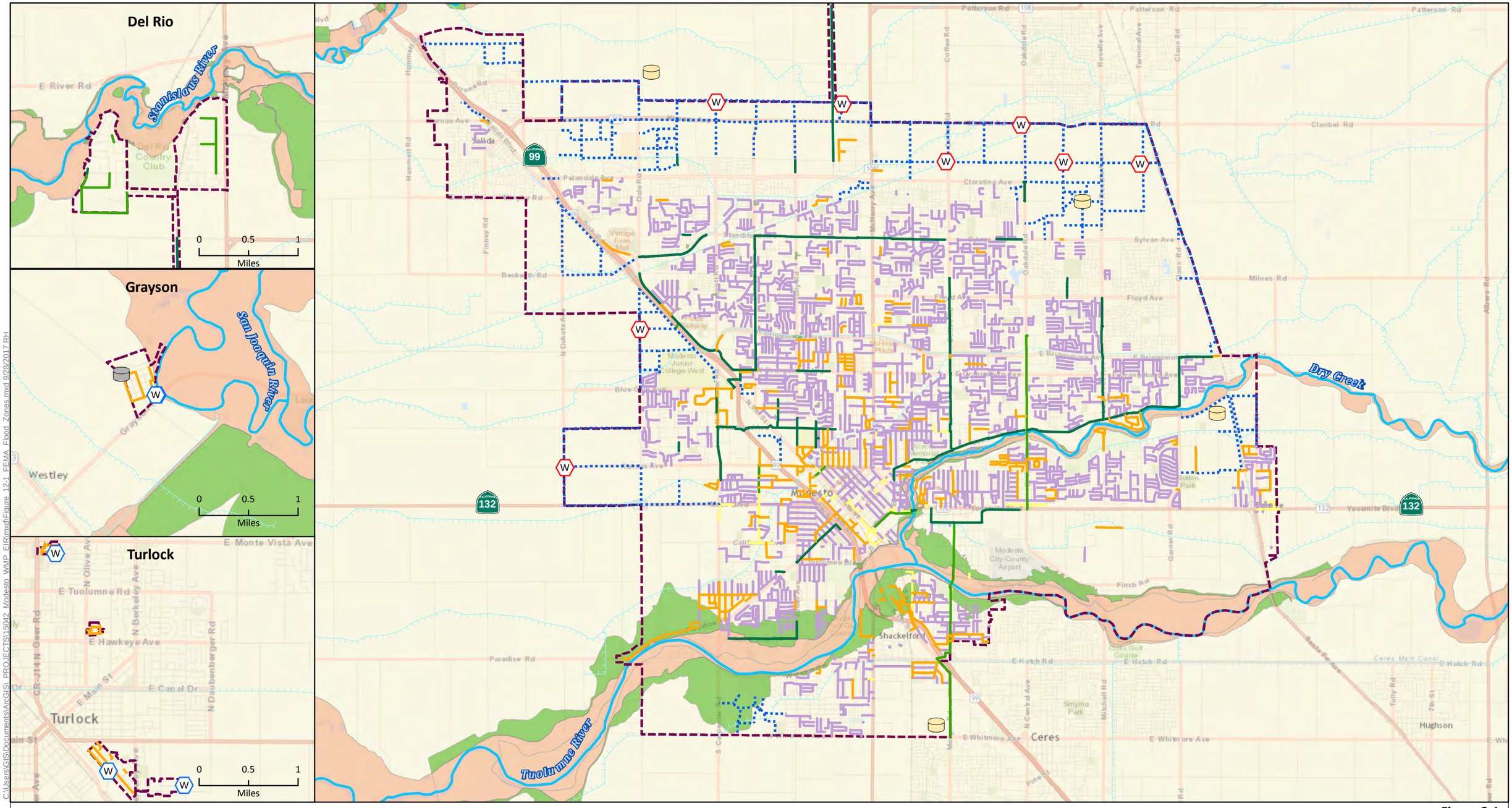

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Proposed Components for Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace
- Build Out Pipes

Other Features

- WMP Study Area
- Rivers
- Canals

Flood Zone

- 100-Year Flood Zone
- 500-year Flood Zone

Source: Federal Emergency Management Agency

Horizon WATER and ENVIRONMENT

Figure 2-1
Surface Waters and FEMA Flood Zones in the Study Area

City of Modesto
Water Master Plan EIR

C:\Users\GIS\Documents\ArcGIS\ PROJECTS\15042 Modesto WMP EIR\mxd\Figure 12-1 FEMA Flood Zones.mxd 9/28/2017 RH

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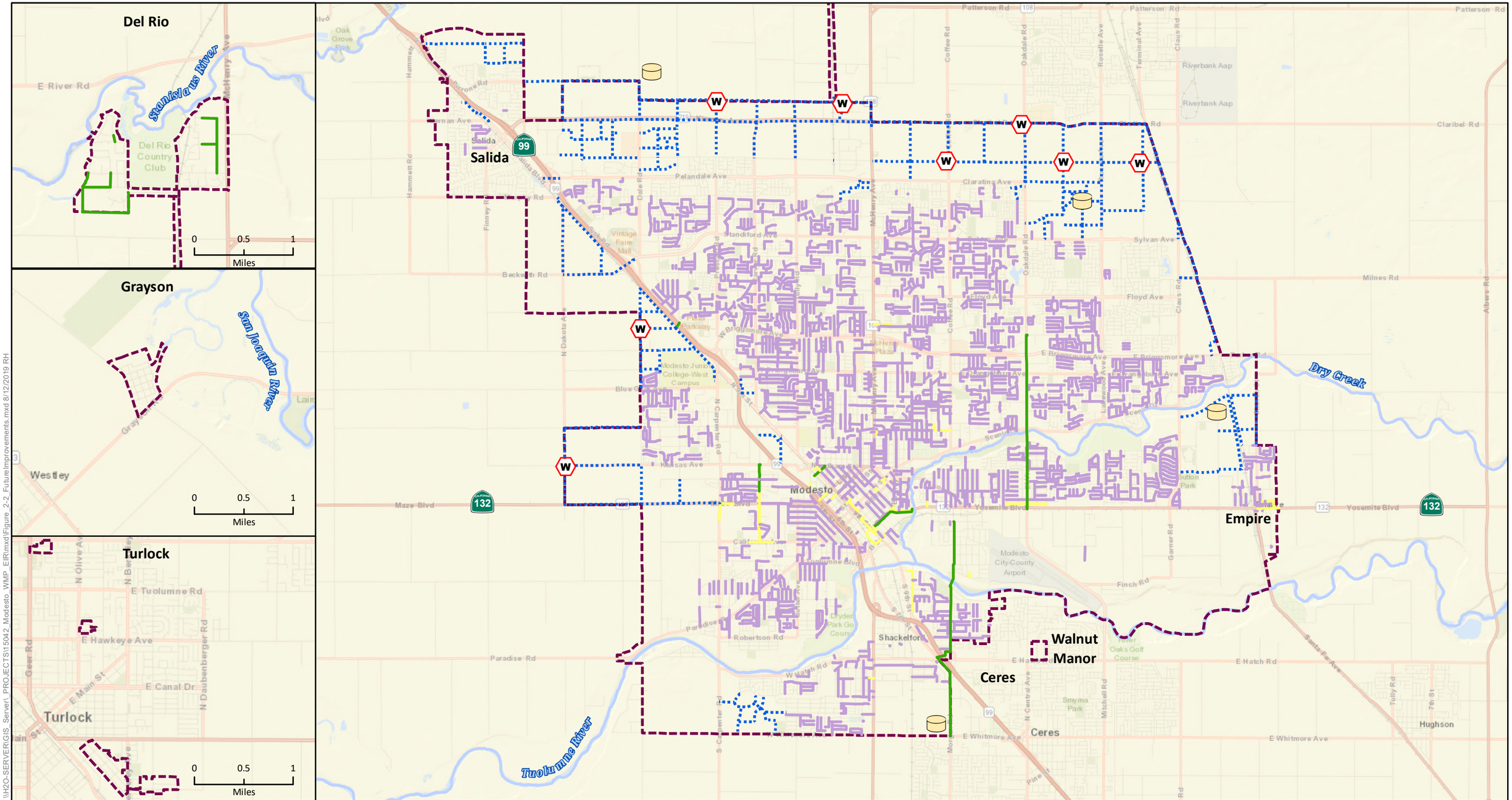

Proposed New Water System Components

- Future Tanks
- Future Wells
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace
- WMP Study Area

Figure 2-2
Proposed Future and Buildout Improvements to Modesto Water System

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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2.5.1 CIP Improvements Outside of this Program

Some of the 22 categories of CIPs described in the 2016 WSER have already been completed or were in the process of being constructed. CIPs that have been completed or are currently being constructed are briefly mentioned here but are not part of the Proposed Program and, as such, are *not* analyzed as proposed CIP improvements in this DEIR.

- **MRWTP (Category 1 of WSER).** As described in Chapter 1, this project is complete and involved the expansion of MID's MRWTP capacity from an average annual flow of 30 million gallons per day (mgd) to 60 mgd.

- **City-side Downstream Improvements Related to MRWTP Expansion (Category 2 of WSER).** Two proposed improvements in the City-operated water supply infrastructure that distributes treated surface water from the MID-operated MRWTP facilities have been or are in the process of being constructed to correct low peak hour pressures and distribute additional treated surface water. These improvements include a completed Codoni Transmission Mains Pipeline project and an Industrial Tank/Booster Pump Station project (comprised of a 4-MG industrial tank and a 12-mgd booster pump station). One additional improvement in this WSER category has not yet been constructed and therefore is analyzed as part of the Proposed Program and discussed further in Section 2.5.2, "Proposed CIP Facilities."

- **New Corporation Yard (Category 6 of WSER).** The City has purchased property (47.4 acres on Litt Road) to consolidate and relocate the Water Division's existing and future maintenance and operations activities. The 2010 Water Master Plan EIR evaluated this project and a Finding of Conformance to General Plan Master EIR was prepared in 2015 (EA UTL No. 2015-09). As of October 2019, construction of this project is nearing completion. The project includes the construction of a new building (approximately 30,000 square feet), and site development (parking, landscaping, lighting, security measures, vehicle wash station, refueling station, etc.). The site would also be used to store soil, concrete, and asphalt removed during construction of water projects for later reuse as part of the City's recycling program.

- The Water Division's existing maintenance and operations facilities are currently spread over multiple locations, including the City's Jefferson Street Corporation Yard, Tank 6 on Carpenter Road, and Codoni Avenue. Once the maintenance and operations facilities are amalgamated at the single location, the Water Division would vacate the City's Jefferson Street Corporation Yard for use by other City departments.

- Equipment and materials would be removed from Tank 6, which would continue to be in active service, and from Codoni Avenue, which is the future site of the Industrial Tank and Pump Station.

- **Del Rio Tank and Wells Project.** The City has purchased property (3.96 acres on Ladd Road) for a proposed 0.23-MG water storage tank, 1.0 mgd booster pump station, and new 1,000-gallon-per-minute (gpm) water supply well to address existing system deficiencies. These improvements are collectively known as the Del Rio Tank and Wells Project, and have been addressed by a separate CEQA document. An EIR for the Del Rio

Tank and Wells Project (SCH#2015072055), was certified by Modesto's City Council along with associated findings, documents and project approval on September 5, 2017 by Resolution 2017-347.

2.5.2 Proposed CIP Facilities

The following is a brief description of the Proposed Program water infrastructure categories identified in the WMP and WSER. As previously noted, Category 1, the MRWTP Phase II Expansion, and Category 6, the New Corporation Yard, are not listed, as these projects are completed or are currently under construction. Included here are descriptions of the category components (storage tanks and booster pump stations, groundwater wells, etc.) proposed to be installed or upgraded to alleviate existing deficiencies and accommodate water service demands associated with future development within the contiguous and outlying service areas. The locations of existing facilities needing improvements are known. The exact locations of some of these new facilities have yet to be finalized; however, in some cases tentative sites have been identified.

Individual facilities/improvements identified below would be designed and constructed on an as-needed basis and as funding becomes available. As final design and locations of Program components are identified, project-level CEQA review would be completed. All CIPs are evaluated at a program level of detail in this DEIR, since they are improvements that the City would likely construct in the future, but designs of these improvements have not been advanced to a level at which a detailed evaluation can be completed. As such, a more general, programmatic analysis of these improvements is included in this DEIR.

Category 2 of WSER: City-Side Downstream Improvements Related to MRWTP Expansion

The City's water supplies include groundwater and treated surface water from MID's MRWTP, which is transported to the City's distribution system through MID transmission mains. The Proposed Program provides for the design, construction, and rights-of-way acquisition for a City-side downstream improvement[2] necessary to accommodate the increased MRWTP expanded capacity (60 mgd) and further integrate the MID transmission mains with the City's distribution system. This improvement project would assist in correcting low pressures currently observed during peak hour conditions, distribute the additional treated surface water, and benefit existing and future customers. Two other improvement projects in this WSER category were completed or are currently under construction, and are not analyzed in this Program EIR. This improvement project is described in **Table 2-3**.

[2] City-side downstream improvements refer to City-operated water system facilities that are downstream of MID's surface water supply infrastructure that transports treated surface water from the MRWTP to the City.

Table 2-3. Summary of Proposed City-Side Downstream Improvements (Category 2)

Project Name	General Location	Description	Key Objective
Yosemite Transmission Mains	Lapham Drive to 7th and B Street	Construct 14,000 linear feet (lf) of 16-inch-diameter pipeline from the intersection of 7th/B Streets; in S. Morton, Yosemite Blvd, S. Santa Rosa, Mono Drive, Empire Avenue and Lapham Drive to the intersection of Lapham and Spenker.	Correct low peak hour pressures and distribute additional treated surface water

Category 3 of WSER: Improvements for South Modesto and North Ceres and Category 9 of WSER: Strengthen and Replace Water System

Under Category 3 of the WSER, the City would implement improvements to increase delivery reliability to customers in South Modesto and North Ceres. Types of improvements proposed in this area include new transmission pipelines that would strengthen the interconnectivity with North Modesto and more effectively distribute the water. These improvements would benefit both existing and future water consumers because the South Modesto service area is not completely built out.

Category 9 of the WSER replaces and upgrades deficient water mains throughout the water system service area that have reached the end of their useful life, are undersized, aged, and/or steel pipe. Typically, strengthen-and-replacement projects upgrade/replace pipes, valves, fire hydrants, blow-offs, meters, and other appurtenances as needed. Where possible, pipes are abandoned in place to minimize disruption to existing services, although removal and replacement in the same trench is sometimes necessary.

Similar to the water main extensions described for Category 8 of the WSER, replacement pipelines would be sized per the City's adopted standards, but the sizing would need to be verified by project-specific engineering as a part of final design, and possibly adjusted from that identified in the WMP. Pipelines would generally be constructed within the public right-of-way, following the alignment of existing or future planned streets and easements, wherever feasible.

Other pipeline improvements would include grid improvements to improve the hydraulic transmission of the water system, and fire-flow-related improvements. The fire-flow-related improvements are prioritized by the water system's existing flows compared to the required minimum fire flows of 1,500 gpm. Lower-Priority Fire Flow Improvements are in areas with available fire flow of less than two-thirds of the required fire flow. High-Priority Fire Flow Improvements are located in areas that have even less available flows to meet the fire flow requirements and, thus, are more urgently needed than the Lower-Priority Fire Flow Improvements.

Table 2-4 and **Table 2-5** provide a summary of proposed pipeline improvements under WSER Categories 3 and 9 for the City's existing system and the future and buildout system, respectively.

Table 2-4. Proposed Pipeline Improvements for City's Existing Contiguous and Outlying Service Water Systems (Categories 3 and 9 of WSER)

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
Contiguous Service Area			
Fire flow improvements for existing contiguous systems			
High-Priority Fire Flow	New 8-inch-diameter pipes	153,230 lf	Pipeline Improvement (Category 9 WSER) + Improve existing distribution system's water flow rates and pressures to ensure sufficient for emergency firefighting (Category 3 WSER)
High-Priority Fire Flow	New 12-inch-diameter pipes	8,360 lf	Pipeline Improvement
Lower-Priority Fire Flow	New 8-inch-diameter pipes	860 lf	Pipeline Improvement
Lower-Priority Fire Flow	New 12-inch-diameter pipes	72,100 lf	Pipeline Improvement
Grid Improvements for existing contiguous systems			
EXGRID-01	Construct new 12-inch-diameter pipelines along Briggsmore Avenue between Held Drive and Claus Road; Along Claus Road between Briggsmore Avenue and Scenic Drive	5,630 lf	Distribution/Transmission Improvement
EXGRID-02	Construct new 12-inch-diameter pipelines along Scenic Drive between Claus Rd and Lakewood Avenue	5,430 lf	Distribution/Transmission Improvement

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
EXGRID-03	Construct new 12-inch-diameter pipelines along Lincoln Oak Drive, between Kodiak Drive and Floyd Avenue; Along Roselle Avenue between Floyd Avenue and Briggsmore Avenue	5,540 lf	Distribution/Transmission Improvement
EXGRID-04	Construct new 12-inch-diameter pipelines along Lakewood Avenue between Orangeburg Avenue and Scenic Drive	4,330 lf	Distribution/Transmission Improvement
EXGRID-05	Construct new 12-inch-diameter pipelines along Scenic Drive between Lakewood Avenue and Oakdale Road	5,680 lf	Distribution/Transmission Improvement
EXGRID-06	Construct new 12-inch-diameter pipelines along Scenic Drive between Orangeburg Avenue and Burney Street	10,430 lf	Distribution/Transmission Improvement
EXGRID-07	Construct new 12-inch-diameter pipelines along Coffee Road between Rumble Road and Briggsmore Avenue	5,180 lf	Distribution/Transmission Improvement
EXGRID-08	Construct new 12-inch-diameter pipelines along Coffee Road between Briggsmore Avenue and Scenic Drive	6,870 lf	Distribution/Transmission Improvement
EXGRID-09	Construct new 12-inch-diameter pipelines along Oakdale Road between Claratina Avenue and Mable Avenue; Along Sylvan Avenue between Oakdale Road and Palmwood Drive; Along Sylvan Avenue between Coffee Road and McHenry Avenue	8,160 lf	Distribution/Transmission Improvement

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
EXGRID-10	Construct new 12-inch-diameter pipelines along Standiford Avenue between McHenry Avenue and Carver Road	8,200 lf	Distribution/Transmission Improvement
EXGRID-11	Construct new 12-inch-diameter pipelines along Carver Road between Standiford Avenue and Orangeburg Avenue	9,250 lf	Distribution/Transmission Improvement
EXGRID-12	Construct new 12-inch-diameter pipelines along Standiford Avenue between Prescott Road and Dale Road; Along Veneman Avenue between Bridle Path Lane and Conant Avenue; Along Tully Road and American Avenue South of Bangs Avenue	7,210 lf	Distribution/Transmission Improvement
EXGRID-13	Construct new 12-inch-diameter pipelines along Sisk Road between Rumble Road and Briggsmore Avenue; Along Orangeburg Avenue between Briggsmore Avenue and Martin Avenue	10,160 lf	Distribution/Transmission Improvement
EXGRID-14	Construct new 12-inch-diameter pipelines along Orangeburg Avenue between Carlton Avenue and Tully Road; Along Orangeburg between Carver Road and Martin Avenue, Along Martin Avenue between Orangeburg Avenue between Orangeburg Avenue and Clayton Avenue; Along Clayton Avenue (across Highway 99 assuming Jack and Bore) to Blue Gum Avenue	5,760 lf	Distribution/Transmission Improvement

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
EXGRID-15	Construct new 12-inch-diameter pipelines along Coldwell Avenue between Virginia Avenue and 9th Street; Along College Avenue between Yale Avenue and Stoddard Avenue; Along Tully Road between Yale Avenue and Stoddard Avenue; Along Kearney Avenue between Cecil Way and Coldwell Avenue; Along Woodland Avenue between 9th Street and Emerald Avenue	12,500 lf	Distribution/Transmission Improvement
EXGRID-16	Construct new 12- and 16-inch-diameter (respectively) pipelines along Emerald Avenue/Woodland Avenue between Highway 99 and Carpenter Road; Along Carpenter Road	5,620 lf (12-inch)	Distribution/Transmission Improvement
		2,310 lf (16-inch)	Distribution/Transmission Improvement
EXGRID-17	Construct new 12-inch-diameter pipelines along Lapham Drive between Spenker Avenue and Empire Avenue; Along Empire Avenue between Lapham Drive and Mono Drive; Along Mono Drive between Empire Avenue and South Santa Rosa Avenue; Along South Santa Rosa between Yosemite Boulevard and Mono Drive, and along Yosemite Boulevard (assuming Jack and Bore) below existing bridge to Connect to Pipelines along Morton Boulevard.	8,170 lf	Distribution/Transmission Improvement (Category 3 and Category 9)

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
EXGRID-18	Construct new 12-inch-diameter pipelines along 5th Street between G Street and H Street; Along H Street between 5th Street and South Washington Street; Along Paradise Avenue between South Washington Street and Sutter Avenue; Along Chicago Avenue between Allen Avenue and Florette Avenue	4,900 lf	Distribution/Transmission Improvement
EXGRID-19	Construct new 12-inch-diameter pipelines along Sutter Avenue between Pelton Avenue and Robertson Road; Along Robertson Road between Sutter Avenue and Vernon Avenue	5,850 lf	Distribution/Transmission Improvement
EXGRID-20	Construct New 16-inch-diameter pipeline along the Virgina Corridor between Bangs Avenue to Ladd Road to Connect the City's Contiguous Service Area and the Del Rio Outlying Area for supply reliability	10,650 lf	Supply Reliability
		Total	**97,920 lf / 18.5 miles**
Del Rio Service Area			
Pipeline improvements for existing Del Rio systems			
—	Install 8-inch pipeline along Carver Road between Riveroaks Drive and Thunderbird Drive	230 lf	Fire Flow
Grayson Service Area			
Pipeline improvements for existing Grayson systems			
—	Replace 6-inch-diameter pipelines along Minnie Street from Tank 9 to Laird Road to 8-inch	810 lf	Fire Flow
—	Replace 4-inch-diameter pipelines along Laird Road from Minnie Street to Amelia Street to 8-inch	700 lf	Fire Flow

Pipeline Type/Name	Description	Total Pipeline Length (linear feet)	Objective
—	Replace 4-inch-diameter pipelines along Stakes and Charles Street from Minnie to Mary Street to 8-inch	1,640 lf	Fire Flow
—	Replace 6-inch-diameter pipelines along River Road from Mary Street to Amelia Street to 8-inch	750 lf	Fire Flow
—	Replace 6-inch-diameter pipeline along Mary Street from Laird to River Road to 8-inch	710 lf	Fire Flow
Turlock Service Area			
Pipeline improvements for existing Turlock systems			
—	Replace North Service Area Island 4-inch diameter pipelines to 8-inch	2,300 lf	Fire Flow
—	Replace Central Service Area Island 4-inch diameter pipelines to 8-inch	2,400 lf	Fire Flow
—	Replace South Service Area Island 4-inch diameter pipelines to 8-inch	5,700 lf	Fire Flow

Table 2-5. Proposed Improvements for City's Future and Buildout Contiguous and Outlying Service Water Systems (Categories 3 and 9 of WSER)

Pipeline Type/Name	Description	Total Pipeline Length (linear feet/miles)	Objective
Contiguous Service Area			
Fire flow improvements for future contiguous systems			
—	New 8-inch-diameter pipes	2,360 lf	Ensure future distribution system's water flow rates and pressures are sufficient for emergency firefighting
—	New 12-inch-diameter pipes	34,700 lf	Ensure future distribution system's water flow rates and pressures are sufficient for emergency firefighting (Category 3 and 9 of WSER)
Strengthen and replace improvements for future contiguous systems			
—	Upsize existing small-diameter pipelines to 8-inches in diameter	1,379,580 lf	Strengthen and replace to accommodate future development (Category 3 and 9 of WSER)
Grid Improvements for future contiguous systems			
FTGRID-01	Construct new 16-inch-diameter pipelines along Oakdale Road between Merle Avenue (downstream of Turnout 6) and Lapham Drive	12,080 lf	Distribution/Transmission Improvement
FTGRID-02	Construct new 16-inch-diameter pipelines along Yosemite Boulevard between North Morton Boulevard and D Street; Along D Street between Yosemite Boulevard and 10th Street	3,100 lf	Distribution/Transmission Improvement

Pipeline Type/Name	Description	Total Pipeline Length (linear feet/miles)	Objective
FTGRID-03	Construct new 16-inch-diameter crossing across Highway 99 (assuming Jack and Bore) at the intersection to Conant Avenue and Sisk Road to Brink Avenue	2,460 lf	Distribution/Transmission Improvement
FTGRID-04	Construct new 16-inch-diameter pipelines along South Santa Cruz Avenue between Mono Drive and Monterey Avenue; along South Santa Cruz Avenue from Monterey Avenue; across the Tuolumne River (assuming Deep Horizontal Directional Drilling [HDD]) to River Road; along Herndon Road between River Road and Joyce Avenue; Across Highway 99 (Assuming Deep HDD) to East Hatch Road and Morgan Road; along Morgan Road between East Hatch Road and East Whitmore Avenue	16,090 lf	Distribution/Transmission Improvement (Category 3 of WSER)
Del Rio Service Area			
Pipeline improvements for future Del Rio Systems			
—	Install 10-inch future development pipelines	12,000 lf	Grid
Grayson Service Area			
Pipeline improvements for future Grayson Systems			
N/A	N/A		
Turlock Service Area			
Pipeline improvements for future Turlock Systems			
N/A	N/A		

Category 3 of WSER: Improvements for South Modesto and North Ceres and Category 18 of WSER: New Water Storage Tank Improvements

New or replacement storage tanks are proposed within the contiguous outlying service areas to meet the existing and/or future service areas fire-flow requirements, peak demands, and generally improve service reliability. Any proposed storage tanks would have an associated booster pump station with a backup power supply and pipelines connecting to the existing water system. The tanks would be either aboveground steel or concrete tanks, or partially buried concrete tanks. Exterior coating of new pump stations and tanks would appear similar to existing structures seen throughout Modesto, and earth tones with non-reflective finishes would be used to coat aboveground components.

Aboveground tanks could be as high as 35 feet and have a diameter up to 250 feet. Partially buried tanks would typically have an exposed height of between 10 and 15 feet and a diameter up to 250 feet. Based on similar water tanks in the study area, it is assumed that each 4- to 6-million-gallon tank would require approximately 3 acres. Based on other pump station buildings seen throughout the Modesto region, associated pump station buildings may be approximately 20 feet tall and encompass an area of 2,000 to 2,500 square feet.

Based on the water system analysis, the tanks would have a storage capacity ranging from 0.2 to 5 million gallons. Each tank would be matched with an appropriately sized booster pump station of 7- to 9-mgd capacity and a diesel generator as a backup power supply.

Proposed new storage tank improvements to address existing and future water system needs are summarized in **Table 2-6**.

Table 2-6. Summary of Proposed Storage Tanks for Existing and Future Water System (Categories 3 and 18 of WSER)

Project Name	Description	Key Objective
Existing System Improvements		
Grayson	Repair or replace Tank 9 (0.2 MG capacity) and add two new pumps (50-horsepower [HP] each)	Address existing storage deficiency
Future and Buildout System Improvements		
South Modesto Storage Tanks for Future Service Area	Construct new 2.6 MG storage tank in South Modesto and construct new booster pump station of 7.8 mgd capacity.	Address future storage deficiency
North Modesto Storage Tanks for Future Service Area	Construct three new storage tanks in North Modesto, including at the Terminal Reservoir (total 10.9 MG storage capacity) Construct two new booster pump stations of 8.7 mgd capacity each at two tanks, excluding Terminal Reservoir tank	Address future storage deficiency and maximize the existing pumping capacity of Terminal Reservoir Booster Pump Station

Project Name	Description	Key Objective
Buildout System Improvements for Del Rio	Expansion of booster pump station constructed with new 0.23 MG storage tank to provide an additional 1.0 mgd for a total Del Rio booster pump station capacity of 2.0 mgd	Address future supply deficiencies

Category 4 of WSER: Water Quality Related Studies

This category includes a variety of system-wide water-quality-related studies and activities needed to identify cost-effective methods to manage groundwater resources for meeting the City's water supply needs. Studies may include research, analysis of existing data, modeling, and field investigations (including but not limited to dynamic flow profiling, geophysical investigations, borings, construction of monitoring wells, groundwater monitoring).

Category 5 of WSER: SCADA System Upgrades

This category includes SCADA system upgrades to improve the City's operation and management of the water system. The City would prepare a SCADA Master Plan that would guide the system upgrades in the near and long term. Upgrades may include hardware at remote sites, hardware at centralized location(s), programming, and reporting.

Category 7 of WSER: Existing Tank Improvements

Improvements to existing tanks (and their sites) may include but are not limited to repainting the outside, recoating the inside, structural repairs, general repairs (such as replacement of interior ladders or vent screens), inlet/outlet modifications, emergency overflow modifications, electrical and/or monitoring equipment (i.e., SCADA) upgrades, replacement of hardware and gaskets.

Category 8 of WSER: Extend Water Mains

This program extends water mains, on an as-needed basis, into developing areas throughout the contiguous and outlying service areas to meet the demands of growth. Typically, this includes the installation of 12-inch-diameter and larger pipes, fire hydrants, and valves on a half-mile grid. Projects to complete distribution pipeline looping are included to improve service reliability to new water service areas. Large-diameter transmission mains may require cathodic protection systems to prevent or control corrosion within the system.

New pipelines would be sized to allow the system to meet the City's adopted standards (City of Modesto 2014) for Maximum Day plus fire flow demand and Peak Hour demand. The sizing of the pipelines would need to be verified by project-specific engineering as a part of final design, and possibly adjusted from that identified in the Engineer's Report. The City would extend water mains to future development areas as summarized in **Table 2-7**.

Pipelines would generally be constructed within the public right-of-way, following the alignment of existing or future planned streets and easements, wherever feasible. Prior to constructing

buildout pipelines on agricultural or undeveloped lands, the City typically requires developers to provide right-of-way dedications for utility improvements.

Table 2-7. Proposed Water Main Extensions (Category 8 of WSER)

Project Name	Description	Total Pipeline Length (linear feet)	Key Objective
Contiguous Service Area	Construct new 12-inch-diameter pipelines	344,450	Extend Water Mains
Contiguous Service Area	Construct new 16-inch-diameter pipelines	18,520	Extend Water Mains

Category 10 of WSER: Install New Wells and Category 11 of WSER: Wellhead Treatment

New wells are proposed within the contiguous and outlying service areas in order to meet existing and future demands along with improving service reliability. In addition to the new wells that are proposed, the Program would entail improvements to several existing wells, including installation of generators for backup power.

Typically, the wells would have a pumping capacity between 750 and 2,000 gpm. All new wells would have a diesel generator as a backup power supply, chlorination equipment, monitoring equipment, SCADA, security features. Depending on the site location, new wells may be constructed within a block wall enclosure or within a pump house. Well sites would be designed to allow for future treatment and future monitoring equipment. Based on similar wells in the study area, it is assumed that new wells would typically occupy a 10,000-square-foot area.

Replacement wells are proposed within the contiguous and outlying service areas. Wells that have been offline for some time may be destroyed then replaced on the existing well site, on an adjacent site, or in the service area. Existing improvements are typically upgraded with the construction of the replacement well. Improvement upgrades may include, but are not limited to, monitoring equipment, SCADA equipment, security features, electrical system, flush lines, and emergency generators.

Wellhead treatment may be required for wells throughout the water service area that are offline due to levels of contaminants that exceed California Drinking Water MCLs. The program includes evaluating various wellhead treatment technologies and well treatment alternatives. Wellhead treatment would be selected based on the contaminants of concern present. Improvements to the well site may include, but are not limited to, concrete slabs, enclosures, or block buildings to house treatment systems, monitoring equipment, SCADA equipment upgrades, electrical system upgrades, security features, flush lines, and emergency generators. Treatment and non-treatment alternatives would be considered for each well and may include, but are not limited to, one or a combination of the following technologies: coagulation/filtration, oxidation, coagulation assisted microfiltration, lime softening, sorption processes, ion exchange, microfiltration, ultrafiltration, reverse osmosis, electrodialysis reversal, and blending. Waste streams generated by various

technologies may include but are not limited to backwash water, dewatered sludge, backwash water, spent media, liquid brine, and concentrated streams. Waste disposal would depend on the constituents present in the waste and may include discharge to publicly owned treatment works, off-haul for disposal, landfill, or approved California hazardous landfill. Treatment systems may generate materials containing toxins, hazardous materials, heavy metals, and/or radio nucleotides. Testing and pre-treatment may be required prior to hauling and/or disposal.

Within the contiguous service area, the City would construct up to 13 new wells to support the future system development. These wells would be equipped with backup generators to ensure that a "firm" or reliable water supply could be delivered in the event of a power outage and, thus, result in an additional 11,700 gpm (16.8 mgd) firm groundwater supply capacity. Conceptual proposed well locations for eight wells that would have firm groundwater supply capacity are shown in Figure 2-2. The locations of the additional five wells would be determined through analysis of available land that overlies good groundwater production capability and good quality water. Outlying service areas would also require replacement or new wells to meet existing and future service system needs, as shown in **Table 2-8**. For the Turlock service area, as a method to minimize potential wellhead treatment needs, the Proposed Program may include a total of three full-size (8-inch-diameter) emergency interties. These proposed interties are summarized in Table 2-8**.**

Table 2-8 provides a summary of proposed well improvements in the contiguous and outlying service areas to meet existing and future service system area demands.

Table 2-8. Summary of Proposed Groundwater Well Improvements for Existing and Future Water System (Categories 10 and 11 of WSER)

Project Name	Description	Key Objective
Existing System Improvements		
All Service Areas	Replacement wells as needed to address water quality, well construction related issues, or regulatory requirements. Replacement wells may be constructed at existing wells sites, adjacent to existing wells sites, or at other locations throughout the various service areas.	Supply
All Service Areas	Well head treatment as needed to address water quality or regulatory requirements. Well head treatment may be constructed at existing well sites, adjacent to existing well sites, or at other locations throughout the various service areas.	Supply

Project Name	Description	Key Objective
Grayson	New well with 400 gpm capacity, backup generator, and SCADA. It is unknown if treatment will be needed for the new well. This could include potential upgrades to existing ion exchange system at Well 295 site, or new treatment system at the well 274 site, based on treatment requirements.	Supply
Turlock	Rehabilitate or replace Well 255	Supply
Turlock	Three total emergency interconnections to City of Turlock water system for the North, Central, and South Service Area Islands	Supply
Future and Buildout System Improvements		
Contiguous Service Area	Thirteen (13) new wells, resulting in an additional 11,700 gpm (16.8 mgd) firm groundwater supply capacity	Supply

Category 12 of WSER: New Generators

Emergency generators provide backup power to various booster pump stations for tank and well sites throughout the water system. There is an existing storage capacity deficiency in the City's water supply system that could be offset by installing emergency backup power generators at 18 wells within the City's contiguous water system. By installing these backup power generators and because the City's water supply includes groundwater wells, the groundwater basin can account for a portion of the City's water storage capacity requirement (Emergency Groundwater Storage Credit). Emergency generator sizing is dependent on the application, but can be 20 feet long by 9 feet wide by up to 15 feet high with fuel storage. Emergency generators would be operated monthly for brief testing and maintenance purposes and used as necessary during power outages or similar emergency situations. **Table 2-9** provides the specific proposed emergency generator improvements for the contiguous and outlying service areas.

Table 2-9. Proposed Backup Generator Improvements for the Contiguous and Outlying Service Areas (Category 12 of WSER)

Project Name	Description	Objective
Contiguous Service Area		
Existing System Improvement	Backup generators on Wells 1, 4, 7, 16, 45, 47, 48, 50, 51, 58, 217, 237, 241, 267, 278, 284, 287, and 312	Backup Power

Grayson		
Existing System Improvement	Replacement generator for Well 274 and a backup generator at the existing booster pump station	Supply
Turlock		
Existing System Improvement	Backup generators for Wells 255, 256, and 275	Supply

Category 13 of WSER: Water System Security Enhancements

This ongoing program provides fencing, security signage, lighting, and other security measures to be implemented at well and tank sites throughout the water system. New lighting at these facilities would be consistent with outdoor lighting currently used at similar facilities found throughout the Modesto area.

Category 14 of WSER: Groundwater Management

This program develops projects identified through the Integrated Regional Groundwater Management Plan (IRGMP) in the Modesto Groundwater Sub-basin and the Groundwater Management Plan (GWMP) in the Turlock Groundwater Sub-basin. The City of Modesto has partnered with other agencies to develop Groundwater Sustainability Agencies in each Sub-basin in accordance with Sustainable Groundwater Management Act (Water Code section 10720 et seq.*)*. Projects include but are not limited to groundwater quality monitoring, groundwater replenishment studies, and continued participation in regional groundwater-related activities.

Category 15 of WSER: Urban Water Management Plan

An Urban Water Management Plan (UWMP) (City of Modesto 2016) was developed and would be updated every 5 years in compliance with the Urban Water Management Planning Act of 1983. The Act was amended by passage of the Water Conservation Act of 2009, which requires local agencies to establish water use targets that would result in a 20 percent savings by 2020. Using information generated by the WMP, the UWMP outlines measures to ensure the reliability of the water supply, and includes conservation programs such as residential plumbing retrofits, recycled water implementations, and water system audits.

Category 16 of WSER: Water Master Plan

The ongoing program would provide recurring updates to the WMP and the completion of the associated CEQA compliance. The WMP evaluates the hydraulic and operational performance of the City's water system and addresses, among other items, future sources of supply, water quality issues, water demands, conjunctive use strategies, water system modeling updates, and capital improvements for both existing and future customers. Data collection and analysis is required as part of the preparation effort, and may include field data collection, fire flow testing, system monitoring, and other information needed for calibration of the hydraulic model.

Category 17 of WSER: Water System Evaluation

This ongoing program provides "as-needed" engineering studies and water system evaluations throughout the water service area. Studies and evaluations are typically related to demand expectations, supply capabilities, potential loss of key groundwater production wells, hydraulic modelling support, and other water-system-related activities. Data collection and analysis may include field data collection, fire flow testing, system monitoring, and other information needed for hydraulic model update(s).

Category 19 of WSER: Water Meters

The City is in the process of installing water meters on services throughout the water service areas, as well as upgrading existing obsolete meters. This multi-year endeavor is mandated by state law and must be completed by 2025.

Category 21 of WSER: New or Replacement Pumps

On an as-needed basis, deficient water pumps at wells and booster pump stations are replaced, typically due to age, being beyond their useful life, and/or too costly to repair.

Category 22 of WSER: Utility Cuts Program

Pavement repairs related to utility construction activities, such as the installation of water lines, valve replacement, water connections, and leak repairs, are required on an as-needed basis.

2.6 Proposed Aquifer Storage and Recovery Program

The proposed ASR Program would identify areas within the Modesto Groundwater Subbasin where groundwater augmentation may occur both to aid in maintaining basin groundwater levels and to provide for storage of seasonally-available surplus treated surface water[3] (obtained via existing infrastructure from the MRWTP as supplied under agreements with MID) in the subsurface for future use. The ASR Program has been conceptually evaluated and appears to be a viable water supply management tool for the City but additional studies, tests, and planning are required to develop and implement this program (West Yost 2017a). As part of the Proposed Program, additional groundwater modeling, pilot tests, and/or plans would be developed to identify and implement potential studies, projects, and/or programs to further develop the ASR Program. The proposed ASR Program is a key step in understanding basin hydrodynamics for development of a long-term groundwater banking, conjunctive use, and basin management program.

The City's proposed ASR Program would pump MRWTP-treated surface water that meets drinking water standards to one or more injection wells via the City's existing drinking water distribution system. During periods of injection, both water users and the injection well system would receive water from the MRWTP. Water would later be extracted from the aquifer as needed and conveyed to water users in the same distribution system. This type of ASR Program poses a low threat to the beneficial uses of the aquifer, because the water that would be stored in the aquifer

[3] Seasonally-available surplus treated surface water would typically be available during the winter and spring months in normal and wet years (West Yost 2017a).

would be treated to meet all drinking water standards. Other advantages of the ASR program and using direct injection wells to transport surface water into the aquifer, as compared to a spreading basin, includes preventing the loss of water through evaporation and the smaller land area needs for the program.

To support implementation of this program, the City would evaluate existing wells for suitability as ASR injection wells, identify regulatory requirements, review source water quality and seasonal variability, develop hydrogeological characteristics such as transmissivity, and evaluate movement and perimeter interactions of injected water in the subsurface. As part of this evaluation, a pilot demonstration test program may be performed to empirically verify the conclusions of past ASR evaluations and develop site-specific data regarding the effectiveness, impacts, and economics of an ASR program. Additional objectives of further ASR Program evaluations, including a potential pilot demonstration test, would be to verify that recovered water meets all drinking water standards and other water quality perceptions (i.e. taste, odor, visual clarity), verify that injected water remains geochemically stable during storage and recovery, and verify the beneficial impacts to basin water levels from the ASR operations (West Yost 2017a).

2.7 Construction

2.7.1 Phasing of Construction

Because of the magnitude of the capital improvement costs associated with implementation of the WMP, improvements would be implemented in phases as funding sources become available. It is estimated that buildout of the water system improvements would occur through 2050.

The precise order of project phasing would depend on the sequencing of specific parcel development and the general patterns of the City's future growth. Other than the development applications currently being processed by the City, the majority of the CIPs identified in the WMP cannot be prioritized with certainty at this time. Even projects identified as existing system projects that would be anticipated to be more near-term than future system projects do not have a defined timeline and would be analyzed in the future at a project level following further design of these improvements.

In general, construction activities for the Proposed Program would generally occur Monday through Friday between 7:00 a.m. and 5:00 p.m., excluding City-observed holidays. Because there may be weather constraints, some construction activities may need occur on weekends or holidays, or in the event of emergency, outside normal working hours.

2.7.2 Construction Methods

Construction of proposed improvements to the City's water service system would involve several types of activities: site preparation; demolition and removal of some existing facilities; earthwork (grading and excavation); pipeline and well installation; and facility construction. These activities are described below. As indicated in Section 2.7.1, "Phasing of Construction," construction would occur throughout the Program planning period and within the construction period for each improvement; 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.

All water system facilities proposed under the WMP and corresponding post-construction site improvements would be designed and constructed in compliance with the City's Standard Specifications (City of Modesto 2014), which details requirements related to a variety of topics, including but not limited to permits for construction, storm drainage, water system, utilities and trenching, grading, driveways, demolition plans, and traffic striping and signs.

Site Preparation

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, other site preparation work may involve demolition of existing facilities/structures, excavation, import, and placement of fill, and compaction. Demolition work would be required to remove improvements and structures from property acquired by the City for various well and/or tank improvements.

To the extent feasible, excavated soil would be reused on site. If required, fill would be delivered to 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.

Water Storage Tanks

Water storage using at-grade and/or tanks and their associated booster pump stations would involve (but would not be limited to) construction of the following:

- Concrete pads and foundations for the tank, booster pump station, and generator for backup power would consist of concrete or asphalt paving.
- Masonry block building to house booster pumps, process piping, and electrical equipment.
- Above- and below-ground process piping.
- Electrical and control systems housed in secure enclosures.
- Standby generator for a backup power supply during any power outage.
- The entire pump station and tank site would be fenced, gated, and locked.
- The pump station building would be designed to architecturally blend in with other existing buildings in the area. The pump station's building design would include selecting materials and paint colors that are compatible with the existing colors of the surrounding area. The transition of base and accent colors used will relate to changes in the building material or texture, or the change of building surface planes.

- Storm drainage facilities would be installed to allow all-weather maintenance and vehicle access to the site. Proposed storm drainage systems include an on-site retention basin to capture any overflow from the storage tank or booster pumps.
- All lighting would be internally directed to reduce light or glare.
- Based on other pump station buildings seen throughout the Modesto region, associated pump station buildings may be approximately 20 feet tall and encompass an area of 2,000 to 2,500 square feet.
- Standby diesel generators would be installed in inside the booster pump station or in an acoustically designed and insulated structure outside the booster pump station.
- Chain-link fencing would be installed around the perimeter of the site for security purposes.

Figure 2-3 depicts a typical storage tank with booster pump stations. The depth of excavation for construction of tanks, booster pumps, and appurtenances can reach 20 feet. Construction of new water storage tanks typically extend from several months to 1.5 years. Booster pump stations are typically incorporated into the design and construction of tanks and/or wells.

Groundwater Wells

Construction of new wells would involve (but is not limited to) construction of the following.

- Drilling of the well.
- Pumping of the well during initial capacity and production testing.
- Concrete pads and foundations for the well's motor and pump and standby generator.
- Masonry block building to house the well (if required), related equipment, process piping, and electrical equipment.
- Subsurface or inline sand removal equipment.
- Above- and below-ground process piping and valving.
- Electrical and control systems housed in secure enclosures.
- SCADA equipment may include antenna.
- Standby emergency generator for a backup power supply during any power outage.
- The entire pump station and tank site would be fenced (or perimeter masonry block enclosure), gated, and locked. The well house building (if required) would be designed to architecturally blend in with other existing buildings in the area.
- Flush line installed for well discharges to wastewater collection system.

- Storm drainage facilities would be installed to allow all-weather maintenance and vehicle access to the site.
- All lighting would be internally directed to reduce light or glare.
- Standby diesel generators would be installed in acoustically designed and insulated structures.
- Chain-link fencing would be installed around the perimeter of the site for security purposes.

Figure 2-3 shows the typical components that would be constructed at a new groundwater well site. Typical construction durations for installation of new and replacement wells would range from approximately 1 to 1.5 years. Security upgrades and emergency generator installations would typically have a duration of 3 to 6 months.

a) Water storage tank and booster pump stations.

b) Water storage tank in the distance.

c) Groundwater well station within a public park. Building houses monitoring equipment.

d) Groundwater well station near a public school as seen from a road.

Horizon WATER and ENVIRONMENT

Figure 2-3
Typical City Water Storage Tanks and Groundwater Wells

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Pipelines

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 (referred to as "cut and cover"). In existing streets, the cut-and-cover method involves removing the asphalt, roadway base, and underlying soil; materials would generally be replaced at the completion of the program, but some excess materials may be disposed off-site. The depth and width of the trenches would vary depending upon the size of the pipe, City and County standards, and consideration of other existing utility lines. In general, the depth of excavation for open trench construction for pipelines typically ranges from 5 feet to 11 feet deep or more. Construction crews may close one lane of traffic temporarily during pipe installation. 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, typically 200 to 400 feet. For new water transmission mains or distribution pipelines, typically 200 to 400 feet can be laid with one crew working. A typical crew size includes five workers. In the event multiple crews are working on a particular pipeline project, more than 400 feet of new pipeline can be installed. If a pipeline is required to be installed over an existing line, typically the cut-and-cover method would be used and the existing pipe would be cut, capped or hot tapped (using a valve), and removed; the replacement pipe would then be installed as described above and the surface improvements restored.

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 this 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.

Pipelines may also be installed by the jack-and-bore method, typically when the open trench method is not practical and/or possible. For example, when transmission mains or water distribution pipelines are required to cross a railroad, Caltrans right-of-way, an irrigation canal, local water bodies (i.e., Dry Creek or the Tuolumne River) or needs to be buried very deep beneath the ground surface. This method of construction would also be used to avoid sensitive habitats (wetland and riparian habitats) and special-status plants, particularly for construction of Program components that cross the Tuolumne River and Dry Creek, such as FTGRID-01 and FTGRID-04.

The jack-and-bore method 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. Launch and receiving pits for trenchless construction typically would be up to 15 feet deep. 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. Horizontal directional drilling (HDD) may also be used when the open trench method is not practical and/or possible. HDD is a steerable trenchless method of installing underground pipe in a shallow arc along a prescribed bore path by using a surface-launched drill rig, with minimal impact to the surrounding area.

Pipelines constructed across major waterways such as the Tuolumne River could be attached to an existing vehicle or pedestrian bridge. The water piping would typically be installed inside a steel

casing and may be contained within the bridge deck, with no visible changes to the outward appearance of the bridge.

Staging Areas

Staging areas would be needed to store pipe, construction equipment, and other construction-related material. The precise locations of staging areas are not known at this time and would be determined just prior to construction. Staging areas would likely be established along the pipeline routes where space is available, such as vacant lots, parcels, or parking lots. In some cases, staging areas may be used for longer duration for CIPs that require construction in one location (e.g., new tank or groundwater well). In other cases, such as when pipeline construction moves along the route, the staging area would also shift to minimize hauling distances and avoid disrupting any one area for extended periods. Staging areas would not be located in environmentally sensitive areas and would be subject to investigation during the project planning phase. The City would reserve the authority to approve the locations of the staging areas as part of the contracts for construction of their respective facilities.

Testing, Disinfection, and Flushing

Prior to use of newly constructed water system improvements, water system facilities, such as pipelines, must be tested, disinfected, and flushed in accordance with the requirements detailed in Section 6, Water System Design, of the City's most current Standard Specifications. Tanks and wells would also be flushed following construction and prior to use in the water system. Specific activities associated with hydrostatic pressure testing would include but not be limited to slowly filling new pipeline sections with water from the existing system, expelling air from the pipeline, equalizing the pipeline pressure to existing system pressure for at least 24 hours, ensuring the hydrostatic pressure meets all defined requirements, determining leakage, and carefully examining new exposed system components during testing. Disinfection would occur after hydrostatic pressure tests were completed. One of the prescribed disinfection methods in the City's standard specifications, which comply with American Water Works Association (AWWA) standard methods, would be used to disinfect all new water mains and appurtenances. After completion of the disinfection process, the heavily chlorinated water would be dechlorinated to neutralize the chlorine and flushed from the new pipelines/water system facilities until the residual chlorine concentration meets the City's established requirements. The de-chlorinated water would be disposed of in the storm drainage system or sanitary sewer system.

2.7.3 Construction Equipment

In general, the main pieces of equipment that may be used during construction activities are:

- well drilling equipment
- rollers
- pavers
- bulldozer
- backhoe
- welders
- track-mounted excavator
- front-end loader
- ten-wheel dump truck
- compressors/jack hammers
- paving equipment
- water truck
- flat-bed delivery truck
- boom truck
- concrete truck
- cement and mortar mixers

- crane
- compactor
- end dump truck
- forklift
- grader
- mowing equipment (e.g., weed eaters, commercial lawnmowers)
- generator sets

The consumption of energy for equipment and vehicles would be minimized by reusing excavated soils on site and reducing vehicle and construction equipment idling for each project.

2.8 Operations and Maintenance

Operation of the Proposed Program would primarily involve the operation, inspection, and maintenance of the water system. The pump stations, storage tanks, and wells are manually and remotely controlled through an automated SCADA system.

The City would inspect the entire water system on an annual basis to determine whether maintenance is needed, though individual water system components may be inspected more frequently. Maintenance activities for storage tanks include the periodic cleaning of a tank's inside (with the use of a vacuum system) to maintain capacity and functioning and occasional recoating of the tank, as needed. Tank maintenance and repair activities would typically have an approximate duration of 3 to 6 months, depending on the extent of repairs or modifications required. Tank sites are inspected on a minimum weekly basis, and tank interiors are inspected a minimum of every 3 years. Maintenance activities associated with wells include various mechanical tests and meter calibration (with equipment specific to those activities) and general maintenance of treatment systems (e.g., treatment system flushing or regeneration). Wells are inspected on a minimum weekly basis. Water meters for commercial or larger water use customers are inspected annually. Residential water meters and system fire hydrants are inspected on an as-needed basis.

The City inspects the wells and pump stations and pipelines on a regular basis (numerous times during the wet months and less frequently the remainder of the year) to ensure optimal performance. In general, pump stations are inspected a minimum of once per week. Pressure points are inspected a minimum of two times a week, and water valves are inspected every 3 years. Maintenance of the pump stations and pipelines is performed on an as-needed basis.

2.9 Permits and Approvals

Table 2-10 provides a summary of potential permits that may be required for the Proposed Program's CIPs. Specific permits would vary for each CIP depending on a variety of factors, including but not limited to the specific site conditions at individual CIP locations and the proposed construction methods for an individual CIP. The state and local agencies identified below would be considered responsible agencies under CEQA.

In addition to the City, the EIR for the Proposed Program would 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 would be used by several agencies as part of their decision-making process regarding applicable regulations.

Agencies that may have regulatory authority over various aspects of the Proposed Program are also identified in Table 2-10.

Table 2-10. Potential Permit and Regulatory Requirements for CIPs under the Proposed Program

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
U.S. Army Corps of Engineers (USACE)	Clean Water Act Section 404	Authorizes dredge or fill materials in waters of the United States	Section 404 permit
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act	Protects special-status wildlife species from "take" by Program activities	Section 7 or Section 10 consultation
National Marine Fisheries Service	Endangered Species Act	Protects special-status fish species from "take" by Program activities	Section 7 or Section 10 consultation
State Water Resources Control Board (SWRCB)	Clean Water Act, Porter-Cologne Water Quality Control Act	Regulate pollutant discharges into surface waters	Section 401 water quality certification, General Construction Permit under National Pollutant Discharge Elimination System
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

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
California State Lands Commission	General Lease-Public Agency Use	Applies to pipeline construction activities across Tuolumne River	Approval of improvements under General Lease
Central Valley Regional Water Quality Control Board (RWQCB)	Clean Water Act, Porter-Cologne Water Quality Control Act	Regulate pollutant discharges into surface waters	Section 401 water quality certification, Basin Plan oversight, National Pollutant Discharge Elimination System permit
Central Valley Flood Protection Board	Water Code 8710, California Code of Regulations Title 23	Applies to pipelines crossing Dry Creek and the Tuolumne River	Encroachment permit
San Joaquin Valley Air Pollution Control District (SJVAPCD)	Rule 8021	Limit fugitive dust emissions from construction	Construction notification form
Modesto Irrigation District (MID)	N/A	Permission to conduct work involving or affecting MID facilities	Encroachment permits
Turlock Irrigation District (TID)	N/A	Permission to conduct work involving or affecting TID facilities	Encroachment permits
Stanislaus County	N/A	Compliance with County ordinances and policies	Temporary construction easement
City of Modesto	N/A	Required for construction on City-owned parcels	Temporary construction easement
City of Turlock	N/A	Compliance with City ordinances and policies	Temporary construction easement

Regulatory Agency	Law/Regulation	Purpose	Permit/Authorization Type
City of Ceres	N/A	Compliance with City ordinances and policies	Temporary construction easement

Chapter 3
INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

3.1 Overview

Chapters 4 through 17 of this DEIR describe the potentially affected environmental resources and potential environmental impacts (and proposed 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 environmental conditions that could be affected by the Proposed Program. In addition, each chapter includes a discussion of the criteria used in determining the significance levels of the Proposed Program's environmental impacts. Finally, for any 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, 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

The study area for this DEIR encompasses the service area for the WMP that would be addressed by the various CIPs, including both the contiguous service area and outlying areas. The City's contiguous service area includes the current SOI, Salida, North Ceres, and some unincorporated areas within and adjacent to the SOI including Empire. The outlying service areas consist of Del Rio, Ceres (Walnut Manor), Grayson, and portions of Turlock.

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

3.3.1 Planning Context

At the time this DEIR was prepared, the City was in the process of developing a General Plan Amendment and updating the General Plan Master EIR. Because those documents were not published at the time this DEIR was prepared, this document continues to rely on relevant policies

[1] 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.

from the *City of Modesto Urban Area General Plan* (2008a), as well as the *Stanislaus County General Plan* (2016), the *City of Ceres General Plan* (1997), and the *City of Turlock General Plan* (2012a) for the outlying areas.

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 a 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 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 the Proposed Program components at a programmatic level of detail. All CIPs are evaluated at a program level of detail because, although the City would likely construct these projects in the future, the design of these improvements has not been advanced to a level at which a detailed evaluation can be completed, and specific locations for some improvements are yet to be determined. As such, a more general, programmatic analysis of these improvements is included in this DEIR. Tables 2-1 through 2-8 provide an overview of all projects considered throughout the DEIR.

This Program EIR can be used to streamline the task of preparing environmental documents on later parts of the program. This Program EIR may provide the basis, through preparation of an environmental checklist, for determining whether the later activity may have any significant effects that have not been evaluated as part of the Proposed Program. It can be incorporated by reference to address regional influences, secondary effects, cumulative impacts, broad alternatives, and other factors that apply to the Program as a whole. Also, it can focus the CEQA review of a subsequent project to permit discussion solely of new effects that have not been considered previously.

Impacts of the Proposed Program are considered based on the potential for various types of proposed improvements to have a significant impact on the physical environment, in the context of appropriate mitigation measures. For example, subsurface improvements, including but not limited to new and/or replacement water mains, would not result in a visible change to the surroundings and therefore are unlikely to have aesthetic impacts. Similarly, proposed improvements to the existing water system, such as strengthening and replacement projects, would not have growth-inducing impacts. Proposed Program improvements located outside of riparian zones would not have biological impacts related to riparian habitat. Agricultural resources would not be affected by Proposed Program improvements in developed areas.

Each resource chapter includes an impact summary table that clearly identifies the impact significance, both before and after mitigation. For some resource chapters, the impact analyses are discussed collectively and no subheading is shown.

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. The draft MMRP presented in Appendix E identifies the responsible parties for carrying out requirements specified in the mitigation

measures throughout the design, construction, and operation phases of the Program. A final MMRP will be adopted by City Council with certification of the Program 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 provided 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 has tracts of hardwood forest, as indicated in its General Plan (Stanislaus County 2016), but these are not located in any area affected by the Program activities. For this reason, the Proposed Program would not adversely affect 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 and outlying areas outside the city limits in Stanislaus County. The Proposed Program involves upgrades to the City's water distribution and supply system that would accommodate growth projected within the City's water service areas and under the respective general plans of Modesto, Ceres, Turlock, and Stanislaus County (City of Modesto 2019a, City of Ceres 1997, City of Turlock 2012a, Stanislaus County 2016). This growth would not result in any significant effects on police or fire services beyond those evaluated in the *Master Environmental Impact Report for the Urban Area General Plan* (City of Modesto 2019b) and the City of Turlock's *General Plan Environmental Impact Report* (City of Turlock 2012b).

During construction of Program facilities, incidents could require law enforcement, fire protection, or emergency services; however, many proposed components are located within the urban areas of Modesto, Ceres, and Turlock, which are currently served by existing public services like police and fire protection, schools, and parks. The remaining outlying areas in unincorporated Stanislaus County receive police and fire protection services from Stanislaus County Sheriff's Department, California Highway Patrol, and the Stanislaus Consolidated Fire Protection Districts. The 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, although additional facilities would be constructed that would require staff maintenance; therefore, operation of the Proposed Program would not substantially change the demand for public services and would not 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 not substantially affect public services to a level that would require new or modified government facilities, and this impact would be less than significant.

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 is addressed in Chapter 15, *Population and Housing*, as described above. Program components would be constructed in Fairview Neighborhood Park, Creekside Golf Course, and Thousand Oaks Park, and in roadways near several other parks. If required, the temporary closure of these facilities could result in a short-term increase in use of other nearby parks and recreational facilities. However, 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. In addition, the Proposed Program does not include recreational facilities and would not directly require the construction or alteration of any such facilities. Therefore, based on the above discussion, there would be a less-than-significant impact on recreational uses or facilities.

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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 site 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.

Policy Two: Assure compatibility between natural areas and development.

City of Modesto Urban Area General Plan

Chapter VII of the *City of Modesto Urban Area General Plan* (City of Modesto 2019a), "Environmental Resources and Open Space," 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.

Del Rio Community and Salida Community Plans

The *Del Rio Community Plan* (Stanislaus County 1992), which was incorporated in the *Stanislaus County General Plan*, does not identify specific policies or regulations related to preservation of scenic views or aesthetic resources. Similarly, the *Salida Community Plan* (Stanislaus County 2007), which was incorporated in the *Stanislaus County Plan,* does not identify policies or regulations related to aesthetics.

Ceres General Plan

The Ceres General Plan 2035 (2018) contains the following goal and policies related to aesthetics:

Goal 2.B. Foster a distinctive city identity to support civic pride and Ceres' appeal.

> **2.B.1 Place-Based Development.** Encourage development consistent with Ceres' history, location in the Central Valley, and evolving demographics to promote community identity and pride.
>
> **2.B.2 Visual Distinction.** Provide visual distinction for key entry points to the City.
>
> **2.B.3 Greenbelt.** In cooperation with Stanislaus County and the City of Hughson, seek to establish a permanent greenbelt between Ceres and Hughson.
>
> **2.B.4 Gateways.** Create gateways to provide distinctive entrances to Ceres, particularly at key access points along the SR 99 corridor, along the major entrances on Mitchell Road, and at transitions from Modesto and Ceres on Crows Landing Road.

City of Turlock General Plan

The Turlock General Plan (2012) notes the scenic value of the city's historic characteristics, but does not identify specific policies or regulations concerning the preservation of scenic views of aesthetic resources pertaining to the Proposed Program. However, the City of Turlock has adopted the Beautification Master Plan to foster the city's identity and improve aesthetics through targeted planting and street designs.

Tuolumne River Regional Master Plan

A joint powers authority comprised of the City of Modesto, 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 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. The TRRP Master Plan also identifies several "river overlooks" within the park-enhancement areas. Based on information available for the Proposed Program, WMP components would not be located in proximity to these river overlooks and would not be visible from future vista points or river overlooks.

4.3 Environmental Setting

Modesto and the City's contiguous areas including Salida, North Ceres, and Empire; and outlying service areas (e.g., Del Rio, Grayson, Ceres [Walnut Manor], and portions of Turlock) are 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. Figure 2-1 shows existing water system improvements within the service area.

4.3.1 Modesto

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.

Agricultural 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 new water storage tank and groundwater well sites to the north of Modesto are in predominantly agricultural areas with some single-family residential uses nearby (see Figure 2-2). The 5 MG water storage tank site to the south of Gomes Road would be located adjacent to two existing tanks. The 2.6 MG tank site in southern Modesto consists of a vacant parcel with commercial and residential uses to the south.

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 Ceres

Ceres is located immediately south of Modesto but only the northern portion of Ceres and the Walnut Manor area of Ceres are within the City's service area. Land uses in North Ceres predominantly consist of industrial and residential uses. As North Ceres is bordered by the Tuolumne River to the north and Highway 99 to the west, riparian vegetation along the river and the highway itself are the most prominent visual features in the area. Walnut Manor is a residential neighborhood in Ceres bordering North Central Avenue and East Hatch Road that is surrounded by predominantly residential uses.

4.3.3 Salida

The community of Salida, located northwest of Modesto, is characterized by a combination of agricultural uses, open space, industrial, and residential development. Salida is known for cultivating almonds and is home of the major Blue Diamond processing facility.

4.3.4 Empire

Empire is located immediately east of Modesto and south of the Tuolumne River. Similar to other contiguous areas, Empire is also an agriculturally active region with residential development.

4.3.5 Del Rio

The community of Del Rio is located roughly 2.5 miles north of Modesto. Del Rio is situated along the south bank of the Stanislaus River and is characterized by agricultural uses, open space, residential development, the Del Rio Golf and Country Club, and the Stanislaus River itself.

4.3.6 Grayson

The community of Grayson is located approximately 11 miles southwest of Modesto and 6.5 miles northwest of the city of Patterson. This small rural residential and agricultural community is situated on the west bank of an old channel of the San Joaquin River. Grayson was once an active port known for transporting grains along the river. Prominent visual features include the surrounding agricultural operations and riparian vegetation along the San Joaquin River.

4.3.7 Turlock

Turlock is a growing community that is characterized by residential, commercial, and industrial development, the SR 99 corridor, and California State University, Stanislaus.

The City of Turlock's *Beautification Master Plan* is a tool that aids the City of Turlock in enhancing Turlock's visual image. The Master Plan identifies landscaping improvements and wayfinding signage improvements for the following corridors and roadways: the SR 99 corridor, Golden State Boulevard, Christoffersen Parkway, Monte Vista Avenue, Fulkerth Road, West Main Street, East Avenue, Geer Road, and Lander Avenue, and Secondary Corridors along Taylor Road, West Tuolumne Road, Hawkeye Avenue, and East Canal Drive (City of Turlock 2010).

The City of Modesto's Turlock water service area is an independent water system made up of three small, separate service area islands ("Northern," "Central," and "Southern," as shown in Figure 1-2) located within the City of Turlock's water system. The Northern service area is bounded by East Monte Vista Avenue to the north, James Lane to the east, Hedstrom Road to the south, and Geer Road to the west. The Central service area is bounded by Debone Avenue to the north, Runyan Drive to the south, Colorado Avenue to the east, and North Olive Avenue to the west. The Southern service area is basically a two-service block area, connected via a pipeline along Brier Road. The entire Turlock service area contains approximately 99 acres, primarily residential, and is considered fully developed.

4.4 Impact Analysis

4.4.1 Methodology

The Proposed Program includes, but is not limited to, four primary types of improvements, as identified in the WMP and WSER: storage tanks, groundwater wells, pumps and pump stations, and pipelines. 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 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. Subsurface improvements, such as pipelines and subsurface portions of wells, would not be visible and therefore are not expected to affect visual resources.

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;
- Substantially degrade the existing visual character or quality 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 (*No Impact*)

No designated scenic vistas or viewpoints exist in the study area. As described in Section 4.2.3, above, proposed WMP components would not be visible from vista points and scenic overlooks identified in the TRRP Master Plan due to distance. **No impact** on existing scenic vistas are likely as a result of the Proposed Program.

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 4 miles away from the Proposed Program components. 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. 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*)

Construction of proposed WMP components, including new storage tanks, groundwater wells, pipelines, generators, and other CIPs involving ground disturbing activities would be visible to various receptors near the construction work areas. For the various WMP 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 of pipeline and other water system-related materials, and earth movement associated with trenching and grading. Views of pipeline construction activities would be likely be limited to several days at any given location since pipeline construction would likely progress at a rate of 200 to 400 feet per day. In contrast, construction of new and replacement wells would typically occur over a 1- to 1.5-year timeframe, and construction of new water storage tanks would extend over a longer period (typically several months up to 1.5 years, depending on size, construction method, site specific requirements, etc.). Depending on the size, wellhead treatment improvements typically require 3-12 months of construction and tank maintenance and repairs typically require 3-6 months of construction. Depending on where individual CIPs get built, views of these operations may be perceived as a degradation of the surrounding area'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**.

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

For components located in residential areas and near public parks or trails, 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. To the extent practicable, staging areas 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 Operations (*Less than Significant with Mitigation*)

Once constructed, all proposed pipeline components including fire flow improvements and grid improvements, extended and replaced water mains would be underground and would not be visible. Underground components would therefore have no impacts on the visual character of the surrounding area.

Aboveground components that would be constructed include new storage tanks, buildings to house booster pump stations and groundwater wells, and new or replacement water pumps at wells and/or booster pump stations. Wellhead treatment facilities will depend on the treatment method, and typically will include (but are not limited to) piping, treatment tanks approximately 15 feet high, monitoring equipment and appurtenances, structures and enclosures. Emergency generator sizing is dependent on the application, but can be 20 feet long by 9 feet wide by up to 15 feet high with fuel storage. In addition, ongoing system security enhancements would involve aboveground improvements such as new fencing, security signage, lighting and other security measures at well and tank sites. These facilities would be visible from surrounding areas and could alter the visual character of each individual site. Aboveground storage tanks could be as high as 35 feet and have a diameter up to 250 feet, while partially buried tanks could have an aboveground height between 10 and 15 feet and a diameter up to 250 feet. Based on other pump station buildings seen throughout the Modesto region, associated pump station buildings may be approximately 20 feet tall and encompass an area of 2,000 to 2,500 square feet. Other ancillary features that may be visible include new outdoor lighting and fencing and gates around the perimeter of new water infrastructure. Views of these facilities may be available from residential and agricultural areas, public roadways, parks, and other public areas.

While these facilities are unlikely to degrade the visual character or quality of views from agricultural areas along the outskirts of Modesto (northern, eastern and western areas of Modesto), they have potential to degrade the visual character or quality of views from public recreation and residential areas as these viewers tend to have longer duration views and have an expectation of higher quality views. As noted in Section 4.3.1, while the new water storage tanks would be constructed on parcels in predominantly agricultural areas, limited views would also be available from nearby residences that typically have a higher visual sensitivity. These tanks would also be visible from adjacent public roads and due to the large size of these facilities, would likely obscure views of orchard row crops and, depending on the vantage point, the Sierra Nevada mountain range in the distance. For this reason, impacts related to degradation of the visual character or quality of the site and surrounding area would be considered significant. Implementation of design considerations as described in **Mitigation Measures AES-2 (Incorporate Aesthetic Considerations into Design for Storage Tanks, Pump Stations, Groundwater Well Buildings, and Other Above-ground Facilities to Be Consistent with Surrounding Settings)** would reduce this impact. Therefore, this impact would be considered **less than significant with mitigation**.

Mitigation Measure AES-2: Incorporate Aesthetic Considerations into Design for Storage Tanks, Pump Stations, Groundwater Well Buildings, and Other Above-ground Facilities to Be Consistent with Surrounding Setting.

Where wells, tanks, pump stations and other above-ground facilities are located in proximity to or are readily visible from residential areas, recreational areas, or public roadways, the facility and fencing shall be designed to be consistent with the surrounding setting, to the maximum extent feasible. The following design elements shall be used to enhance the aesthetic appearance of proposed facilities and to integrate them with the existing visual setting:

- New storage tanks and pump station buildings shall be set back from public views and, upon completing Mitigation Measure AES-2, the City and/or contractor shall consider partially burying tanks to minimize view obstructions.
- Proposed facility designs shall integrate elements such as color, materials, and pattern of the surrounding landscape.
- The exterior of aboveground facilities shall be painted or include appropriate concrete admixtures to achieve low-glare, earth-tone colors that blend with the surrounding terrain and visual setting.
- Wherever possible, use of unpainted metallic surfaces and other reflective sources that may cause increased levels of reflectivity shall be eliminated.
- Wherever possible, install native landscaping and/or fencing to help screen views of the water treatment plant, pump station, and water storage tanks from public roads and adjacent residences.
- Any outdoor night lighting shall be motion-activated and include baffles that direct lighting onto the facility and minimize light spillage onto adjoining properties.

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

As described above under Impact AES-4, once constructed, all pipelines would be underground and would therefore not result in a new source of substantial light or glare.

New aboveground facilities that require on-site exterior lighting include new or replacement booster pump stations, storage tanks, wells, wellhead treatment facilities, generators, and water system security enhancements. New lighting at these facilities would be consistent with outdoor lighting currently used at similar facilities found throughout the Modesto area. Exterior coating of new pump stations and tanks would appear similar to existing structures seen throughout Modesto, and earth tones with non-reflective finishes would be used to coat aboveground components. However, because the exterior coating of proposed facilities has not been determined for aboveground facilities and there could be light spillage onto adjoining properties, permanent light or glare impacts would be considered significant. Implementation of Mitigation Measure AES-2 would ensure that outdoor lighting is motion-activated and directed downward

and that the exterior of new facilities use non-reflective finishes, reducing this impact to **less than significant with mitigation**.

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 geographic information systems (GIS) data for Stanislaus County (2016a);
- The *Stanislaus County General Plan* (2016a);
- The Stanislaus County Public Parcel Viewer – Zoning Map (2016b)
- The Stanislaus Local Agency Formation Commission Policies and Procedures (Stanislaus LAFCO 2015);
- The *Del Rio Community Plan* (Stanislaus County 1992);
- The *Salida Community Plan* (Stanislaus County 2007);
- The *City of Modesto Urban Area General Plan* (2019);
- The *City of Turlock General Plan* (2012); and
- The *Ceres General Plan 2035* (2018).

5.2 Regulatory Setting

There are no federal laws, regulations, and policies regarding agricultural resources pertinent to the Proposed Program.

5.2.1 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 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 2016a). 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.

5.2.2 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 goals of this policy are as follows:

- 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 (LAFCO 2012).

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).

Stanislaus County General Plan

The *Stanislaus County General Plan*'s Land Use and Agricultural Elements 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.

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 2016a). 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.

Del Rio Community Plan

The *Del Rio Community Plan* (Stanislaus County 1992), which was incorporated in the *Stanislaus County General Plan*, is a focused planning policy and land use planning document for the Del Rio area. The Community Plan acknowledges that agricultural use would be gradually confined to the southern portion of the community, with efforts made to decrease incompatibilities with adjacent agricultural and residential uses. The following goals and policies regarding agricultural resources are relevant to the Proposed Program:

Goal 2. Prime agricultural land in the Del Rio vicinity should be preserved in areas where incompatibility impacts between agricultural and residential uses can be minimized.

Goal 3. Further development in the Del Rio should be planned to ensure that adverse impacts on services and utilities, schools, transportation and circulation, agriculture, water, and air quality are appropriately mitigated.

Goal 7. The Del Rio Community shall not be allowed to become an example of inadequately planned leap-frog urban development on primer agricultural land which outpaces demand and overrides community sentiment.

The Plan includes the following standard for future residential development in southern Del Rio:

2. Planned developments adjacent to agricultural land shall be required to incorporate buffers, such as roads, green belts, or natural open spaces, between residential and ag use so as to minimize potential use incompatibilities.

Salida Community Plan

The *Salida Community Plan* (Stanislaus County 2007), which has also been incorporated in the *Stanislaus County General Plan,* serves as a land use planning and policy document for Salida, which is located northwest of Modesto. The County has designated lands that are suitable for open space or recreational use as Agriculture. Within the Plan's Amendment Area, this applies to the Stanislaus River Park, which comprises 244 acres. Note that this designation is not intended to accommodate agricultural activities within Community Plan boundary.

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 is 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)

Ceres General Plan 2035

The *Ceres General Plan 2035* (2018) seeks to balance the need for growth while encouraging the conservation and enhancement of the area's agricultural and natural resources. Most of Ceres was developed on prime agricultural farmland and the goals and policies of the plan strive to maintain agricultural uses as long as possible.

Goal 4. A. To promote the productivity of agricultural lands surrounding Ceres and the continued viability of agriculture in Stanislaus County, and, recognizing the community's agricultural heritage and its contribution to the local economy, support the preservation of agricultural character where it has cultural or scenic significance.

4.A.2 Urban Expansion in Agricultural Areas. Ensure that development and the expansion of infrastructure in urban areas do not encourage the expansion of urban uses into areas designated for Agriculture on the Land Use Diagram, or otherwise reduce the viability of agricultural operations on lands designated for Agriculture.

4.A.5 Land Use Compatibility. Ensure that new development adjacent to agricultural uses is compatible with the continuation of the agricultural uses by minimizing conflicts through appropriate design criteria, such as site layout, landscaping, and buffers to provide adequate separation between habitable structures and active farmland.

The Stanislaus County General Plan also contains an agricultural buffer policy that would apply to unincorporated areas of the Planning Area.

4.A.6 Right to Farm. Continue to support the County's Right-to-Farm ordinance.

4.A.7 Farmland Mitigation. Minimize the loss of agricultural lands by developing a Plan for Agricultural Preservation upon application for a SOI expansion or annexation that includes agricultural land, consistent with the Stanislaus LAFCO Agricultural Preservation Policy.

Goal 4.B Conserve and, where possible, enhance open space lands for the preservation of natural resources, the managed production of resources, outdoor recreation, and public health and safety.

City of Turlock General Plan

The *City of Turlock General Plan* (City of Turlock 2012) includes several goals and policies that are intended to promote and protect local agricultural resources and to minimize conflict with urban uses. Goals and policies relevant to agriculture are listed below.

Land Use

Policy 2.9-a Agriculture belongs in unincorporated areas. Support Stanislaus and Merced County policies that promote continued agricultural activity on lands surrounding the urban areas designated on the General Plan Diagram.

Policy 2.9-c Encourage infill and more compact development to protect farmland. Relieve pressures to convert valuable agricultural lands to urban uses by encouraging infill development.

Parks and Open Space

Policy 6.1-d Minimize conflict. Minimize conflict between urban and agricultural uses.

Agriculture and Hydrology

Policy 7.2-a Preserve Farmland. Promote the preservation and economic viability of agricultural land adjacent to the City of Turlock.

Policy 7.2-b Limit Urban Expansion. Retain Turlock's agricultural setting by limiting urban expansion to designated areas and minimizing conflicts between agriculture and urban activities.

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 is the County's leading industry, generating over $3.8 billion in agricultural commodities in 2015 alone (Stanislaus County 2016a). Approximately 768,000 acres of land throughout the County is categorized as farmland, with approximately 4,150 farms in operation (Stanislaus County 2016a). The County's leading commodities are currently almond crops and milk (Stanislaus County 2016a). 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 important farmland in the Program vicinity. While the majority of proposed components would be located in urban and built-up areas of Modesto, the following Program components would be sited on lands classified as Prime Farmland: one water storage tank in Modesto, two water storage tanks in the outskirts of Modesto in unincorporated Stanislaus County, two wells in the northern portion of the WMP's contiguous study area in unincorporated Stanislaus County, two wells in the

western portion of the contiguous study area, and buildout pipelines along the outskirts of Modesto. Proposed components that would be sited on lands classified as Unique Farmland include two wells, one water storage tank, and build-out pipelines, all located in the northeastern area of the WMP's contiguous study area.

Aside from buildout pipelines planned along the outskirts of Modesto, the majority of proposed pipeline components in the WMP's contiguous study area including fire flow improvements, grid improvements, and strengthening and replacement pipelines would be sited within urban/developed areas. Similarly, in the City's outlying service areas, proposed components primarily include fire flow improvements in existing road rights-of-way.

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* (Stanislaus County 2015a), the General Plan policies of Stanislaus County, the City of Modesto, City of Ceres, and City of Turlock; Williamson Act maps; FMMP maps; and relevant federal and state regulations. Improvements in the Proposed Program include replacement or upgrade of existing facilities. Existing facilities are considered developed, and are not expected to have agricultural resources impacts. 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 agricultural resource impacts; however, new facilities proposed in undeveloped areas would be subject to 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.

Impacts on forestry resources are not evaluated in this DEIR because no zoning for forest land was identified in the Program area (City of Modesto 2019; Stanislaus County 2015b) and Stanislaus County had no land classified as Timberland Protection Zone as of 2001 (Shih 2002).

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. 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).

The impacts of development of the urban area of Modesto have been previously considered in the City of Modesto's General Plan Master EIR, and were found to be significant and unavoidable. While the majority of proposed pipelines would be constructed within existing roadways or in urban/developed areas, some proposed build-out pipelines and grid improvements in Del Rio would be installed on land that is designated as Prime Farmland. Some build-out pipelines in the northeastern portion of the study area would be installed on land designated as Unique Farmland. Prior to constructing build-out pipelines on agricultural or undeveloped lands, the City typically requires developers to provide right-of-way dedications for utility improvements. Ground disturbing activities associated with these improvements would temporarily affect lands designated as Farmland. All of these pipeline improvements would be installed to serve areas planned for growth and would involve either open trench methods or trenchless methods at irrigation or utility crossings (e.g., jack and bore methods). Since the pipeline components would be underground, any disturbance to Farmland would be temporary, Farmland could be returned to pre-construction conditions after construction is complete, and land could continue to be used for agricultural purposes.

Aside from build-out pipelines, the following WMP components would be constructed on Prime Farmland:

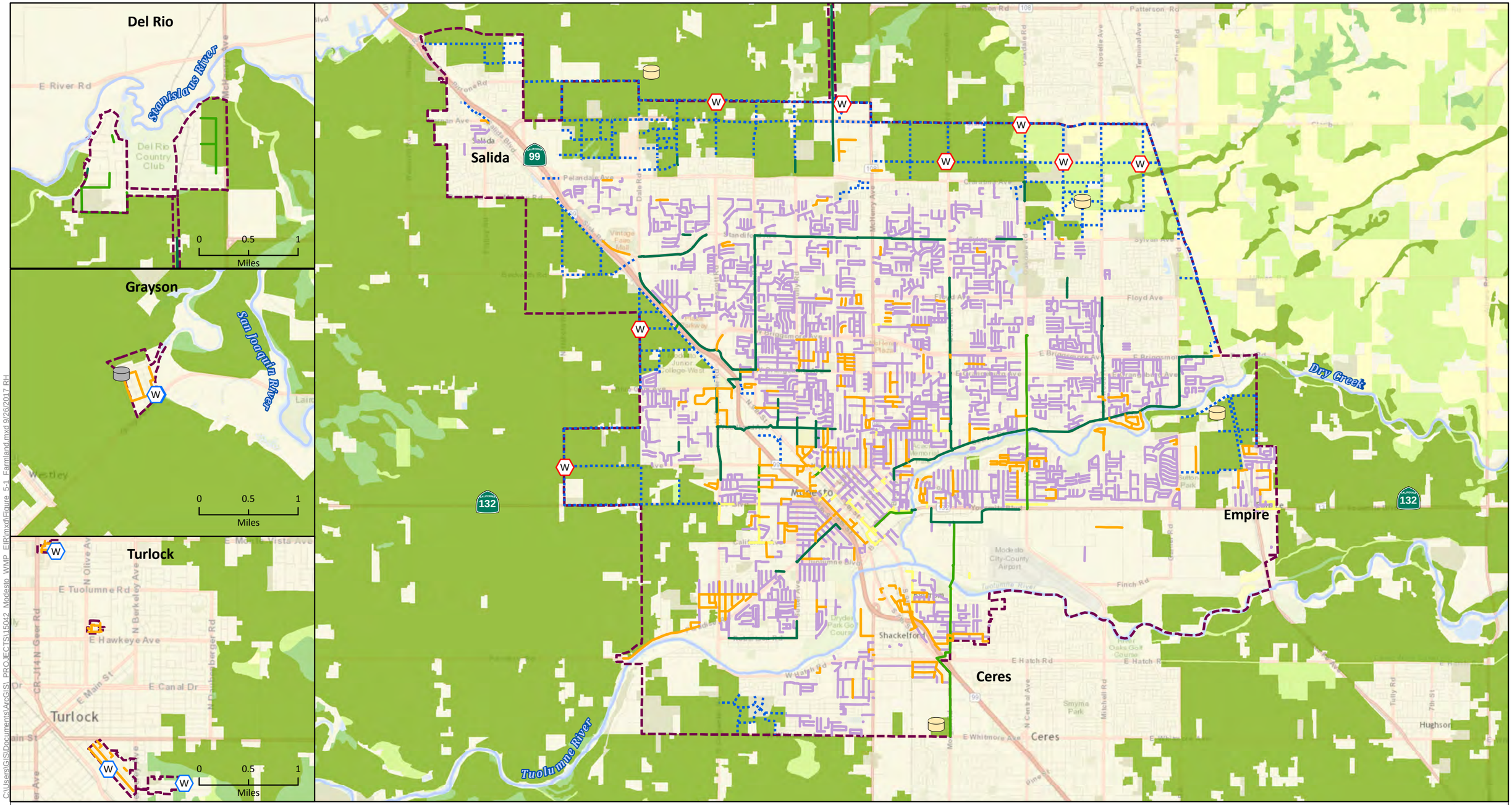
- three water storage tanks (one in northern Modesto east of Dale Road, one in eastern Modesto south of Gomes Road, and one in southern Modesto west of Morgan Road and north of East Whitmore Road),
- two wells in the northern portion of the WMP's contiguous study area (north of Kiernan Avenue), and

- two wells in the western portion of the contiguous study area (west of Highway 99).

In addition, two new groundwater wells in northeastern Modesto would be constructed on Unique Farmland. The proposed tank east of Mable Avenue would also be constructed on land designated as Unique Farmland.

Based on similar wells and water tanks in the study area, it is assumed that new wells would occupy a 10,000 square-foot-area and each 4-6 million gallon tank would require approximately 3 acres. The proposed wells and tanks would result in the permanent conversion of approximately 10 acres 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**.



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Component Types of Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

Important Farmland

- Prime Farmland
- Farmland of Statewide Importance
- Unique Farmland
- Farmland of Local Importance
- Grazing Land
- Water
- WMP Study Area

Horizon WATER and ENVIRONMENT

Figure 5-1
Important Farmland

City of Modesto
Water Master Plan EIR

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

Most pipeline components would take place within developed areas of the WMP study area. However, several storage tanks, wells, and buildout pipelines would be installed on land zoned for agricultural uses. **Table 5-1** summarizes Program components that are zoned for agricultural use in Stanislaus County.

Table 5-1. WMP Components Zoned for Agricultural Use

WMP Components	Location
2.9 MG water storage tank in unincorporated Stanislaus County (north of Modesto)	Northeast of Dale Road and Pirrone Road intersection
5.0 MG water storage tank	South of Gomes Road and north of La Coste Lane
Groundwater well and connecting buildout pipelines	North of Kiernan Avenue and about 0.5 mile east of American Avenue
Groundwater well and connecting buildout pipelines	About 1 mile east of Bangs Avenue and 0.5 mile south of Claribel Road
Groundwater well and connecting buildout pipelines	Immediately southwest of Oakdale Road and Claribel Road intersection
Groundwater well and connecting buildout pipelines	About 0.5 mile west of the Plainview Road and Roselle Avenue intersection
Groundwater well and connecting buildout pipelines	Immediately southwest of the Plainview Road and Litt Road intersection
Groundwater well	Kansas Avenue and Dakota Avenue
Groundwater well and connecting buildout pipelines	About 0.25 mile north of Shoemake Avenue and 1 mile east of Dakota Avenue

In addition, based on review of California Department of Conservation's Williamson Act Lands map (CDOC 2012) and as shown in **Figure 5-2**, one new groundwater well (located near the Plainview Road and Litt Road intersection) would be sited on Williamson Act-Prime Agricultural land. Some build-out pipelines would be constructed adjacent to designated Williamson Act lands but those pipelines would be constructed within existing roadways. No other new WMP facilities would be sited on Williamson Act lands.

While the Program could conflict with lands zoned for agricultural uses or Williamson Act lands, 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. Specifically, the ordinance states that uses not directly related to agriculture can occur on lands that are not located on the County's most productive agricultural areas, which includes lands within LAFCO-approved spheres of influence of cities and/or community service districts serving unincorporated communities. Since the WMP

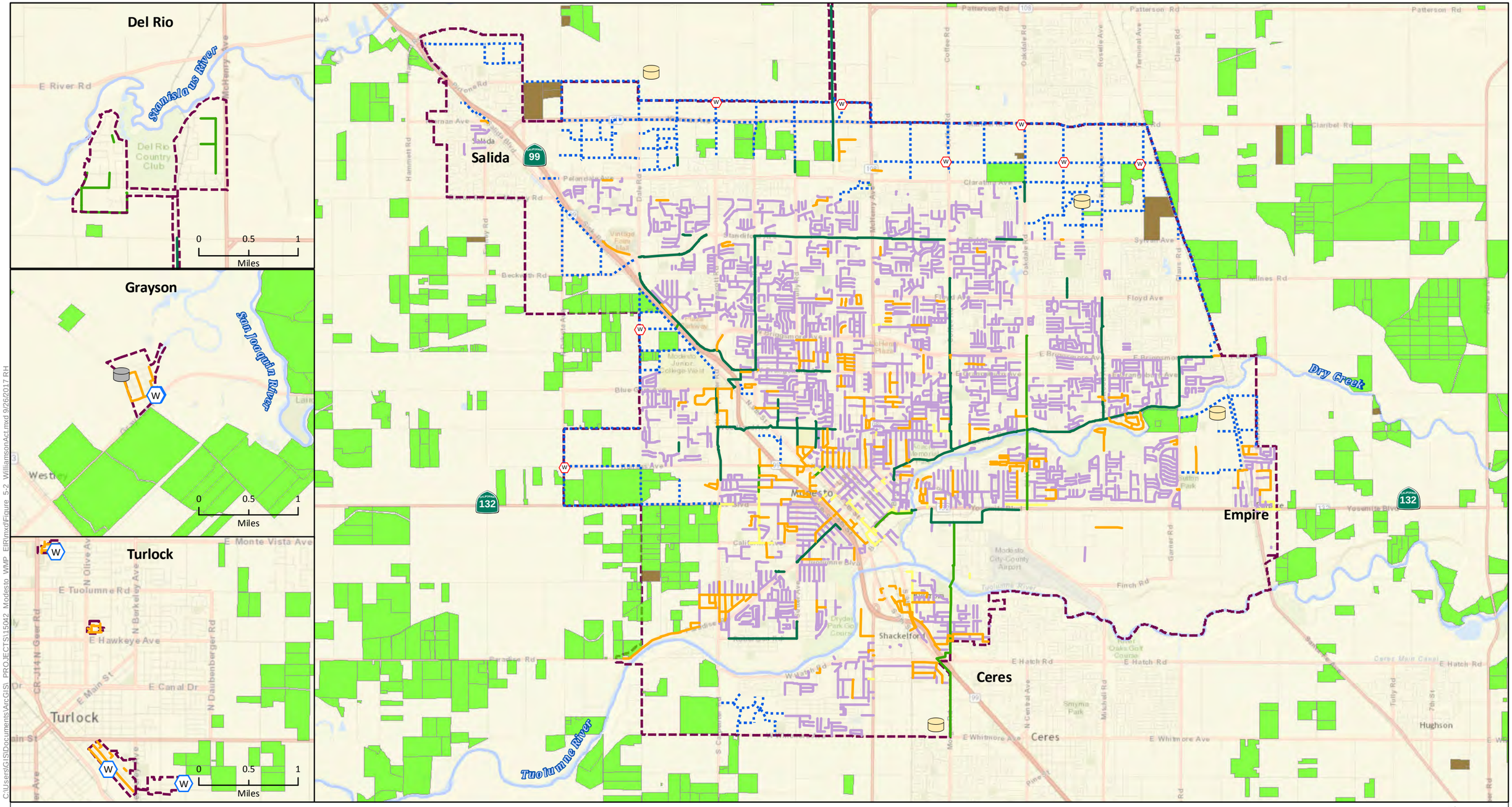
study area includes the City of Modesto's sphere of influence and outlying areas are within the City's service area, lands designated for agricultural uses would not qualify as "productive agricultural areas" as defined in Stanislaus County Ordinance Section 21.20.030. Allowable uses include construction of public facilities. As such, the proposed WMP components listed in Table 5-1 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, conflicts with Williamson Act lands and land zoned for agricultural uses 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 (*Significant and Unavoidable*)

The Proposed Program would not directly or indirectly induce substantial population growth during construction, but could result in the conversion of farmland to non-agricultural uses. The impacts of development of the urban area of Modesto have been previously considered in the City of Modesto's General Plan Master EIR, and were found to be significant and unavoidable.

This impact is discussed in more detail in Chapter 15, *Population and Housing* under Impact PH-3. Mitigation for specific development proposals that involve conversion of agricultural land, such as Mitigation Measure AG-1, would compensate for this impact; however, it would not avoid the conversion and reduce the impact to a less-than-significant level. In addition, the specifics regarding future development that may result in agricultural conversion are not known at this time, and implementation of this mitigation measure for such development is not considered feasible within the scope of the Proposed Program. Impacts are considered **significant and unavoidable**.



Component Types of Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

Williamson Act Contracts 2016

- Williamson Act Contract - Prime Agricultural Land
- Williamson Act Contract, non-renewal
- WMP Study Area

Source: California Dept. of Conservation, 2016

Figure 5-2
Williamson Act Contracts

City of Modesto
Water Master Plan EIR

Horizon WATER and ENVIRONMENT

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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 described 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);
- SJVAPCD *Mitigation Measures* guidance document (SJVAPCD 2017d); 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 U.S. Environmental Protection Agency (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 (PM10) and particulate matter of aerodynamic radius of 2.5 micrometers or less (PM2.5). 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 Status1	Federal Standards Attainment Status2
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 ppm5		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 (PM10)	24-hour	50 µg/m3	N	
		150 µg/m3		A
	Annual arithmetic mean	20 µg/m3	N	
Fine Particulate Matter (PM2.5)	24-hour	35 µg/m3		N (Moderate)
	Annual arithmetic mean	12 µg/m3	N	N (Moderate)
Sulfates	24-hour	25 µg/m3	A	
Lead (Pb)[6]	30-day average	1.5 µg/m3	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
PM10- particulate matter of aerodynamic radius of 10 microns or less
PM2.5- 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, PM10, 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 PM2.5 and PM10 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 PM10 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 PM2.5 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 PM10 is met if the 3-year average falls below the standard at every site. The annual PM2.5 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. Although the vinyl chloride CAAQS remains in force, current regulatory efforts are under ARB's Air Toxics Program.

Sources: SJVAPCD 2017a, 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

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 2017b). 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 2016). 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 2016).

PM10

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. PM10 is typically found near roadways and around dusty industrial sites. Based on PM10 measurements from 2003-2006, USEPA found that the SJVAB has reached attainment of federal PM10 standards. On September 21, 2007, the SJVAPCD Governing Board adopted the 2007 PM10 *Maintenance Plan and Request for Redesignation*, which demonstrates that the SJVAB will continue to meet the PM10 standard. USEPA approved the document and, on September 25, 2008, the SJVAB was redesignated to attainment/maintenance (SJVAPCD 2017c). The District is in the process of

developing the 2017 PM10 Maintenance Plan to demonstrate the maintenance of the standard for an additional ten-year period of 2020 through 2029 (SJVAPCD 2017c, 2017e).

PM2.5

PM2.5 are found in smoke and haze. Changes in the federal PM2.5 air quality standard (in 1997, 2006, and 2012) and recent drought conditions in California have resulted in the development of multiple PM2.5 air quality plans by SJVAPCD. The 2008 and 2015 PM2.5 Plans have been prepared to achieve attainment of USEPA's first PM2.5 standard, set in 1997. The attainment deadline for the 1997 standard has been delayed to 2020 (SJVAPCD 2015b).

USEPA lowered the PM2.5 standard in 2006. Although SJVAPCD's 2012 PM2.5 Plan showed attainment of this standard by 2019, USEPA reclassified SJVAPCD to serious nonattainment for the 2006 PM2.5 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 PM2.5 standard issued by USEPA in 2012 and USEPA's determination that the SJVAB is a moderate nonattainment area for the 2012 federal PM2.5 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 PM2.5 standards (1997, 2006, and 2012) (SJVAPCD 2017c, 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 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 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 PM10 Prohibitions** is a series of rules (Rules 8011–8081) designed to reduce PM10 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 PM10 emissions by 20 percent and 45 percent, respectively. Compliance with Rule 9510 is designed to reduce operational emissions of NO_X and PM10 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 2017d) 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 in the Final Master Environmental Impact Report.

Del Rio Community and Salida Community Plans

The *Del Rio Community Plan* (Stanislaus County 1992), which was incorporated in the *Stanislaus County General Plan*, identifies in Goal 3 that future development in the Del Rio Area should be planned to ensure that adverse impacts on air quality are appropriately mitigated. The *Salida Community Plan* (Stanislaus County 2007), which was incorporated in the *Stanislaus County Plan,* does not identify policies or regulations related to air quality.

Ceres General Plan 2035

The *Ceres General Plan 2035* (2018) contains the following goal and policies related to air quality:

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

> **4.G.1. Air Quality Goals.** Cooperate with the San Joaquin Valley Air Pollution District and other agencies in the San Joaquin Valley Air Basin to meet regional air quality goals and achieve a consistent and effective approach to regional air quality planning and management. Coordinate with other jurisdictions and other regional agencies in the San Joaquin Valley to establish parallel air quality programs and implementation measures.
>
> **4.G.3. Air Quality Analysis.** Require major new development projects (those exceeding the San Joaquin Valley Air Pollution District's small project analysis level) to submit an air quality analysis for review and approval, with mitigation measures to be required as determined by the City.
>
> **4.G.5. Reduce VMT.** Emphasize transit-oriented, walkable, compact development patterns to reduce total vehicle miles traveled.

City of Turlock

The *Turlock General Plan* (2012) has the following policies related to air quality:

Policy 8.1-a. Prioritize Air Quality in Local Planning. Continue efforts to improve air quality in Turlock by integrating air quality analysis and mitigation in land use and transportation planning, environmental review, public facilities and operations, and special programs.

Policy 8.1-n. Construction-related Air Emissions Impacts. Continue to 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. Food processing plants operate in the study area and agricultural land uses are located around the edge of the City proper. The outlying service areas of Grayson, Turlock, and Del Rio are primarily residential. Grayson and Turlock are considered mostly or fully developed, respectively, while Del Rio is approximately 57 percent developed.

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.

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	PM10	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
	PM2.5	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; PM2.5 = particulate matter of 2.5 micrometers or less; PM10 = 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 Water Treatment Facilities and Distribution System

Monitoring data or comprehensive estimates of existing emissions of criteria pollutants or TACs from the City's water distribution system facilities is not available. The types of emissions associated with the water distribution facilities include criteria pollutant and TAC emissions from burning diesel fuel to run emergency generators at wells and booster pump stations.

The water distribution facilities are typically not a potential source of odors. SJVAPCD was contacted to obtain a list of all odor complaints received in the past 3 years associated with the drinking water system and no complaints were found.

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. PM10 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. PM10 is typically found near roadways and around dusty industrial sites. PM2.5, 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 PM10. (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 water storage and well treatment areas.

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 elements of the Proposed Program. Specific sensitive receptors may change or move over the life of the Program, and a comprehensive map of sensitive receptors is not available. Figure 11-3 in Chapter 11, *Hazards and Hazardous Materials,* show the locations of existing schools, which are one category of sensitive receptors in the study area.

6.4 Impact Analysis

6.4.1 Methodology

Construction and operation-related air quality impacts of WMP components were evaluated qualitatively by considering the Proposed Program's sources and duration 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. 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. 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.

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 qualitatively considered these thresholds of significance, which are identified 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 WMP 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 6-3** below. 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 6-3**. 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, and 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 NO_X during construction, 10 tons of NO_X 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 6-3. 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 (PM10)	15	15	15
Fine particulate matter (PM2.5)	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, 2015d) 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, 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 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 cities of Modesto, Turlock, and Ceres have planned for growth and adopted general plans for future development (City of Modesto 2019, Stanislaus County 2016b, City of Ceres 2018, City of Turlock 2012). The SJVAPCD develops its air quality plans to attain NAAQS and CAAQS which are in part based on the population and growth estimates provided by the local planning agencies, including the cities 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 water distribution and conveyance infrastructure to support and accommodate new and existing development in the

City's service areas, General Plan, and SOI. The Proposed Program components would not directly add new housing or substantial sources of employment to the region.

The Proposed Program 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. 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 unpermitted 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 unpermitted operational emissions.

For these reasons, the Proposed Program 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*)

As described above, the Proposed Program would be located in an area that is in non-attainment for federal and state ozone and PM2.5 standards and state PM10 standards. In order to determine if the Proposed Program would violate or contribute substantially to an existing or projected air quality violation, an evaluation of the projected mass emissions for construction and operation compared to the applicable mass criteria emission thresholds is required.

The SJVAPCD considers PM10 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 the GAMAQI (SJVAPCD 2015a), constitute sufficient mitigation to reduce construction-related PM10 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. The implementation of Mitigation Measures AQ-1 and AQ-2 would reduce this impact to a less-than-significant level. In addition, the SJVAPCD recommends the measures listed below to reduce exhaust pollutant emissions from heavy construction equipment to less-than-significant levels:

- Water exposed surfaces three times daily.
- Cover soil stockpiles with a tarp.
- Water unpaved haul roads three times daily.

- Apply soil stabilizers to inactive areas.
- Replace ground cover in disturbed areas quickly.
- 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 measures and requirements identified 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.

Construction Impacts

The Proposed Program components would all be located 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 WMP components would include the operation, inspection, and maintenance of new tanks, emergency generators, well stations, pump stations, lift stations and water treatment 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 vehicle trips, maintenance equipment, generator use, and water treatment operation. The operation and maintenance of other WMP facilities would not require a substantial change in employees compared to existing conditions.

Emissions from the operation of emergency generator sources would not be substantial since any new or modified emergency generators 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.

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 PM10

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 PM10

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 miles per hour (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 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 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 Operational Emissions of PM10 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 water system sites when required to mitigate significant PM10 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, WMP components would be located in an area that is in non-attainment for federal and state ozone and PM2.5 standards and state standards for PM10. 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. With implementation of Mitigation Measures AQ-1, AQ-2, and AQ-3, none of the program-level components 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 the program-level component sites. 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*)

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 water distribution and treatment facilities are not included in the list. As described in Section 6.3.2, SJVAPCD has not received or confirmed odor complaints associated with the City's water facilities in the last three years. Therefore, this impact would be less than significant.

Overall Conclusion

Considering the WMP components as a whole, the construction and operation would not have any substantial long-term sources of odors. There will be some odors associated with diesel fueled equipment during construction and operation which 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. The Program components are not facility types that are known to produce odors and no odor complaints have been received in the past three years. Therefore, 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 U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA's) 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. Section 10(a)(1)(B) of the ESA provides a process by which nonfederal entities may obtain an incidental take permit from USFWS or NMFS for otherwise lawful activities that incidentally may result in take of endangered or threatened species, subject to specific conditions.

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 the U.S. Army Corps of Engineers (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. The California Department of Fish and Wildlife (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 2019a). 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.

Ceres General Plan 2035

The Ceres General Plan 2035 (City of Ceres 2018) guides land use and development in the City of Ceres. Goals and policies in the General Plan related to biological resources that are potentially relevant to the Proposed Program include the following:

Chapter 6, Agricultural and Natural Resources

Goal 4.C Protect, restore, and enhance habitats and wildlife corridors that support fish and wildlife species to maintain populations at viable levels.

Policies

4.C.2. Pesticide Control. Work with the Stanislaus County Agricultural Commissioner to identify and enforce mechanisms to control residual pesticides and pesticide runoff to prevent potential damage to water quality, vegetation, and wildlife.

4.C.3. Fisheries. Support the management efforts of the California Department of Fish and Wildlife to maintain and enhance the productivity of fisheries in the Tuolumne River.

4.C.4. Riparian Setback. Protect the integrity of habitats, hydrology, and soils along the river by prohibiting development within a distance of at least 50 feet as measured from the limit of riparian vegetation or as measured from the top of the channel bank, whichever is greater. Smaller buffers may be allowed only where it can be demonstrated that a 50-foot buffer is not possible due to site-specific constraints or if the development is for public, passive park or recreational uses, and the proposed narrower buffer would adequately protect the biological, hydrologic, and geologic integrity of the riparian corridor.

Goal 4.D Protect environmentally sensitive lands and rare, threatened, or endangered plant and animal communities.

Policies

4.D.1. Special-Status Species. Support the preservation of habitats of rare, threatened, endangered, and other special-status species. Require development in areas known to have value for wildlife to be carefully planned and, where possible, sited to maintain reasonable wildlife value of the habitat.

4.D.2 Biotic Resource Evaluation. Require, as part of the environmental review process prior to approval of discretionary development permits involving parcels within a significant ecological resource area, a biotic resources evaluation of the site by a qualified biologist. Significant ecological resource areas include, at a minimum, the following:

- Any habitat that supports rare, threatened, or endangered animals or plants; and
- Riparian and wetland habitats associated with the Tuolumne River.
- Such evaluation should consider the potential for significant impact on biological resources, and identify measures to feasibly mitigate any impacts or otherwise indicate why mitigation would not be feasible. In approving any such permit, the City shall determine the feasibility of the identified mitigation measures.

4.D.3. Significant Biological Resources. Support and cooperate with the efforts of other local, State, and federal agencies and private entities engaged in the preservation and protection of significant biological resources from incompatible land uses and development, including efforts involving a Habitat Conservation Plan or other plan for habitat management or restoration. Significant biological resources include endangered, threatened, or rare species and their habitats, wetland habitats, wildlife migration corridors, and locally-important species/communities.

City of Turlock General Plan

The City of Turlock General Plan (City of Turlock 2012) guides land use and development in the City of Turlock. Policies in the General Plan related to biological resources that are potentially relevant to the Proposed Program include the following:

Guiding Policies

7.4-a Increase Biological Diversity. Make efforts to enhance the diversity of Turlock's flora and fauna, including street trees.

Implementing Policies

7.4-b Sensitive Site Planning. Protect mature trees and natural vegetation and features wherever feasible in new development areas.

7.4-c Urban Trees. Protect and expand Turlock's urban forest through public education, sensitive maintenance practices, and a long-term financial commitment adequate to protect these resources. Continue to require the planting of appropriately-spaced street trees in new development areas.

7.4-d Special Review if New Information Becomes Available. Establish environmental review procedures, such as site reconnaissance and

certification by a biologist, as part of the project development application process if new information to support existence of a Special Status species becomes available.

7.4-e **Identify and protect nesting habitat.** Projects on greenfield sites proposing to commence construction or other ground-disturbing activities during the typical nesting season (February through mid-September) shall be required to conduct a survey by a qualified biologist no more than 10 days prior to the start of disturbance activities. If nests are found, no-disturbance buffers around active nests shall be established as follows until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival:

- 250 feet for non-listed bird species;
- 500 feet for migratory bird species; and
- One-half mile for listed species and fully protected species.

7.4-f **Swainson's Hawk protection.** If Swainson's Hawks are found foraging in an agricultural area prior to or during construction, project proponents shall consult a qualified biologist for recommended proper action, and incorporate appropriate mitigation measures. If specific project activities on sites where suitable nesting habitat may exist are to take place during the normal breeding season (February through mid-September), project proponents shall be required to conduct a survey by a qualified biologist for nesting raptors in all potentially suitable trees no more than 10 days prior to the start of disturbance activities. If an active Swainson's Hawk nest is found, appropriate mitigation measures may include, but are not limited to:

- Establishing a one-half mile buffer around the nest until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival;
- Mitigating habitat loss within a 10-mile radius of known nest sites as follows:
  - Providing a minimum of one acre of habitat management land for each acre of development for projects within one mile of an active nest tree;
  - Providing a minimum of 0.75 acres of habitat management land for each acre of development for projects within between one and five miles of an active nest tree; or
  - Providing a minimum of 0.5 acres of habitat management land for each acre of development for projects within between five and 10 miles of an active nest tree.

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.

Del Rio Community Plan

The Del Rio Community Plan guides development in the community of Del Rio (Stanislaus County 1992). One goal within the Community Plan is relevant to the Proposed Program.

Goal 6: Significant natural resources in the community shall be preserved.

7.3 Environmental 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 travels westerly north of Modesto. Elevations range from approximately 55 feet above mean sea level (msl) in Grayson 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, transportation, and open space. Natural habitats are mostly found along the Tuolumne River and Dry Creek.

7.3.1 Methods

Reconnaissance surveys were not conducted as the Proposed Program is analyzed in this EIR at a program level, 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 of Modesto Urban Area General Plan (City of Modesto 2019a);
- 2010 WSER Draft Program EIR (ICF Jones & Stokes and Horizon 2009);
- Ceres General Plan 2035 (City of Ceres 2018);
- City of Turlock General Plan (City of Turlock 2012);
- Stanislaus County General Plan 2015 (2016);
- Del Rio Community Plan (Stanislaus County 1992);
- City's Modesto Wastewater Master Plan Update Draft Master Environmental Impact Report (Turnstone 2006); and
- North Valley Regional Recycled Water Program Final Environmental Impact Report/Statement (Bureau of Reclamation and City of Modesto 2015a).

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

- USFWS IPaC Resource List for the Modesto Water Master Plan study area (USFWS 2017a);
- CDFW's CNDDB queries for the following U.S. Geological Survey (USGS) 7.5-minute quadrangles: Manteca, Avena, Escalon, Ripon, Salida, Riverbank, Westley, Brush Lake, Ceres, Oakdale, Waterford, Denair, and Turlock (CDFW 2017);
- California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California queries for the following USGS 7.5-minute quadrangles: Manteca, Avena, Escalon, Ripon, Salida, Riverbank, Westley, Brush Lake, Ceres, Oakdale, Waterford, Denair, and Turlock (CNPS 2017);
- eBird records for the study area (eBird 2017a).

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

7.3.2 Vegetation and Land Cover

Descriptions of vegetation and land cover occurring in the study area are adapted from previous documents related to the study area, including the 2010 WSER Draft Program EIR (ICF Jones & Stokes and Horizon 2009), 2019 Master EIR for the City's general plan (City of Modesto 2019b), 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 2015b). 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*). Redwing blackbird and potentially tricolored blackbird (*Agelaius tricolor*) may use grain crops for breeding habitat. Burrowing owl (*Athene cunicularia*) may use plowed fields for breeding habitat. 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). Other bird species may potentially nest in orchards.

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 (City of Modesto 2019b) 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.

7.3.3 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 Program vicinity were identified from the queries described in Section 7.3.1. A list of these species is provided in **Table 7-1; Figure 7-1**, **Figure 7-2,** and **Figure 7-3** show the CNDDB occurrences of special-status plants, special-status animals, and critical habitat,[1] respectively, within a five-mile radius of the Proposed Program. The

[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.

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 in previous studies in the area.

7.3.4 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, Stanislaus River, 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.

7.3.5 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, Stanislaus River, 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.

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

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
PLANTS						
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.
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.
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.
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.
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.
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.
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.
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.
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.
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.
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 1941.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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).
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	FT	SE	1B.1	Vernal pools. 10-755 meters. Blooms April through September.	**Not expected.** Only the Turlock outlying service areas are 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.
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.
Tuctoria greenei	Greene's tuctoria	FE	SR	1B.1	Vernal pools. Vernal pools in open grasslands. 25-1325 meters. Blooms May through July.	**Not expected.** This species is considered extirpated from Stanislaus County (USFWS 2007b).
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.
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.
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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).
INVERTEBRATES						
Branchinecta conservation	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.
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.
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 2017d).
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.
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).
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.
Thamnophis gigas	giant gartersnake	FT	ST	-	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the gartersnakes in California.	**Not expected.** Potentially suitable habitat exists in the study area, but there have been no CNDDB occurrences within Stanislaus County.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.	**Possible.** 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.	**Possible.** Potentially suitable habitat exists in the study area.
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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.	**Possible.** Species has been observed in the study area (ebird.org 2017a). Flood irrigated pastures provide potential nesting habitat.
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 2017e).
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).
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.	**Possible.** Riparian areas and isolated mature trees in agricultural areas provide potential nesting habitat.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
Haliaeetus leucocephalus	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.	**Possible.** 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.
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.
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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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 2.6 miles north of the Grayson portion 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**.**
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.
Dipodomys nitratoides exilis	Fresno Kangaroo Rat	FE	SE	-	Alkali sink-open grassland habitats in western Fresno County. Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	**None.** The study area is not within 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
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.
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).

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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 2012), which are approximately 0.7 and 4.1 miles north and west of the study area, respectively. Grayson is the closest portion of the study are to these populations, and no Program activities in Grayson would occur in riparian habitat.
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 2017f). 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.

Scientific Name	Common Name	Federal Listing Status	State Listing Status	Rare Plant Rank	Habitat	Potential to Occur in the Study Area
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 provides marginally suitable habitat.

*** 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.

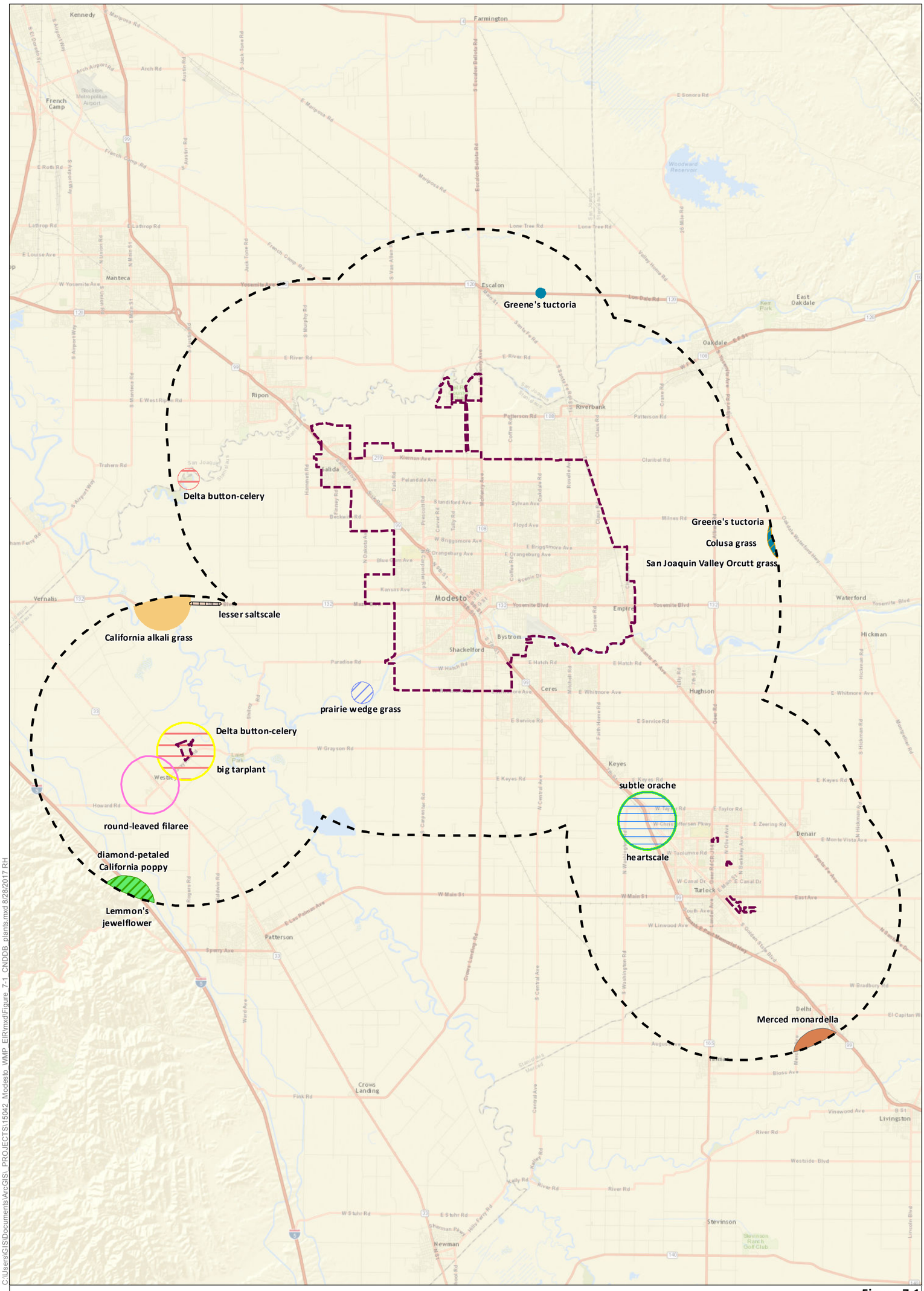

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Figure 7-1
Special-Status Plant Species within 5 miles of the Proposed Program

N

0 1 2
Miles

Study Area
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, October 2019 update

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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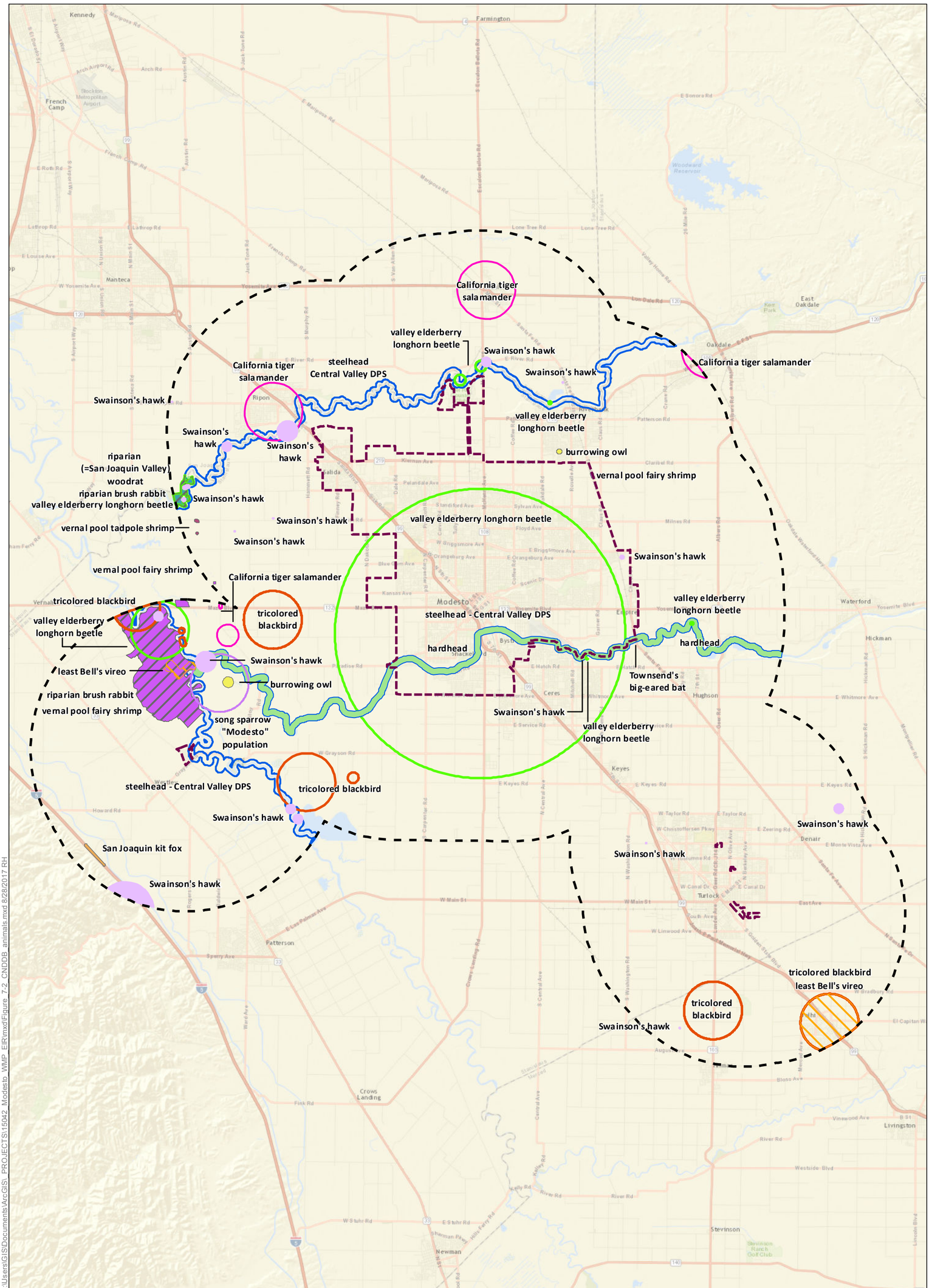

Study Area
5-mile Buffer

California tiger salamander
Conservancy fairy shrimp
Sacramento splittail
San Joaquin kit fox
Swainson's hawk
Townsend's big-eared bat
burrowing owl
hardhead

least Bell's vireo
riparian (=San Joaquin Valley) woodrat
riparian brush rabbit
song sparrow ("Modesto" population)
steelhead - Central Valley DPS
tricolored blackbird
valley elderberry longhorn beetle

vernal pool fairy shrimp
vernal pool tadpole shrimp
western pond turtle

N

0 1 2
Miles

Horizon WATER and ENVIRONMENT

Source: CDFW, CNDDB, August 2017 update

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

City of Modesto
Water Master Plan EIR

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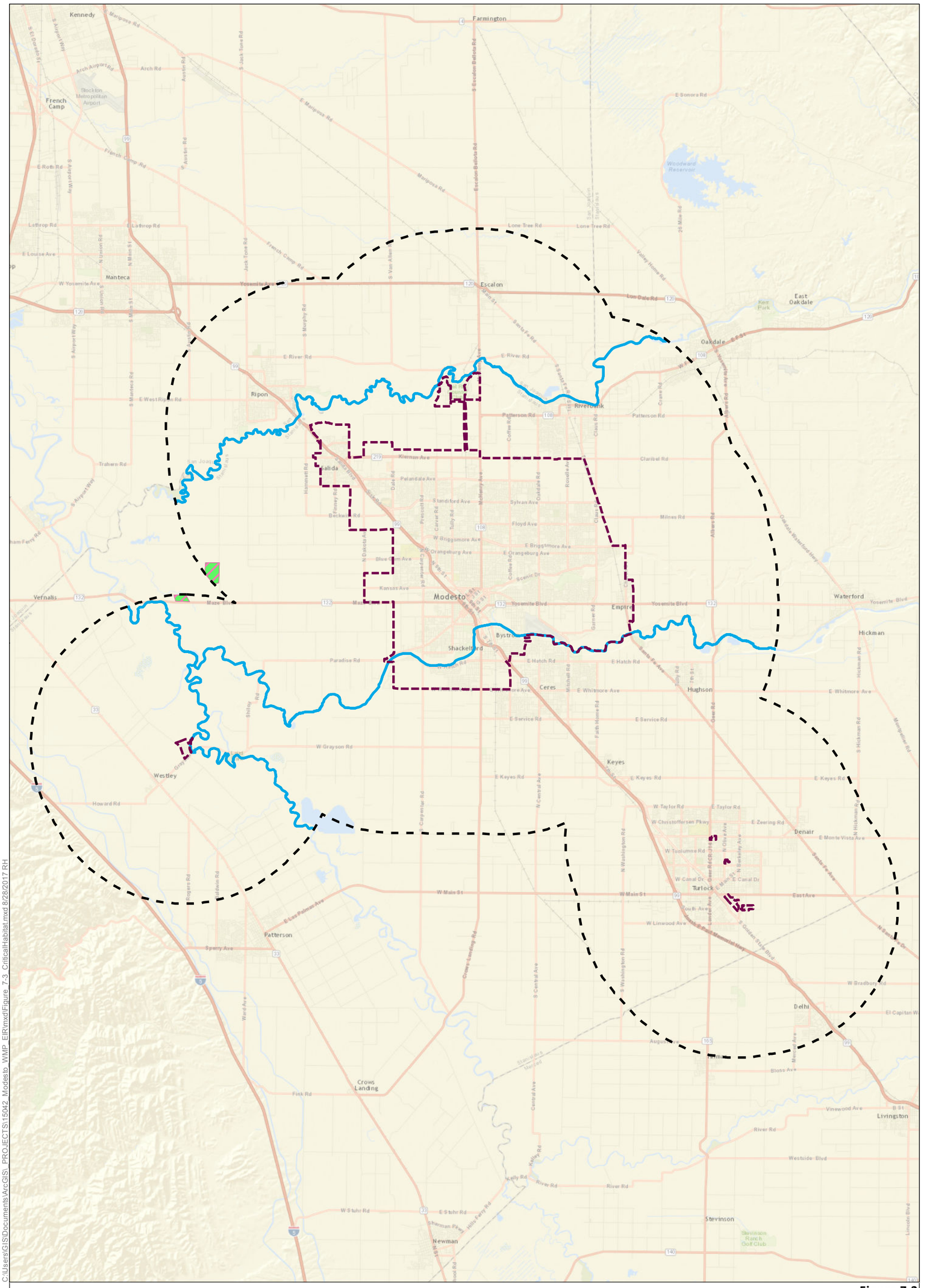

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Figure 7-3
Critical Habitat within 5 miles of the Proposed Program

N

0 1 2
Miles

Study Area
5-mile Buffer

Critical Habitat
Steelhead
Conservancy fairy shrimp
Vernal pool fairy shrimp
Source: USFWS

Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

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7.3.6 Habitat Conservation Plan

The Pacific Gas and Electric Company (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. The Proposed Program is not a covered activity under the PG&E O&M HCP and the Proposed Program would not conflict with the HCP's conservation strategy for covered species.

7.4 Impact Analysis

7.4.1 Methodology

The Proposed Program includes four primary types of improvements, as identified in the WMP and WSER: storage tanks, groundwater wells, pumps and pump stations, and pipelines. 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 anticipated conditions after construction of proposed components. 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, as described in Chapter 2, would continue similar to existing conditions. The level of ongoing operation and maintenance activities would be anticipated to increase from adding capacity to serve growth, but 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.

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 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*)

Special-status plants may occur in the vicinity of Program components in habitats such as grassland, wetlands, vernal pools, and valley and foothill riparian (Table 7-1). Valley and foothill riparian habitat occurs along Dry Creek and the Tuolumne River. Several buildout pipelines, such as those in North Modesto near Cottonwood Drive or South Modesto near Ironside Drive, and a fire flow improvement pipeline in South Modesto near Crows Landing Road and El Paso Avenue, occur in ruderal grasslands. Wetlands may occur in riparian habitat associated with Dry Creek and the Tuolumne River, as well as potentially in some agricultural lands. Impacts to special-status plants could include removal of individuals, and indirect effects from sedimentation or changes to hydrology. Impacts to special-status plants during construction of certain Program components would be minimized by using trenchless or other non-open cut construction method pipeline construction for crossings of the Tuolumne River and Dry Creek, where wetland and riparian habitat is located. The only Program components that would cross the Tuolumne River and Dry Creek are components FTGRID-01 and FTGRID-04, which are both new 16-inch diameter pipelines for future grid improvements. 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.

Several mitigation measures are proposed to avoid, reduce, or compensate for impacts to special-status plants. 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, implementation of Mitigation Measure BIO-2 would identify the extent to which special-status

plants are present and could be adversely affected by the project. Where special-status plants are 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.**

Mitigation Measure BIO-1: Perform Focused Surveys for Special-status Plant Species.

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.

If special-status plants are detected, the City shall implement the following measures to avoid or minimize 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 City 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 City, 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*)

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 WMP 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 Program construction activities would be minimized or avoided through compliance with the National Pollution 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 best management practices (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**.

Mitigation Measure BIO-3: Avoid Impacts on Vernal Pool Branchiopods, Western Spadefoot, and Their Habitat.

Prior to implementation of proposed projects in areas that could contain habitat for vernal pool branchiopods, a qualified biologist will 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 will 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.

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*)

Valley elderberry longhorn beetle (VELB) is a federally-threatened 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. 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 2017g). Implementation of Mitigation Measure Bio-1 would identify the location of elderberry shrubs on a project-specific basis. Implementation of Mitigation Measures BIO-5 through BIO-7 would reduce impacts on VELB to **less than significant with mitigation**.

Mitigation Measure BIO-5: Avoid Impacts on VELB Habitat.

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 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 2017g). 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.

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.

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 and Stanislaus rivers 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.

Program Components (except Future Grid Pipelines FTGRID-01 and FTGRID-04)

Construction of these Proposed Program components would not occur in suitable habitat for special-status fishes. However, impacts to water quality in the Tuolumne River, Dry Creek, the Stanislaus 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. Impacts to special-status fish from water quality include reduction in habitat quality, injury, or mortality. These impacts would be considered significant.

Construction activities that take place near these creeks and rivers, such as existing grid improvement pipelines EXGRID-02, EXGRID-05, and EXGRID-06, could result in discharges of hazardous materials if adequate precautions are not taken. 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.

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. Implementation of Mitigation Measure HYD/WQ-1 would further reduce soil erosion. Implementation of Mitigation Measure HYD/WQ-1 would reduce this impact to a level that is **less than significant with mitigation**.

Future Grid Pipelines FTGRID-01 and FTGRID-04

Construction-related impacts to special-status fish and their habitat would be minimized by using trenchless or other non-open cut construction techniques for these future grid components crossing the Tuolumne River and Dry Creek. Impacts to special-status fish and their habitat may result from a frac-out of drilling fluids during trenchless construction. 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/or Dry Creek would not 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 would translate into the water. Other non-open cut construction methods are also not anticipated to result in noise or vibration impacts on fish. There would be no impacts from noise or vibration from drilling machinery on special-status fishes.

Construction activities of Program components FTGRID-01 and FTGRID-04 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. Such impacts would be avoided or minimized through implementation of BMPs and compliance with the NPDES General Construction Permit and SWPPP requirements. Implementation of Mitigation Measure HYD/WQ-1 would further reduce soil erosion or loss of topsoil and reduce adverse effects on special-status fish. With implementation of Mitigation Measure HYD/WQ-1, impacts would be **less than significant with mitigation**.

Overall Conclusion

WMP components near the Tuolumne River, and Dry Creek, Stanislaus River, and the San Joaquin River have the potential to 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 these mitigation measures 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*)

Potentially suitable habitat for western pond turtle in the study area 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 or other non-open cut pipeline construction where this species is most likely to occur, in the Tuolumne River and Dry Creek. The only Program components that would cross the Tuolumne River or Dry Creek are future grid improvement components FTGRID-01 and FTGRID-04. The majority of Program components would occur in urban portions of Modesto or the outlying WMP service areas 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.

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**.

Mitigation Measure BIO-8: Conduct Preconstruction Surveys for and Minimize Impacts on Western Pond Turtle.

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, and sloughs where suitable habitat exists. If a turtle is located within the construction area, the turtle will be relocated out of this area (with authorization from the DFG), 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 City or its contractors 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 turtles.
- If a 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.
- 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*)

Burrowing owls could occur within grasslands, agricultural habitats and canal and railroad right of ways where burrows are present. Several buildout pipelines such as those in North Modesto near Cottonwood Drive or South Modesto near Ironside Drive, and a fire flow improvement pipeline in South Modesto near Crows Landing Road and El Paso Avenue occur in ruderal grasslands. Other Program components such as buildout pipelines in the northern portion of the contiguous study area, such as in the vicinity of the intersection of Oakdale Road and Mable Avenue and the vicinity of the intersection of Bangs Avenue and American Avenue, occur in agricultural habitats. Implementation of Mitigation Measure BIO-1 would identify burrowing owl habitat on a project-specific basis. If this species is present in the vicinity of proposed 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-11 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**.

Mitigation Measure BIO-9: Conduct Pre-construction Surveys for Burrowing Owls and Implement No-Work Buffer Areas if Necessary.

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 (February 1 through August 31), 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. 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 in the vicinity of the study area (eBird 2017c), 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 in the vicinity of the study area (ebird.org 2017c). 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 2007a). The Tuolumne, San Joaquin, and Stanislaus rivers provide potential foraging habitat. Large trees along the San Joaquin, Tuolumne, and Stanislaus rivers 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 vicinity of the study area and are known to nest locally. Riparian trees along the Tuolumne River, Stanislaus 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 near riparian

habitat include future grid pipeline improvements FTGRID-01 and FTGRID-04, and existing grid improvement pipelines EXGRID-02, EXGRID-05, and EXGRID-06. Although the majority of Program pipelines are within existing roadways, many of these roadways are located adjacent to agricultural habitat.

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 future grid pipeline improvement FTGRID-01 and FTGRID-04 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 study area. 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.

Construction of Program components such as such as new tanks (e.g., North and South Modesto storage tanks) and wells in agricultural or grassland habitat could result in the loss of suitable foraging habitat for Swainson's hawk. 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.**

Mitigation Measure BIO-10: Avoid, Minimize, or Compensate for Impacts on Raptors, including Special-status Species.

The City shall implement the following measures.

- If ground and vegetation disturbing activities occur between February 1 and September 15, 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.

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 Proposed 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 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*)

Program Components (except Future Grid Improvements FTGRID-01 and FTGRID-04)

Special-status passerines that may nest in the vicinity of Program components include tricolored blackbird, loggerhead shrike (*Lanius ludovicianus*), yellow-breasted chat (*Icteria virens*) and yellow warbler (*Dendroica petechia*). These special-status passerines nest in riparian habitat. Program components near riparian habitat include existing grid improvement pipelines EXGRID-02, EXGRID-05, and EXGRID-06. Various birds protected by the MBTA could also occur in the vicinity of any Program components.

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 (Conduct Pre-construction Surveys for Nesting Birds and Implement No-Work Buffer Areas if Necessary)** 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**.

Future Grid Pipelines FTGRID-01 and FTGRID-04

Portions of the future grid pipelines FTGRID-01 and FTGRID-04 cross sensitive habitat in the Tuolumne River and Dry Creek where nesting of special-status passerines are most likely to occur. Impacts would be minimized by using trenchless construction techniques for activities crossing these habitats. However, construction could still 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-14 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 cross the 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.

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 Program include western red bat (*Lasiurus blossevillii*), American badger (*Taxidea taxus*), riparian brush rabbit (*Sylvilagus bachmani riparius*), and riparian woodrat (*Neotoma fuscipes riparia*). 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 this species may roost in trees along the Tuolumne River and Dry Creek. The only Program components that would cross these habitats are future grid pipelines FTGRID-01 and FTGRID-04. Riparian trees would not be removed for construction of the proposed components. Non-riparian trees in the vicinity of Program 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 and Dry Creek floodplain provide 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. A captively-bred population of riparian brush rabbit has been released into San Joaquin River National Wildlife Refuge, near the Grayson outlying service area. A population of riparian woodrat has also been discovered in this Wildlife Refuge (USFWS 2012b). These species could potentially occur in riparian habitat adjacent to Grayson. However, no Program activities would occur in riparian habitat adjacent to Grayson. For these reasons, impacts to special-status mammals would be **less than significant**.

Impact BIO-11: Impacts on Riparian Habitat and Other Sensitive Natural Communities (*Less than Significant with Mitigation*)

Future grid pipelines FTGRID-01 and FTGRID-04 would traverse riparian habitat associated with Dry Creek and the Tuolumne River, respectively. 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, although the majority of Program components would take place in urban/developed habitats, vernal pool habitat may be present in areas where Program components would be constructed in grasslands and pastures. Vernal pool habitats would be identified on a project-specific basis. Construction-related impacts on vernal pool habitats could include sedimentation or alteration in drainage patterns. These impacts are considered significant. 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**.

Impact BIO-12: Impacts on Federally Protected Wetlands (*Less than Significant with Mitigation*)

Program Components (except Future Grid Pipelines FTGRID-01 and FTGRID-04)

The study area contains wetlands and waters that are likely to be regulated by the USACE and the 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 Grayson outlying service area and the Stanislaus River adjacent to the Del Rio outlying service area. Other wetlands and waters with a “significant nexus” to the Tuolumne, San Joaquin, or Stanislaus rivers would also be considered jurisdictional waters of the U.S. Wetlands and waters would be preliminarily identified during implementation of Mitigation Measure BIO-1. 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 impacts to wetlands or waters through temporary or permanent fill, and erosion or sedimentation. Implementation of Mitigation Measure HYD/WQ-1 which would reduce sedimentation; **BIO-13**

(Avoid and Minimize Impacts on Federally Protected Wetlands), which would avoid and minimize impacts to wetlands to the maximum extent practicable; and **BIO-14 (Obtain Regulatory Permits for Work Activities Taking Place in Wetlands and Waters of the United States and the State)**, 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**.

Future Grid Pipelines FTGRID-01 and FTGRID-04

FTGRID-01 and FTGRID-04 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, direct impacts could occur. Implementation of Mitigation Measure HYD/WQ-1, which require preparation of a Frac-out Contingency Plan would reduce impacts to wetlands and waters. Other impacts to wetlands and waters could occur through temporary or permanent fill, and erosion or sedimentation. Implementation of Mitigation Measures HYD/WQ-1, BIO-13, and BIO-14 would reduce this impact to **less than significant with mitigation**.

Overall Conclusion

Construction of Program components could result in impacts to wetlands or waters. Implementation of Mitigation Measures HYD/WQ-1, BIO-13, and BIO-14 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.

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. Mitigation Measure HYD/WQ-1 would also be implemented to minimize construction-related effects on wetlands and waters. 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.

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. 19594). 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*)

Program Components (Except Future Grid Pipelines FTGRID-01 and FTGRID-04)

The majority of Program components (except FTGRID-01 and FTGRID-04, 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.

Impacts on breeding wildlife would be minimized by conducting pre-construction surveys during the breeding season (through implementation of Mitigation Measures BIO-8, BIO-9, BIO-10, BIO-11, and BIO-12). Open-cut pipeline construction would create temporary barriers to wildlife movement in agricultural lands and ruderal habitat, 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**.

Future Grid Pipelines FTGRID-01 and FTGRID-04

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 from future grid pipelines FTGRID-01 and FTGRID-04 would be minimized by conducting pre-construction surveys during the breeding season (see Mitigation Measures BIO-8, BIO-10, 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 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 WMP 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.

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 consisted with all local ordinances and policies protecting biological resource; reducing impacts to a level that is **less than significant with mitigation**.

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Chapter 8
CULTURAL, TRIBAL, AND PALEONTOLOGICAL 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 project 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 and paleontological resources, the affected environment for these resources, project 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 Central California Information Center of the California Historical Resources System at California State University, Stanislaus;
- Files search from the California Native American Heritage Commission (NAHC); and
- The City of Modesto Urban Area General Plan (City of Modesto 2019a) and Urban Area General Plan Master EIR (City of Modesto 2019b); and
- the City of Turlock, City of Ceres, and Stanislaus County general plans (City of Turlock 2012; City of Ceres 2018; Stanislaus County 2016).

8.2 Regulatory Setting

8.2.1 Federal Laws, Regulations, and Policies

No federal laws, regulations, or policies apply to cultural resources and the Proposed Program.

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 Pub. Res. Code Section 21083.2. These limitations do not apply if an archaeological site is also a CEQA-defined "historical resource," as defined below. (CEQA Guidelines Section15064.5(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 Sectoin5020.1) 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 (AB) 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 National Register of Historic Places (NRHP), including properties evaluated under Section 106 of the National Historic Preservation Act. 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.

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.

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 Turlock General Plan

The City of Turlock General Plan (2012) advocates for protection of cultural resources within the city and states that "[t]he Study Area has a rich history of human habitation, including primarily the Yocut tribe of Native Americans. Related to more recent history, a substantial inventory of historically significant buildings in Turlock has been developed, which contribute to the City's visual interest and unique sense of place." Table 7-4 in the Conservation Element of the general plan identifies five buildings designated as historic resources. The following policies address cultural resources:

> **7.5-a Protect Archaeological Resources.** Protect significant archaeological resources in the Study Area that may be identified during construction.
>
> **7.5-b Preserve Historic Places.** Integrate historic preservation into planning for Downtown and other areas with historic significance.

Ceres General Plan 2035

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 1984).

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 of these low sensitivity conditions were present, it was considered that no significant paleontological resource was present and consequently no impact would occur.

8.3.5 Cultural Resources Studies

For the purposes of this DEIR, a cultural resources evaluation based on archival data was conducted for the Proposed Program. These data were obtained largely through the Central California Information Center of the California Historical Resources System at California State University, Stanislaus, as well as the City of Modesto Urban Area General Plan and the General Plan Master Environmental Impact Report.

Archaeological Resources

Archaeological resources reflect past human occupation by the presence of cultural artifacts within or on top of the soil matrix. Prehistoric materials in the study area would most likely include obsidian, basalt, and chert flaked stone tools (e.g., projectile points, knives, and choppers) and tool-making debris, or milling equipment such as mortars and pestles. Darkened soils resulting from extended occupation of an area, along with residue from food preparation (animal bone, seeds, freshwater shell) might also be found. Historic era archaeological remains could include but not be limited to building foundations and structural remains (e.g., bricks, nails) and refuse such as glass and ceramic fragments, metal tools or tool fragments, tin cans, or items of clothing (buttons, buckles, shoes, etc.).

Information about cultural resources within the larger study area was available in the Modesto General Plan Update Final Master EIR (City of Modesto 2019b). The 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, and the Stanislaus and Tuolumne rivers) and on adjacent terraces, which are considered particularly sensitive for archaeological remains. No specific information about archaeological sites is found within the Stanislaus County General Plan, and no other information about archaeological sites within the study area outside of the City of Modesto was garnered through archival research. However, record searches for other specific projects within the County has yielded information to suggest that types and locations of archaeological resources within the County would closely follow those identified within the City of Modesto.

Soils information presented in Chapter 9, *Geology*, *Soils, and Seismicity*, and geoarchaeological data (Rosenthal et al. 2004) indicates that the soils within the study 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 study area.

Built Environment Resources

A large number of built environment resources have been identified within the Program service area. These include residences, industrial and public buildings, railroads, and bridges along with historic-era features such as the Modesto Arch. The City of Modesto maintains a list of Designated Landmark Preservation Sites that contains 59 resources.[1] All of the built environment resources on the list are within the Program service area. The City of Modesto list also contains some landscape features as Landmark Preservation Sites. These include heritage trees, landscaped parks and cemeteries, and one is a golf course.

The Office of Historic Preservation's Directory of Properties in the Historic Property Data File for Stanislaus County (2017) indicates that hundreds of built resources within the Program service area, all within the City of Modesto, have been evaluated for eligibility for inclusion in the NRHP. (Although resources in Ceres, Turlock, and in other regions of Stanislaus County are also listed, they are not within the study area.) Most of these were determined to be not eligible for the NRHP, with the second largest category identified as resources that are contributors to a district that is eligible for listing by a local government. Six resources have been listed or are eligible for listing on the NRHP (City of Modesto 2019a, 2019b). One resource, the McHenry Mansion, has been dedicated as a State of California Point of Historical Interest (2019b).

Native American Coordination

The City of Modesto notified Native American tribes with a traditional and cultural affiliation with the region about the Proposed Project on June 8, 2016, pursuant to the requirements of Pub. Res. Code 21080.3.1 (also known as AB 52). Three tribes were contacted: the Northern Valley Yokuts Tribe, Southern Sierra Miwuk Nation, and Tule River Indian Tribe.

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 Proposed Program pursuant 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. 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 C. None of the tribes requested consultation on the Proposed Program or expressed concerns about potential significant resources within the study area.

[1] The Central California Information Center of the California Historical Resources Information System, located at California State University, Stanislaus, provided the list, which was last updated in March 2011. The list is also available at www.modestogov.com/1966/City-Landmarks. Although 59 resources are identified, the list notes that one resource has been removed from landmark status, one has been demolished, and one has been moved.

Tribal Cultural Resources

No TCRs have been identified within the Program study area.

Paleontological Resources

A desktop study was conducted to assess the sensitivity of the study area or paleontological resources. The study area is predominantly underlain by Pleistocene-aged alluvial fan deposits of the Modesto Formation (California Geological Survey 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. 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).

8.4 Impact Analysis

8.4.1 Methodology

The following impact analysis was conducted based on the records search, review of previous investigations and historic maps, and Native American consultation. The City of Modesto Urban Area General Plan and General Plan Master Environmental Impact Report provided city-wide data that supported the analysis of program-level impacts. The Stanislaus County General Plan also provided information for study areas 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 by 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, tribal, and paleontological resources if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 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 formal 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 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*)

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 sphere of influence (SOI). Program-related activities would also take place within the cities of Ceres, Turlock, and Waterford. The County and the other cities 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 subsequent projects, including those in Del Rio, Empire, Grayson, Hickman, and Salida, 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 cities of Ceres, Modesto, Turlock, or Waterford. Therefore, it is unlikely that the Proposed Program would adversely affect known, listed historic resources, and the WSER evaluated in this PEIR would have a less-than-significant impact on historic resources.

All site-specific projects 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 subsequent projects 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-c, 2-d, 2-e, 2-f, 2-h, 2-i, 2-j,

and 2-k (presented above) would ensure that subsequent projects would avoid significant impacts on historic resources, and that any unforeseen significant impacts would be less than significant.

It also should be noted that if subsequent projects were to use federal funds and proposed the demolition or modification of existing structures, such projects would be subject to historic property review and consultation with the SHPO under Section 106 of the National Historic Preservation Act (NHPA). Any impacts identified during that review would be mitigated fully by site-specific measures developed in consultation with the SHPO. As a result, impacts on known historic, archaeological, or tribal resources would be **less than significant**.

Impact CR-2: Impacts on Previously Undiscovered Archaeological Resources (*Less than Significant with Mitigation*)

Individual projects 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 reconstruction archaeological investigations on the site and implementation of avoidance measures, if necessary. Improvements proposing earthwork outside of archaeological resource study areas must also 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 (also presented above), which require the applicant (the 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 Measure 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**.

Mitigation Measure CR-1: Conduct Cultural Resources Awareness Training for Construction Workers Prior to Beginning Work.

The City shall implement the following measures. 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 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, projects 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 the California Health and Safety Code, as well as Mitigation Measure CR-1, will ensure that subsequent projects' impacts on human remains would be **less than significant with mitigation**.

Impact CR-4: Impacts on Paleontological Resources (*Less than Significant*)

The study area is underlain by the Modesto Formation, which is considered a paleontologically-sensitive rock unit under the Society of Vertebrate Paleontology 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 is considered a potentially significant impact. For projects located within the Baseline Developed and the Planned Urbanized 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. Therefore, impacts on paleontological resources would be **less than significant**.

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, 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 Sections VII-F Policy 2-k, which requires preconstruction archaeological investigations on the site and implementation of avoidance measures, if necessary. Projects proposing earthwork outside of archaeological resource study areas 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 the City of Modesto Urban Area General Plan Section 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 impacts on archaeological resources that meet CEQA's definition of historic resources or unique archaeological resources being **less than significant with mitigation.**

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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 and maps, a site-specific technical report, 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 project implementation 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 CWA is directly relevant to earthwork, additional information is provided here.

The 1987 amendments to 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, the 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 groundshaking, 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 groundshaking, 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.

Ceres General Plan 2035

The *Ceres General Plan 2035* (City of Ceres 2018) guides land use and development in the City of Ceres. Goals and policies in the General Plan related to geology, soils, and seismicity that are potentially relevant to the Proposed Program include the following:

Chapter 7, Health and Safety

Goal 5.G Minimize loss of life, injury, and property damage due to seismic and geologic hazards.

Policies

5.G.1 Building Standards. Require that new structures and alterations to existing structures be designed and constructed according to current California Building Code standards to minimize risk to the safety of occupants during groundshaking.

5.G.2 Improving Knowledge Base. Support investigations conducted by local, State, and federal agencies and other institutions to refine, enlarge, and improve the body of knowledge regarding active fault zones, unstable areas, groundshaking risks, and other seismic conditions in the Planning Area.

5.G.6 Expansive Soils. Limit the siting of structures across soil materials of substantially different expansive properties. Require appropriate design specifications, including special slabs, where foundations are located in areas of expansive soils.

5.G.7 Critical Facilities. Ensure that critical facilities are sited, designed, and maintained to avoid damage from seismic and geologic hazards. Critical facilities include, but are not limited to, water and wastewater facilities, energy stations, hospitals, and public safety facilities.

Critical facilities provide services and functions essential to a community, especially during and after a disaster.

City of Turlock General Plan

The *City of Turlock General Plan* (City of Turlock 2012) guides land use and development in the City of Turlock. Goals and policies in the General Plan related to geology, soils, and seismicity that are potentially relevant to the Proposed Project include:

Conservation Element

Policy 7.2-c. Protect Soil and Water. Work to protect and restore natural resources essential for agricultural production.

Policy 7.2-n. Minimize Soil Erosion. Require new development to implement measures to minimize soil erosion related to construction. Identify erosion-minimizing site preparation and grading techniques in the zoning code.

Policy 10.2-a. Minimize Geologic and Seismic Risk. Continue to use building codes as the primary tool for reducing seismic risk in structures.

Policy 10.2-b. Meet Most Current Seismic Standards. Continue to require all new buildings in the City to be built under the seismic requirements of the latest adopted California Building Code.

Policy 10.2-e. Ensure Stability of Sensitive Public Facilities. Evaluate the structural stability and ability to withstand seismic activity of water tanks, underground utilities, berms, and other sensitive public facilities, and plan for any needed repairs.

Policy 10.2-f. Require Geotechnical Investigations for Proposed Critical Structures. Require that geotechnical investigations be prepared for all proposed critical structures (including water towers and wastewater lift stations) before construction or approval of building permits, if deemed necessary. The investigation shall include estimation of the maximum credible earthquake, maximum ground acceleration, duration, and the potential for ground failure because of liquefaction or differential settling.

Policy 10.2-g. Require Investigations for All Development on Sites Where Soils Pose Risk. Require soils reports for new development projects where soils pose a potential geologic risk, and use the information to determine appropriate permitting requirements, if deemed necessary.

Policy 10.2-h. Require Erosion Control Plans. Require new development to include grading and erosion control plans prepared by a qualified engineer or land surveyor.

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 that are potentially relevant to the Proposed Program 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 City and study area are 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 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. Younger (Holocene) alluvium is present near the Tuolumne River area.

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 (Natural Resources Conservation Service [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).

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 potential 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 potential 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 lies 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 study area are presented in **Table 9-1**.

Table 9-1. Regional Faults in Proximity to the Study Area

Fault	Approximate Distance from Proposed Program	Last Known Major Displacement
San Joaquin Fault (potentially active)	8 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)	23 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

Fault	Approximate Distance from Proposed Program	Last Known Major Displacement
Greenville Fault Zone (active)	25 miles west	1980, Magnitude (M) 5.8
Calaveras Fault Zone, Central Calaveras Section (active)	44 miles southwest	1979, M 5.7 2007, M 5.6
San Andreas Fault Zone, Santa Cruz Mountains Section (active)	50 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.

Intensity	Shaking	Description/Damage
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 an average of 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 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 occur within unconsolidated granular soils or 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. The potential for differential settlement is dependent upon local geologic conditions, soil properties, and land usage.

[1] Ground shaking is usually quantitatively expressed as the acceleration of movement relative to the acceleration of gravity (*g*).

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 (i.e., clays and silts) 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). However, areas with higher water tables and unconsolidated, granular sandy soils, such as the areas adjacent to the Tuolumne River, may be at increased risk for liquefaction due to the potential for the presence of a high water table and sandy, liquefiable soils.

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 (five 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, including the outlying service areas, is relatively flat with little variation in topography. Some gradual slopes may be observed near river terraces and former sand dunes. However, effects of landslides, slope failures, and lateral spreading are negligible throughout most of the Modesto area and the outlying service areas.

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 study area 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).

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 an 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 study area, there would be no impact from ground rupture of a known fault.

In addition, the last 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 substantial distance from 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., storage tanks and groundwater wells) 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 contains sandy or loamy soils exhibiting low to moderate plasticity characteristics (NRCS 2016). In addition, development of Program facilities (e.g., storage tanks) and upgrades to existing water distribution systems on expansive soils typically can be addressed through suitable design and compliance with CBC seismic standards by designing and building structures to a level of strength appropriate to regional seismic risks. However, the Proposed Program includes numerous components throughout the Modesto area, 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 to precipitation and wind. 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, construction of some components like the new storage tanks or well pump houses may involve removing, stockpiling, and transporting a substantial volume of topsoil. These impacts are considered significant. As discussed in Chapter 12, *Hydrology and Water Quality*, construction-related impacts on water quality 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 BMPs 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*)

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. Groundwater would likely not be encountered during shallow excavation and grading activities associated with construction of most Program components, such as storage tanks, and would not require dewatering. 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.

The Proposed Program would include new and replacement wells within the contiguous and outlying Modesto water service areas, as well as upgrades to existing wells. Concentrated or intensive extraction of groundwater supplies can result in an insular cone of depression and potentially lead to localized plastic deformation or surface collapse of unconsolidated soils during strong seismic groundshaking. This differential settling can compromise the strength or integrity of a structure and damage building foundations and other infrastructure. However, this phenomenon is more prevalent following extensive groundwater withdrawal from soils containing high percentages of fine material (i.e., clays and silts). Soils in the study area predominantly consist of sandy loam to fine sandy loam (NRCS 2016). 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). In addition, the Proposed Program was developed in consideration of the operating yield of the Modesto and Turlock groundwater sub-basins to better manage the groundwater basin in consideration of estimates of annual recharge and pumping activities, and to prevent lowering of the groundwater table. Therefore, the potential for the Proposed Program to lead to area subsidence is considered less than significant. For further discussion of groundwater resources, please refer to Chapter 12, *Hydrology and Water Quality*.

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 WMP 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). 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). However, on March 15, 2017 President Donald Trump ordered a midterm evaluation of the later years of the 2017-2025 standards, and thus the increased mileage standard requirements may be subject to change (Reuters 2017).

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 40 percent below 1990 levels by 2030 target.

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 EO B-30-15 and codified by SB 32 (CARB 2017a, 2017b). 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 2017c, SB 1383 2016).

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, in coordination with other state agencies, has updated the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009). The new Safeguarding California Plan augments previously identified strategies in light of advances in climate science and risk management options (California Natural Resources Agency 2014). The Safeguarding California Plan highlights climate risks in nine broad

areas (e.g., energy, forestry, transportation, water) 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). 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 (Stanislaus Council of Governments [StanCOG] 2014). The WMP 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

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 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 Program:

> **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 Turlock General Plan

The *City of Turlock General Plan's* Air Quality and Greenhouse Gases Element, (2012) contains the following policies that may be relevant to the Proposed Program:

8.2-a Reduce Greenhouse Gas Emissions. Reduce greenhouse gas emissions to support statewide GHG reduction goals under the California Global Warming Solutions Act (AB 32).

8.2-n Wastewater and Water System Efficiency. Maximize the efficiency of City-operated wastewater treatment, water treatment, pumping, and distribution equipment.

8.2-s Require Energy Efficiency for Projects Receiving Public Assistance. Require that projects receiving assistance from the City of Turlock, including but not limited to infrastructure projects and affordable housing, include energy efficiency measures beyond the minimum standards of Title 24.

Ceres General Plan 2035

The *Ceres General Plan 2035,* in Chapter 5, 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 Program:

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 (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 (IPCC 2008). 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 tons of carbon dioxide equivalents (MMT CO_2e) (CARB 2019). 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 also provides electricity services to the City of Modesto in addition to water services 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 Program area. **Table 10-2** provides a more detailed breakdown of MID's, TID's, and PG&E's energy resources. As mentioned in 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 power is defined as electricity from transactions that are not traceable to specific generation sources.

Source: MID 2017b, CEC 2017a, CEC 2017b

The 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

For WMP components within the SJVAB, 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. 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.

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 (IPCC 2014). 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 Proposed Program is beyond the scope of this GHG analysis.

10.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on greenhouse gas emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment;
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs;
- Cause wasteful, inefficient, and unnecessary consumption of energy during construction, operation, and/or maintenance; or
- Cause a substantial increase in energy demand and the need for additional energy resources.

With regard to the first criterion, construction and operational emissions were considered less than significant if GHG emissions were consistent with the local air district's significance thresholds. The SJVAPCD has adopted a BMP threshold for 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, the published California air district mass emissions thresholds were reviewed and considered in developing an appropriate threshold. The applicable threshold for the Proposed Program 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, 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 regard to the second criterion for consistency with 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 AB32, 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.

10.4.3 Environmental Impacts

Impact GHG-1: Generate a Substantial Amount of GHG Emissions *(Significant and Unavoidable*)

Construction Impacts. Construction of Program components including tanks, pump stations, wells, and pipelines 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 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 water lines would be categorically exempt from CEQA. New water mains or extension of water mains that have been identified in the WMP 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 WMP 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 WMP components. However, it is still possible that these emissions would not be reduced below the applicable significance threshold of 10,000 MT CO_2e/year of 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 of booster pump stations, use of new or larger emergency electrical generators, and employee vehicle trips for operation and maintenance of future facilities. Employee trips would be similar to the City's existing maintenance and operation activities. Emissions for emergency electrical generators would be infrequent and would not be substantial. Operation of new or larger pumps at booster pump stations as well as the increased capacity and improved level of water distribution could generate GHG emissions that are substantial because they would increase GHG emissions over the applicable significance threshold of 10,000 MT CO_2e/year of GHG emissions Therefore, this impact would be significant. Again, consulting with and permitting through the SJACPCD for stationary source projects would reduce GHG emissions from project operation 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, the Proposed Program would result in a **significant and unavoidable** impact.

Overall Conclusion

On the whole, since specific details regarding the WMP components are not yet available, construction and operation impacts of these components have been conservatively determined to 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*)

Consistency with strategies outlined in CARB's Scoping Plan and future updates are used to ensure that the state goals of AB32, SB 32 and EO S-3-05 will be met. The Renewable Portfolio Standard would reduce GHG emissions compared to the existing mix of energy sources, and would likely result in the program-level components having 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 WMP 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, WMP components would have an energy-efficient design, and utilize Modesto Irrigation District's, TID's, & PG&E's increased renewable energy sources.

WMP components would achieve GHG emission reductions in their design, as discussed above, and would minimize GHG emissions to the maximum extent feasible. Therefore, these components would generally comply with applicable plans, policies, and regulations, including AB 32 and SB 32, as well as the policies/actions described in CARB's 2017 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 Proposed

Program. 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, 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**.

Impact GHG-3: Cause Wasteful, Inefficient, and Unnecessary Consumption of Energy During Construction, Operation, and/or Maintenance (*Less than Significant*)

Construction Impacts. Construction activities 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 water conveyance and storage system for the City of Modesto and surrounding areas to meet future water needs. 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 WMP 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 storage tanks and wells. In addition, emergency generators would use diesel fuel. The design of new and replaced water infrastructure will utilize the latest energy efficient design, as required by Title 24 of the California Code of Regulations. Water supply and reliability improvements are necessary to counteract the effects of climate change and therefore these program components are necessary to ensure a reliable water supply infrastructure. 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. Therefore, the Proposed Program's effects on energy resources would be **less than significant**.

Overall Conclusion. Considering the WMP components as a whole, construction and operation impacts would not cause wasteful, inefficient, and unnecessary consumption of energy. Therefore, impacts are considered less than significant. 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*)

Substantial quantities of fossil fuel would not be required for the Proposed Program 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.

The various booster pumps and wells require electrical power and would likely increase the energy use as the Program is completed with increased services to future development and buildout areas. The amount of electricity required would not be substantial compared to the projected available electricity supply from MID, TID, and PG&E and new sources of electricity generation would therefore not be required to meet this demand. 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.**

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 can also be 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 potentially pertinent to the Proposed Program.

11.2.1 Federal Laws, Regulations, and Policies

Resource Conservation and Recovery Act

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

Safe Drinking Water and Toxic Enforcement Act of 1986 – Proposition 65

The Safe Drinking Water and Toxic Enforcement Act of 1986, more commonly known as Proposition 65, protects the state's drinking water sources from contamination with chemicals known to cause cancer, birth defects, or other reproductive harm. Proposition 65 also requires businesses to inform the public about exposure to such chemicals in the products they purchase, in their homes or workplaces, or that are released into the environment. In accordance with Proposition 65, the California Governor's Office publishes, at least annually, a list of such chemicals. The OEHHA, an agency under the California Environmental Protection Agency (Cal/EPA), is the lead agency for implementation of the Proposition 65 program. Proposition 65 is enforced through the California Attorney General's Office; however, district and city attorneys and any individual acting in the public interest may also file a lawsuit against a business alleged to be in violation of Proposition 65 regulations.

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, CalEPA, 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 (HMBPs) (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

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, HMBP 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

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 relevant to 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.

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.

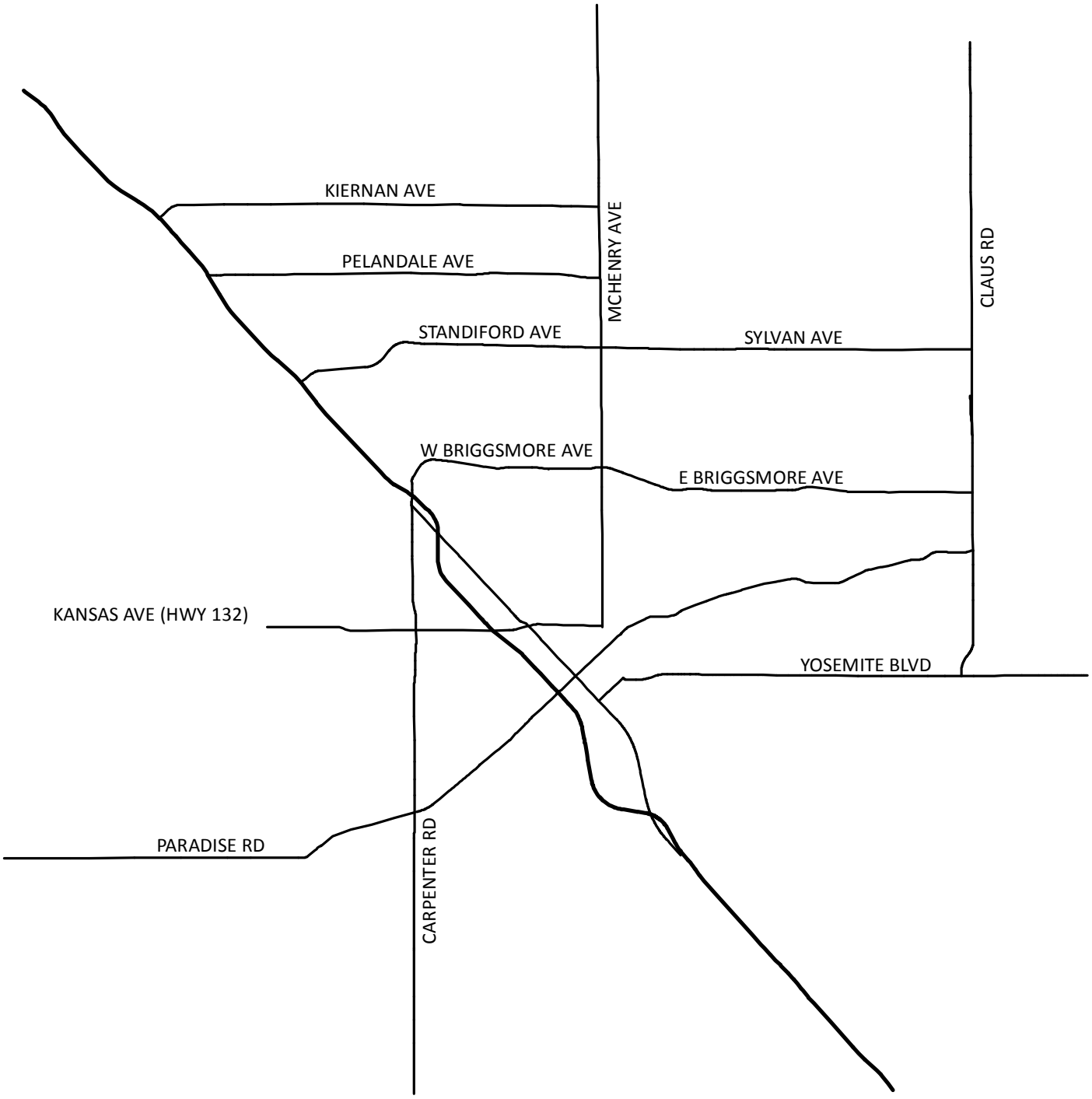
Policy VII-M.C[2]. Design and maintain roads so as to ensure adequate access in hazardous conditions.

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
(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.



Source: City of Modesto 2008

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Figure 11-1. City of Modesto Emergency Evacuation Routes

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Horizon WATER and ENVIRONMENT

City of Modesto
Water Master Plan EIR

Del Rio and Salida Community Plans

The *Del Rio Community Plan* (Stanislaus County 1992) and *Salida Community Plan* (Stanislaus County 2007) do not contain any goals or policies specifically related to hazards and hazardous materials.

Ceres General Plan 2035

The *Ceres General Plan 2035* (City of Ceres 2018) contains the following goals and policies related to hazards and hazardous materials that are applicable to the Proposed Program:

Goal 5.I Minimize the risk of loss of life, injury, serious illness, damage to property, and economic and social dislocations resulting from the use, transport, treatment, and disposal of hazardous materials.

Policies

5.I.1 Hazardous Materials Standards. Ensure that the use and disposal of hazardous materials in the city comply with local, State, and federal safety standards. Ensure that industrial facilities are constructed and operated in accordance with current safety and environmental protection standards and best practices.

5.I.5 County Cooperation. Work with the County to strictly regulate the storage of hazardous materials and wastes.

5.I.6 Development Standards. Ensure that industrial facilities and other uses where hazardous materials are created, stored, or disposed of are designed, constructed, and operated in accordance with current safety and environmental protection standards. Require secondary containment and periodic examination for storage of large quantities of toxic materials.

5.I.10 Coordinated Emergency Response. Work with other agencies, including the City of Modesto and Stanislaus County, to ensure an adequate countywide response capability for hazardous materials emergencies. Provide for safe and efficient hazardous waste emergency response and contaminated site cleanup.

City of Turlock General Plan

The *City of Turlock General Plan* (City of Turlock 2012) includes the following policies related to hazards and hazardous materials that are applicable to the Proposed Program:

Guiding Policies

10.1-a Protect Lives and Property. Prevent loss of lives, injury, illness, and property damage due to hazardous materials and wastes.

10.1-b Protect Natural Resources. Protect soils, surface water, and groundwater from contamination from hazardous materials.

10.1-c Coordinate Efforts to Minimize Risks. Cooperate with State agencies and the Stanislaus County Environmental Resources Department efforts to identify hazardous materials users, implement hazardous materials plans, provide safe waste disposal sites, and minimize risks associated with hazardous cargoes, agricultural spraying, and electromagnetic fields.

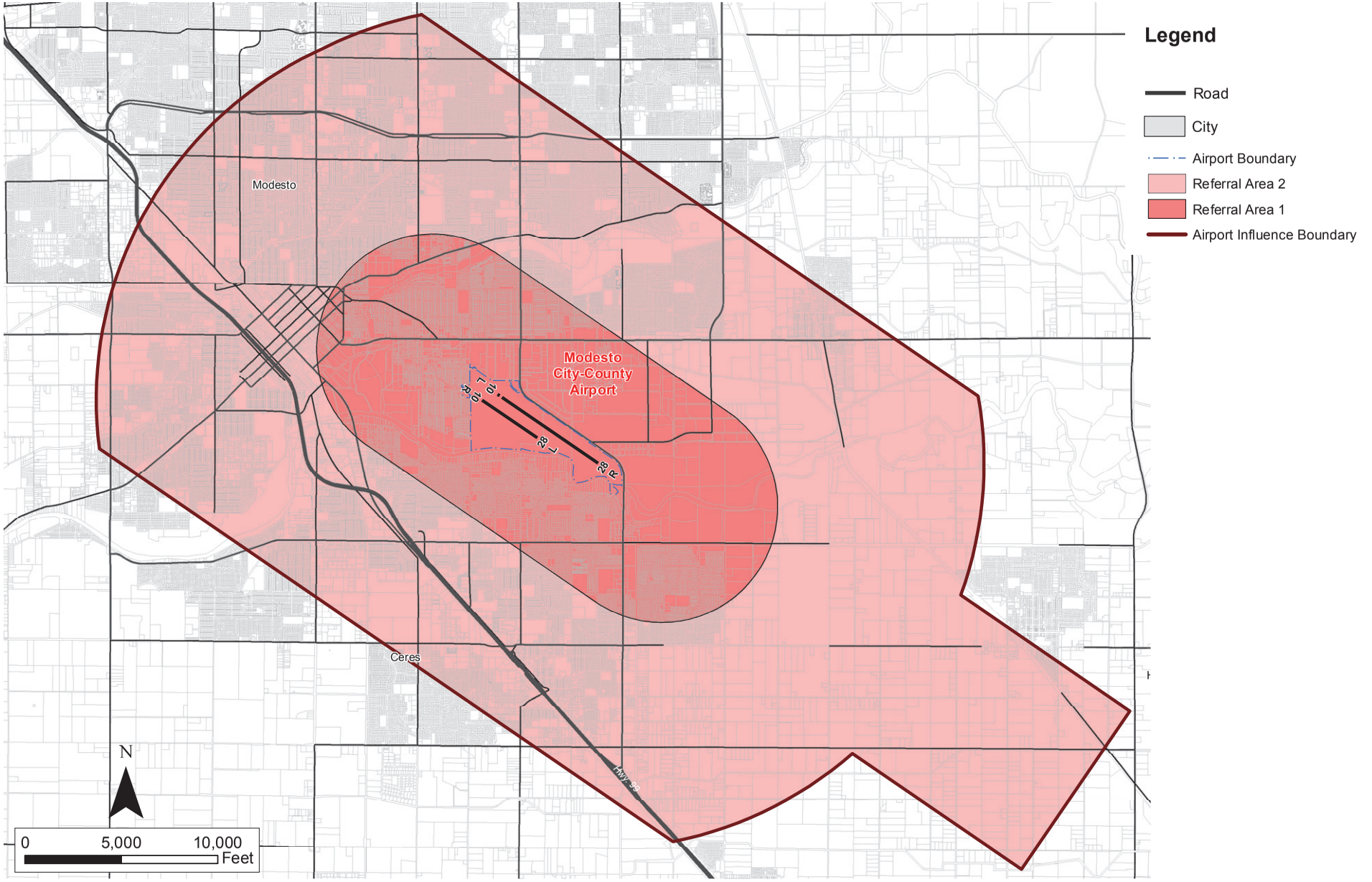
Stanislaus County Airport Land Use Compatibility Plan

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 2016). 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.

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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City of Modesto
Water Master Plan EIR

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 Salida Union District, Ceres Unified School District, Empire School District, and Turlock School District. Numerous Modesto schools are located within 0.25 mile of proposed components. Schools in Salida, Ceres, and Empire are within 0.25 mile of Proposed Program components. Three Turlock area schools (First Baptist Academy, Los Gatos Academy, and Turlock Junior High) are located within 0.25 mile of Proposed Program components. No schools in other outlying service areas are located within 0.25-mile of proposed 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 study area. **Figure 11-4** shows hazardous material sites identified by these databases within one-quarter 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, industrial facilities with underground storage tanks, military bases, and other sites that commonly use or store hazardous materials.

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. Several Program improvements would be located near this airport. The Turlock Airpark had been located in the southern portion of Turlock, but according to the Stanislaus County Airport Land Use Compatibility Plan (2016), this facility is in the process of being sold for a non-aeronautical use. 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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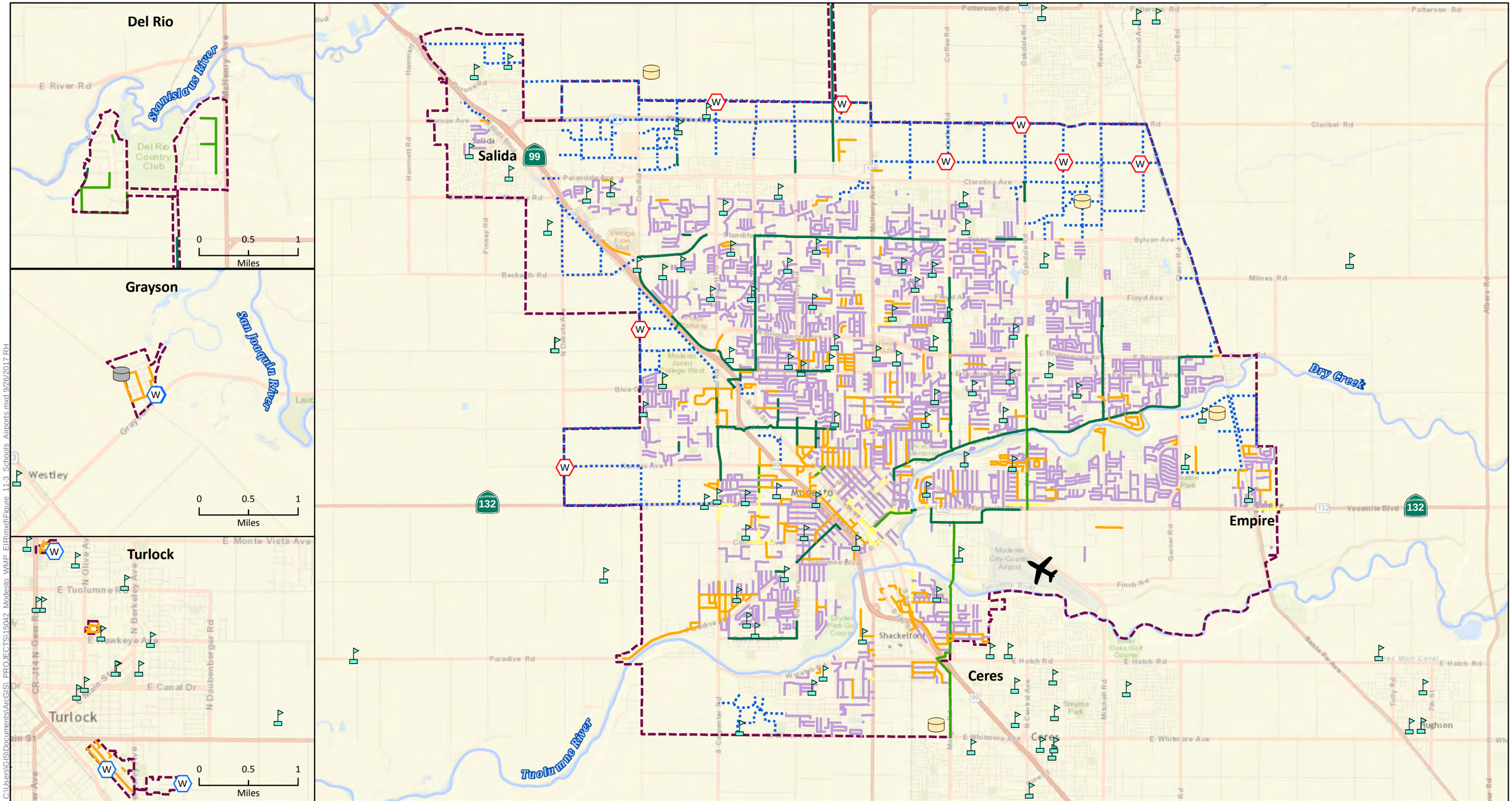

Sources: California Department of Education, Caltrans Division of Aeronautics

Figure 11-3
Schools and Airports in the Proposed Program Vicinity

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Miles

Component Types of Existing Water System
- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components
- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

Other Features
- WMP Study Area
- Schools
- Airports

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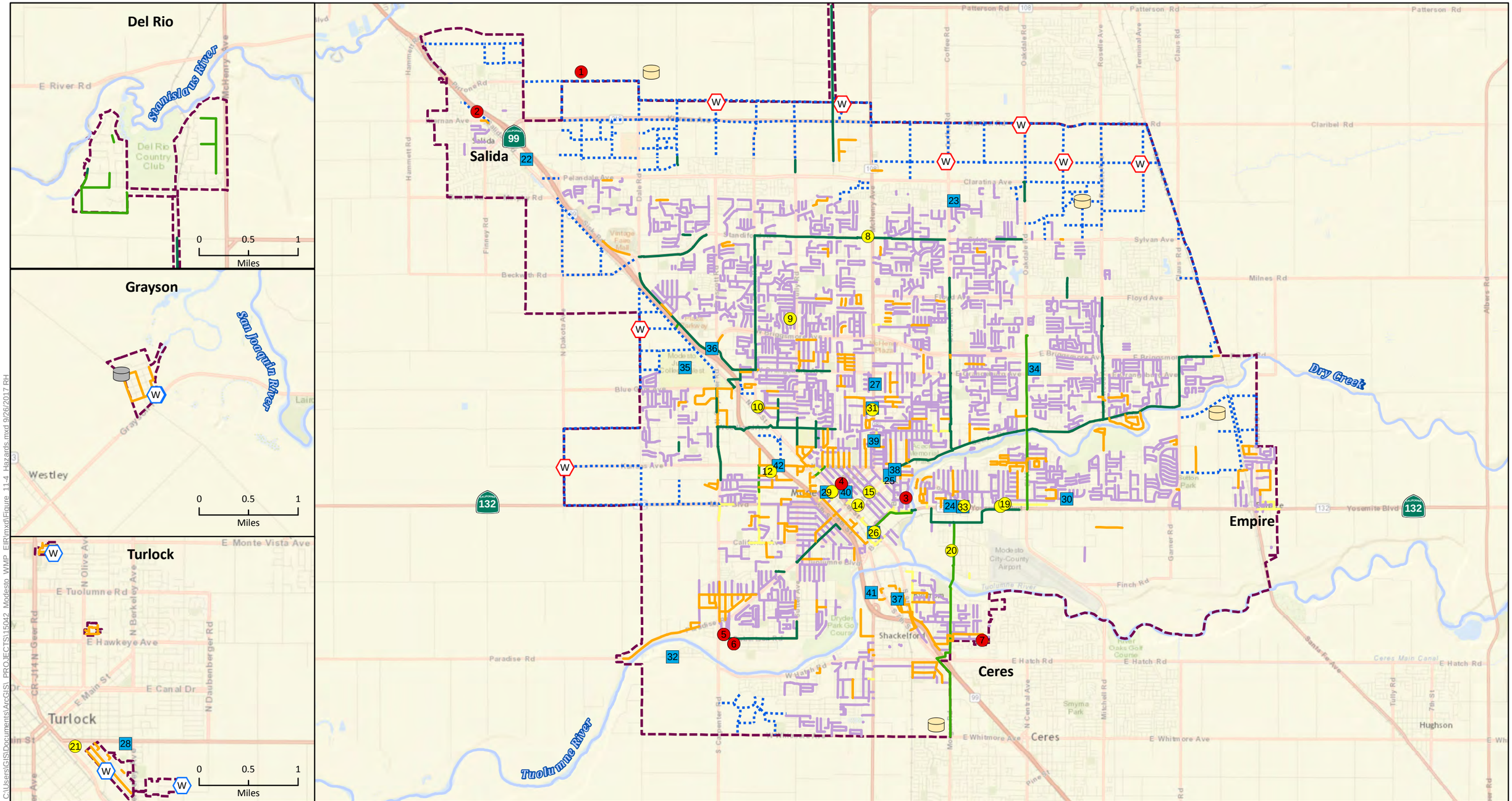

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Horizon
WATER and ENVIRONMENT

Proposed Components for Existing Water System

Tank
Well
Fire Flow Improvements
Grid Improvements

Proposed New Water System Components

Future Tanks
Future Well Sites
Build Out Pipelines
Fire Flow Improvements
Grid Improvements
Strengthen and Replace

WMP Study Area

EnviroStor Cleanup Sites

Certified
Active or Inactive - Needs Evaluation

GeoTracker Sites

Open

Figure 11-4
Existing Hazardous Materials Sites within the Proposed Program Vicinity

City of Modesto
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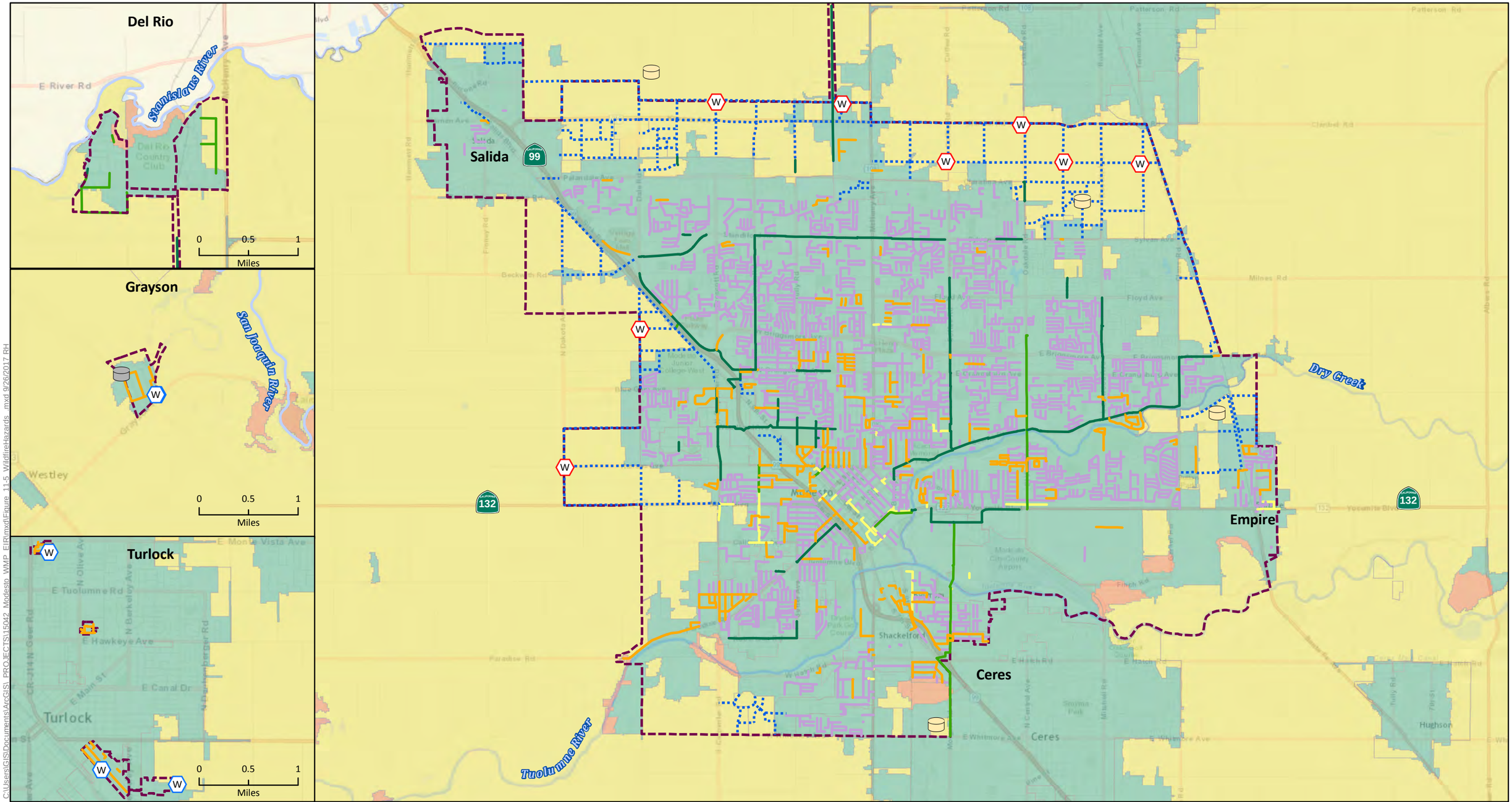

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Horizon WATER and ENVIRONMENT

Component Types of Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

WMP Study Area

LRA Fire Hazard Severity Zones

- Moderate
- Non-Wildland/Non-Urban
- Urban Unzoned

Figure 11-5
Wildfire Hazards in the Proposed Program Vicinity

City of Modesto
Water Master Plan EIR

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Table 11-1. Existing Hazardous Material Sites within 0.25 Mile of Proposed Components

Figure ID	Site/Business Name	Address	City	Site/Case Type	Lead Agency	Site Status	Past Uses/Site History	Potentially Contaminated Media
1	Joseph A. Gregori High School Site	3701 Pirrone Road	Modesto	School Cleanup	DTSC's Site Mitigation and Brownfields Reuse Program (SMBRP)	Certified	Agricultural	Soil, groundwater
2	Safety-Kleen Salida	5050 Salida Blvd.	Salida	Corrective Action	DTSC	Certified	Hazardous waste storage	Groundwater, soil, soil vapor
3	Gallo Glass-Raffle Site	North of Highway 132 and adjacent east bank of Dry Creek	Modesto	State Response	None specified	Certified	LDF	Soil
4	Modesto Convention Center	10th and L Streets	Modesto	State Response	SMBRP	Certified	None	No media affected
5	Littell Property	1921 Vernon Avenue	Modesto	State Response	SMBRP	Certified	Junkyard	Soil
6	Elias Property	2120 Kenneth Street	Modesto	State Response	None specified	Certified	None	Contaminated surface/structure, soil
7	Martinez Property	1627 Nadine Avenue	Modesto	State Response	None specified	Certified	None specified	Soil
8	Acme Cleaners	3501 McHenry Avenue	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil, soil vapor
9	Cesi Drycleaning Center	2021 Tully Road	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil, soil vapor
10	Sunshine Carpet & Drapery	1645 Princeton Avenue	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil, soil vapor
11	Modesto Groundwater Contamination	McHenry Avenue, south of Orangeburg Avenue (behind Halford's Cleaners at 941 McHenry Avenue)	Modesto	Federal Superfund	USEPA	Active	Dry cleaning	Groundwater, soil vapor, indoor air
12	State Route 132 West Expressway (also known as State Route 132/99 Interchange)	Intersection of State Route 132/99	Modesto	Voluntary Cleanup	SMBRP	Active	Manufacturing – chemicals	Soil
13	Modesto Groundwater Investigation	Project area defined in oversight agreement	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Groundwater, soil, soil vapor, indoor air
14	PG&E Manufactured Gas Plant Sq-St-Mod-2	Block bound by H, F, 10th, and Alley Northeast of 10th Streets	Modesto	Evaluation	None specified	Inactive – Needs evaluation	None specified	Soil
15	The Modesto Bee	1325 H Street	Modesto	Tiered Permit	None specified	Inactive – Needs evaluation	None specified	None specified
16	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
17	Former Service Cleaners	Vicinity of La Loma Avenue and Yosemite Blvd.	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil vapor

Figure ID	Site/Business Name	Address	City	Site/Case Type	Lead Agency	Site Status	Past Uses/Site History	Potentially Contaminated Media
18	Hi Grade Drive In Cleaners	1915 Yosemite Blvd.	Modesto	Voluntary Cleanup	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil, soil vapor
19	Jerry's Drapery Service	123 Phoenix Avenue	Modesto	Evaluation	SMBRP	Active	Dry cleaning	Groundwater, indoor air, soil, soil vapor
20	Gallo Glass – South Field Landfill	615 South Santa Cruz Avenue	Modesto	Evaluation	SMBRP	Inactive – Needs evaluation	Landfill	Groundwater, soil
21	So Cal Gas/Turlock MGP	650 South Golden State Blvd.	Turlock	Voluntary Cleanup	SMBRP	Active	Engine testing/repair, machine shop, etc.	Groundwater, soil
22	Salida Radiator & Muffler (former Fuentes Sedano Property)	4648 Salida Blvd.	Salida	Cleanup Program Site	CVRWQCB	Open - Inactive	Reported spill of antifreeze, hot tank liquid, and sludge waste	Surface water, groundwater, soil
23	Modesto Rock Well Closures	Coffee Road	Modesto	Cleanup Program Site	CVRWQCB	Open - Inactive	N/A	Surface water, under investigation
24	Three Star Gas	1131 Yosemite Blvd.	Modesto	LUST Cleanup Site	CVRWQCB	Open – Verification Monitoring	N/A	Groundwater
25	Modesto Polanco-Ideal Cleaners	1801 H Street	Modesto	Cleanup Program Site	DTSC	Open - Inactive	N/A	N/A
26	Berberian Company Property	320 9th Street	Modesto	Cleanup Program Site	Stanislaus County	Open - Inactive	Manufactured gas plant	Under investigation
27	Flanagan's Spray Service		Modesto	Cleanup Program Site	CVRWQCB	Open - Inactive	N/A	N/A
28	Rodgers Min Mart Case #2	1570 East	Turlock	LUST Cleanup Site	CVRWQCB	Open - Remediation	N/A	Groundwater
29	Modesto Steam Laundry	1201 8th Street	Modesto	Cleanup Program Site	CVRWQCB	Open – Verification Monitoring	Dry cleaning	Groundwater, soil
30	BK's Liquors and Foods (Former)	150 North Riverside Drive	Modesto	LUST Cleanup Site	CVRWQCB	Open – Verification Monitoring	N/A	Groundwater, under investigation
31	Modesto Groundwater Contamination Superfund – Halford's Cleaners	941 McHenry Street	Modesto	Cleanup Program Site	CVRWQCB	Open – Site Assessment	N/A	Groundwater, indoor air, soil vapor, under investigation
32	Bonzi Class III LF/Unclass, LF	2650 Hatch	Modesto	Land Disposal Site	CVRWQCB	Open	N/A	N/A
33	L and E Auto Short Property	1411 Yosemite Blvd.	Modesto	LUST Cleanup Site	CVRWQCB	Open – Site Assessment	N/A	Groundwater
34	Century Center Cleaners	2401 East Orangeburg Avenue	Modesto	Cleanup Program Site	CVRWQCB	Open - Remediation	Dry cleaning	Under investigation
35	Hammond General Hospital	N/A	Modesto	Military Cleanup Site	CVRWQCB	Open – Site Assessment	N/A	N/A
36	Chevron No. 96397	1600 Sisk Road	Modesto	LUST Cleanup Site	CVRWQCB	Open – Site Assessment	N/A	Groundwater
37	Royaltone Paints	451 Sonora Avenue	Modesto	Cleanup Program Site	CVRWQCB	Open – Inactive	Discharge of fire suppression water contaminated with paint and painting products to drainage well	Groundwater, soil

Figure ID	Site/Business Name	Address	City	Site/Case Type	Lead Agency	Site Status	Past Uses/Site History	Potentially Contaminated Media
38	Arco – T and T	402 Downey Avenue	Modesto	LUST Cleanup Site	CVRWQCB	Open – Assessment & Interim Remedial Action	N/A	Groundwater
39	Elwood's Dry Cleaner	441 McHenry Avenue	Modesto	Cleanup Program Site	CVRWQCB	Open - Remediation	Dry cleaning	N/A
40	City of Modesto, Modesto Groundwater Investigation	1010 10th Street	Modesto	Cleanup Program Site	CVRWQCB	Open - Remediation	Dry cleaning and dry cleaning chemicals production	Under investigation
41	Crop Production Services, Crows Land Road	541 Crows Landing Road	Modesto	Cleanup Program Site	CVRWQCB	Open – Inactive	Agricultural products distribution	N/A
42	Caltrans Modesto Soil Stockpiles	State Route 99 & Kansas Avenue	Modesto	Cleanup Program Site	DTSC	Open – Site Assessment	N/A	N/A

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

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 are not yet known, possible impacts are discussed more generally, and mitigation is prescribed in the event certain conditions are encountered during future project planning.

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 for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, would the project result in a safety hazard 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 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 improvements 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. In addition, the disinfection and flushing of newly constructed pipelines would require the use of hazardous materials (i.e., chlorination or de-chlorination chemicals).

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 Program improvement site, as well as proximity to sensitive receptors or environmental resources.

In accordance with applicable regulations, the City of Modesto and its contractors would be required to identify and track hazardous waste from "cradle to grave" (see RCRA under 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 hazardous substances.

Compliance with these laws and regulations described in the regulatory setting would prevent significant impacts from occurring during construction activities, and the WMP 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*)

During operation, Proposed Program facilities would not use or store large amounts of hazardous materials. New emergency generators supplying back-up power to various booster pump stations for tank and well sites throughout the water system would store fuel. New groundwater wells installed under the Proposed Program also would each have diesel generators, which would store and use diesel fuel. Depending on the wellhead treatment process selected (e.g., coagulation/filtration, oxidation, coagulation assisted microfiltration, lime softening, sorbtion processes, ion exchange, microfiltration, ultrafiltration, reverse osmosis, electrodialysis reversal, or blending), these activities may require disposal of hazardous materials. Wellhead treatment could generate waste streams (e.g., spent media, dewatered sludge, liquid brine) that contain

toxins, heavy metals, radio nucleotides, or other hazardous materials that may require disposal in a hazardous waste landfill. 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 for storage tanks that exceed the threshold volume (660 gallons), but, regardless, the City would provide secondary containment for all fuel storage tanks.

City of Modesto workers also may use, transport, or dispose of hazardous materials during ongoing routine maintenance, routine facility repair activities, or wellhead treatment system maintenance. If water treatment filtration media is used, these media would potentially accumulate heavy metals, and possibly other hazardous substances present in the source water and underlying rock/soil. This filtration media would need to be periodically disposed of, during which workers may be exposed to the materials. However, 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 its current activities related to operating and maintaining the City's water system, and would not create a substantial hazard to the public or the environment. The Program would add approximately 22 new back-up, diesel generators with fuel tanks associated with new wells and tanks/booster pump stations. As described above, secondary containment structures and existing requirements related to hazardous materials would prevent accidental releases of fuel and adverse impacts. 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 limited use, storage, transport, and disposal of hazardous materials during operation. Improper storage or use of such materials could lead to upset and accident conditions involving the release of hazardous materials into the environment. 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 fuel storage tanks under the Proposed Program that exceed the threshold volume, but the City would include secondary containment on all fuel storage tanks. Compliance with these requirements would reduce this impact to a **less-than-significant** level.

Impact HAZ-5: Emit Hazardous Emissions or Handle Hazardous or Acutely Hazardous Materials, Substances, or Waste within One-Quarter Mile of an Existing or Proposed School (*Less than Significant*)

Depending on the specific WMP 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 Program components. Several schools in Turlock also are located within 0.25-mile of proposed components.

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.

Program 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. 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.**

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*)

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. 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.**

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*)

As shown on Figure 11-3, only one major public airport is located in Modesto: the Modesto City-County Airport. Under the Proposed Program, facilities may be constructed within the Modesto City-County Airport or the Turlock Municipal Airport land use plan areas. However, these facilities would be primarily belowground and would not pose any risks to aviation or exceed maximum height requirements. Impacts are considered **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*)

In general, the Proposed Program would not substantially impair or interfere with an emergency response plan. The Proposed Program would be limited to upgrades/ improvements to the City's water infrastructure. As described in Chapter 2, *Program Description,* construction of Proposed Program facilities, such as installation of water 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**.

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** related to wildfires.

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. **Table 12-2** in Section 12.3.3 lists Section 303(d), Category 5 water body segments in the study area.

Section 402

CWA Section 402 regulates stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES), which is officially administered by the 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. Relevant general NPDES permits are described further under Section 12.2.2, "State Laws, Regulations, and Policies."

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

State Reclamation Board

The State Reclamation Board, deriving its regulatory authority from CCR Title 23, Waters, and, in cooperation with USACE, is responsible for the control of flooding along the Sacramento and San Joaquin Rivers and their tributaries, including the Tuolumne River. The State Reclamation Board cooperates with federal and state agencies and local governments in establishing, planning, constructing, operating, and maintaining flood control works, and maintains the integrity of the existing flood control system and designated floodways through the issuance of permits for encroachments. Designated floodways have been established on both Dry Creek and the Tuolumne River and are subject to regulation by the Reclamation Board. Encroachment permits are required from the Reclamation Board for any project occurring within the boundaries of the designated floodways or within ten feet of a levee.

Several proposed pipeline improvements would cross or be located within the Designated Floodway along the Tuolumne River and Dry Creek, as shown on **Figure 12-1**. Two proposed wells in Grayson are located within 300 feet of the Designated Floodway along the San Joaquin River.

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 RWQCB 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 2016) establishes beneficial uses for the San Joaquin River, Stanislaus River, Tuolumne River and the downstream water bodies to which they are tributary, 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 2016).

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 2009-0009-DWQ as amended by 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 2016). 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.

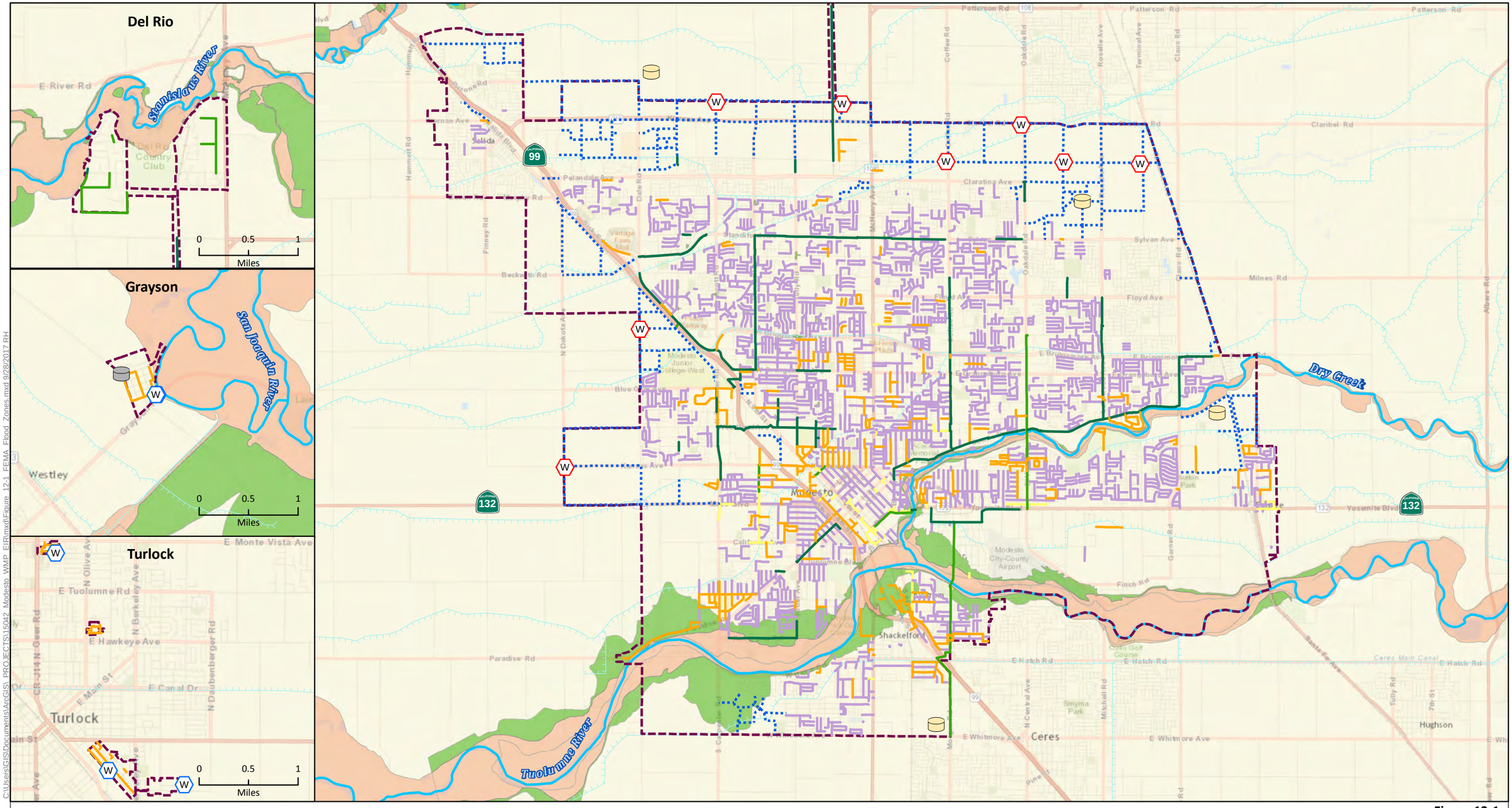
Municipal Stormwater Permitting Program

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).



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Proposed Components for Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace
- Build Out Pipes

Other Features

- WMP Study Area
- Rivers
- Canals

Flood Zone

- 100-Year Flood Zone
- 500-year Flood Zone

Source: Federal Emergency Management Agency

Horizon WATER and ENVIRONMENT

Figure 12-1
Surface Waters and FEMA Flood Zones in the Study Area

City of Modesto
Water Master Plan EIR

C:\Users\GIS\Documents\ArcGIS\ PROJECTS\15042 Modesto WMP EIR\mxd\Figure 12-1 FEMA Flood Zones.mxd 9/28/2017 RH

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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			
		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
San Joaquin River																		
Mouth of Merced River to Vernalis	535/ 541	P	E	E	E			E	E	E	E		E	E	E		E	
Stanislaus River																		
Goodwin Dam to San Joaquin River	535	P	E	E	E	E	E	E	E	E	E	E		E	E	E	E	
Tuolumne River																		
New Don Pedro Dam to San Joaquin River	535	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 2016

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).

Sustainable Groundwater Management Act

On September 16, 2014, Governor Edmund G. Brown, Jr., signed the Sustainable Groundwater Management Act (SGMA), comprised of three separate bills: AB 1739, Senate Bill (SB) 1319, and SB 1168. A central feature of SGMA is that it allows local agencies to customize groundwater sustainability plans (GSPs) to their regional economic and environmental conditions and needs (DWR 2017a). Among other things, SGMA requires that a GSP be adopted for high- and medium-priority groundwater basins (127 out of 515 basins and subbasins) in California. SGMA defines sustainable groundwater management as the "use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results." Undesirable results are defined as the following (DWR 2017b):

- Chronic lowering of groundwater levels (not including overdraft during a drought if a basin is otherwise managed);
- Significant and unreasonable reduction of groundwater storage;
- Significant and unreasonable seawater intrusion;
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies;
- Significant and unreasonable land subsidence that substantially interferes with surface land uses; or
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

SGMA outlines the following timetable for adoption of GSPs:

- By 2017, local groundwater sustainability agencies (GSAs) must be identified.
- By 2020, overdrafted basins must be covered by a GSP; other high- and medium-priority basins not in overdraft must have plans by 2022.

- By 2040, each high- and medium-priority basin must achieve sustainability, although this deadline can be extended 10 years for good cause.

GSAs within the study area include the Stanislaus and Tuolumne Rivers Groundwater Basin Association (STRGBA), which covers roughly the Modesto Subbasin (i.e., from the Stanislaus River to the Tuolumne River), and the West Turlock Subbasin Groundwater Sustainability Agency, which covers the area south of the Tuolumne River within the Turlock Subbasin (DWR 2017c).

CASGEM Basin Prioritization

In 2009, the California State Legislature amended the California Water Code with SBx7-6, which mandates a statewide groundwater elevation monitoring program to track seasonal and long-term trends in groundwater elevations in California (DWR 2017d). Pursuant to this amendment, DWR established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. The CASGEM Program establishes the framework for regular, systematic, and locally managed monitoring in all of California's groundwater basins (DWR 2017d). To facilitate implementation of the CASGEM Program and focus limited resources, as required by the California Water Code, DWR ranked all of California's basins by priority: high, medium, low, and very low based on the following factors (DWR 2017e):

1. Population overlying the basin;
2. Rate of current and projected growth of the population overlying the basin;
3. Number of public supply wells that draw from the basin;
4. Total number of wells that draw from the basin;
5. Irrigated acreage overlying the basin;
6. Degree to which persons overlying the basin rely on groundwater as their primary source of water;
7. Any documented impacts on the groundwater within the basin, including overdraft, subsidence, saline intrusion, and other water quality degradation; and
8. Any other information determined to be relevant by DWR.

DWR classifies the Modesto Subbasin as a high-priority basin, with noted impacts of "water quality degradation due to industrial and agricultural practices," though the basin is not specifically noted as being in overdraft (DWR 2014). The Turlock and Delta-Mendota subbasins are also both classified as high-priority basins, with noted groundwater overdraft issues (DWR 2014).

DWR Water Well Standards (Bulletins 74-81 and 74-90 combined)

DWR's well standards, contained in Bulletin 74-81 together with the well standards in the supplement Bulletin 74-90, are recommended minimum statewide standards for the protection of groundwater quality. The construction standards contained in Bulletins 74-81 and 74-90 apply to all water wells and cover such topics as well location with respect to contaminants and pollutants, sealing the upper annular space (i.e., space between the well casing and wall of the

drilled hole), and surface construction features. The well standards require that the surface portions of wells be adequately sealed such that contaminated water cannot enter through the well and into the groundwater.

Central Valley Flood Protection Board

The Central Valley Flood Protection Board (CVFPB) 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, including along the Sacramento and San Joaquin Rivers and their tributaries. 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). Designated floodways have been established on the Tuolumne River, Stanislaus River, San Joaquin River, and portions of Dry Creek. In general, CVFPB requires a permit for proposed work that is located within the SFPC (see below), 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). Several proposed pipeline improvements would cross or be located within the Designated Floodway along the Tuolumne River and Dry Creek, as shown on Figure 12-1. Two proposed wells in Grayson are located within 300 feet of the Designated Floodway along the San Joaquin River.

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 along the Tuolumne River in the vicinity of Modesto and the study area. An SPFC levee is located along the east bank of the San Joaquin River near the location of the proposed improvements in Grayson; however, the proposed improvements would not affect this levee (Central Valley Flood Management Planning Program 2010).

12.2.3 Local Laws, Regulations, and Policies

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.

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.

Del Rio Community Plan

The *Del Rio Community Plan* (Stanislaus County 1992) includes the following goal and policy that are relevant to hydrology and water quality:

Goal 5 Future development shall be served by adequate public infrastructure.

Policy A. All future development in Del Rio shall require underground utilities and facilities for community-wide secondary sewage treatment and water supply systems.

Salida Community Plan

The *Salida Community Plan* (Stanislaus County 2007) does not include any goals or policies that are relevant to the hydrology and water quality analysis for the Proposed Program.

City of Ceres General Plan

The City of Ceres General Plan (1997) includes the following goals and policies related to hydrology and water quality:

Goal 4.C To ensure a safe and reliable water supply sufficient to meet the future needs of the city.

Policies

4.C.2. The City shall only approve new development that relies on a public water system and where an adequate water supply and conveyance system exists or will be provided.

4.C.5. The City shall promote aquifer and wellhead protection programs to limit infiltration of pollutants that might contaminate the groundwater supply.

4.C.6. The City shall participate in a groundwater management program to preserve existing groundwater quality and quantity and to ensure future supplies.

Goal 4.E To collect and dispose of stormwater in a manner that minimizes inconvenience to the public, minimizes potential water-related damage, and enhances the environment.

Policies

4.E.1 The City shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the city and immediately adjacent to the city in unincorporated Stanislaus County.

4.E.2 All drainage designs shall be in accordance with the accepted principles of civil engineering, the Stanislaus County *Storm Drainage Design Manual,* and City improvement standards.

4.E.4 The City shall encourage project designs that minimize drainage concentrations and impervious coverage.

4.E.6. The City shall require projects that have significant impacts on the quality of surface water runoff to incorporate mitigation measures for water quality impacts related to urban runoff.

Goal 6B To protect and enhance the natural qualities of the Ceres area's rivers, creeks, and groundwater.

Policies

6.B.1. The City shall cooperate with other agencies in the conservation of the Tuolumne River for the protection of its water resources and its open space qualities.

6.B.3. The City shall help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.

6.B.4. The City shall continue to require the use of feasible and practical best management practices (BMPs) to protect receiving waters from the adverse effects of construction activities and urban runoff.

City of Turlock General Plan

The *City of Turlock General Plan* (2012) includes the following policies related to hydrology and water quality:

Guiding Policies

3.3-a Protect Water Quality and Supply. Continue efforts to safeguard the quality and availability of Turlock's water supply.

3.3-b Use Groundwater at a Sustainable Rate. Undertake steps to ensure the use of groundwater does not exceed the sustainable supply by verifying the estimated sustainable supply of 24,550 acre-feet per year and limiting groundwater use to the sustainable supply.

3.3-d Meet Projected Needs. Promote the orderly and efficient expansion of public utilities and the storm drainage system to adequately meet projected needs, comply with current and future regulations, and maintain public health, safety, and welfare.

3.3-e Coordinate Infrastructure Provision with Growth. Coordinate capital improvements planning, design, and construction for all municipal service infrastructure with the direction, extent, and timing of growth.

Integrated Regional Groundwater Management Plan for the Modesto Subbasin

The *Integrated Regional Groundwater Management Plan for the Modesto Subbasin* (IRGMP) (STRGBA 2005) was developed by the STRGBA, an association of the following six agencies: City of Modesto, Modesto Irrigation District, City of Oakdale, Oakdale Irrigation District, City of Riverbank, and Stanislaus County. The IRGMP was developed in compliance with the Groundwater Management Planning Act of 2002 (SB 1938) and the Integrated Regional Water Management Planning Act of 2002 (SB 1672). The overarching goal of the IRGMP is "to provide for the integrated use of groundwater and surface water within the basin to ensure the reliability of a long-term water supply to meet current and future beneficial uses including agricultural, industrial, and municipal water requirements while protecting the environment" (STRGBA 2005).

Consistent with SB 1938, the IRGMP contains basin management objectives (BMOs) to meet the purpose and goals of the groundwater management plan. BMOs that may be applicable to the Proposed Program include the following:

- Maintain groundwater levels
  - Identification and mapping of the basin's natural recharge areas
  - Development of a water budget to determine if the basin is in overdraft and, if so, to determine the amount of overdraft

- Control degradation of groundwater quality
  - Maintaining groundwater levels to control the movement of poor quality water into and within the basin. Groundwater pumping that results in the lowering of groundwater levels in part of the basin could alter the natural groundwater flow direction in the basin. In the area with groundwater contamination, this change could result in the movement of poor quality water in the basin. The City of Modesto has reduced groundwater pumping in some parts of the basin, augmenting its groundwater with surface water deliveries to its customers. Other actions may include implementing the actions summarized for the groundwater level BMOs listed above.
- Protect against potential inelastic land surface subsidence
- Groundwater monitoring and assessment

Groundwater Management Plan for the Turlock Groundwater Basin

The Groundwater Management Plan for the Turlock Subbasin presents BMOs and recommended protection measures to meet the Turlock Groundwater Basin Association's (TGBA's) overall goal to "ensure that groundwater remains a reliable, safe, efficient, and cost-effective water supply for the local area." The TGBA is a formal group for coordinating groundwater management activities within the Turlock Subbasin, which has included input from the Turlock and Modesto irrigation districts; the cities of Ceres, Turlock, Modesto, and Hughson; the Hilmar and Delhi county water districts; the Keyes, Denair, and Ballico community services districts; the Eastside and Ballico-Cortez water districts; and Stanislaus and Merced counties. BMOs described in the Groundwater Management Plan include the following (TGBA 2008):

1. Maintain an adequate water level in the groundwater basin.
2. Protect groundwater quality and implement measures, where feasible, to reduce the potential movement of existing contaminants.
3. Monitor groundwater extraction to reduce the potential for land subsidence.
4. Promote conjunctive use of groundwater and surface waters.
5. Support and encourage water conservation.
6. Develop and support alternate water supplies, and educate users on the benefits of water recycling.
7. Continue coordination and cooperation between the TGBA members and customers.

Stanislaus County Groundwater Ordinance

The Stanislaus County Groundwater Ordinance requires that all applications for a Well Construction Permit filed after November 25, 2014 demonstrate, based on substantial evidence, that either (1) one or more of the exemptions set forth in Section 9.37.050 apply, or (2) extraction of groundwater from the proposed well will not constitute unsustainable extraction of

groundwater. The ordinance notes that the above conditions do not apply to a well designed to replace an existing well that has been permitted under Chapter 9.36 prior to November 25, 2014, if the replacement well has no greater capacity than the well it is replacing.

The exemptions set forth in Section 9.37.050, referenced above, include the following:

> Water resources management practices of public water agencies that have jurisdictional authority within the County, and their water rate payers, that are in compliance with and included in groundwater management plans and policies adopted by that agency in accordance with applicable state law and regulations, as may be amended, including but not limited to the California Groundwater Management Act (Water Code Sections 10750 et seq.), or that are in compliance with an approved Groundwater Sustainability Plan.

12.3 Environmental Setting

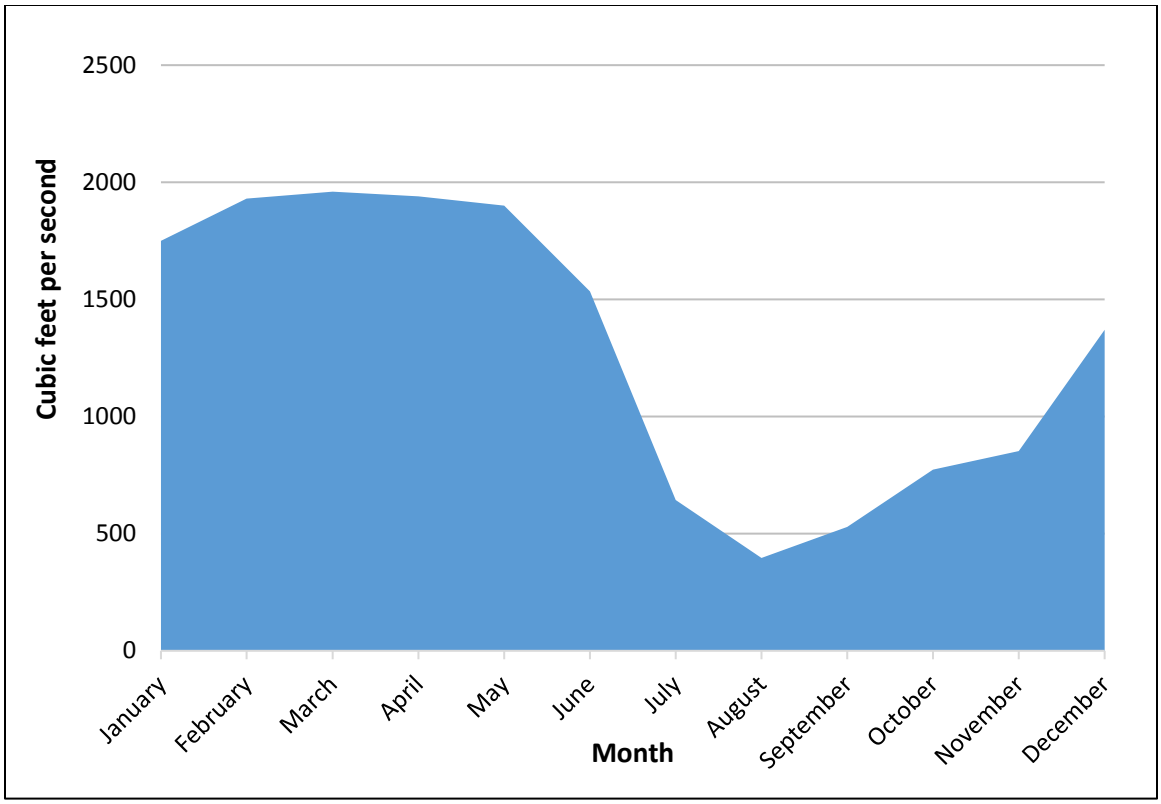
12.3.1 Topography and Climate

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 City of 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 and passing near the communities of Del Rio, Salida, and Riverbank. 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. Dry Creek flows through northeast Modesto before discharging into the Tuolumne River. Figure 12-1 shows surface water bodies in the study area.

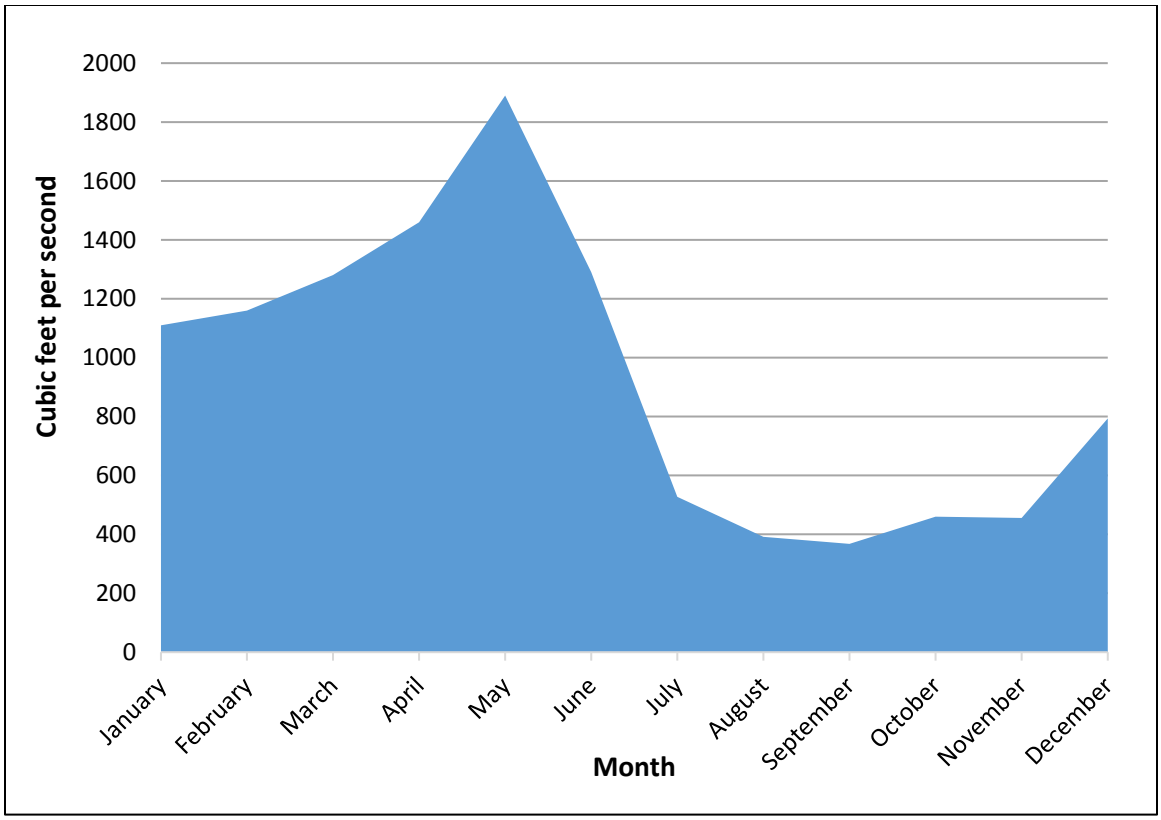
Flows in study area waters vary seasonally, roughly in line with the seasonal precipitation pattern. Flows in the Tuolumne River are regulated by reservoirs and power plants upstream from Modesto, including Hetch Hetchy Reservoir and Don Pedro Reservoir. Don Pedro Reservoir, jointly operated by the Modesto Irrigation District (MID) and the Turlock Irrigation District (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 at Modesto (USGS 11290000).



Source: USGS 2017a

Figure 12-2. Mean Monthly Discharge at USGS Gage 11290000 (Tuolumne River at Modesto, CA), Water Years 1940-2016

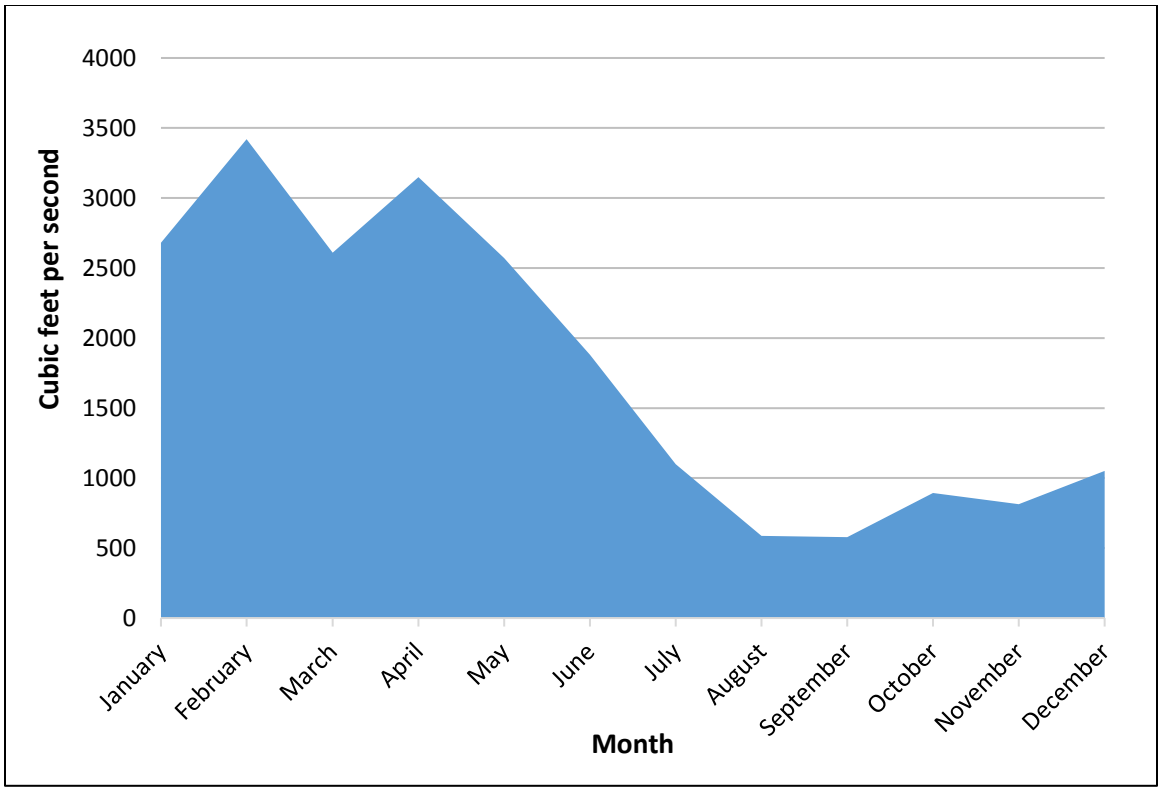
Flows in the Stanislaus River also are regulated by upstream dams and reservoirs, including the Tulloch Reservoir and New Melones Lake. **Figure 12-3** shows mean monthly flow in the Stanislaus River as measured at the USGS stream gage at Ripon (USGS 11303000).



Source: USGS 2017b

Figure 12-3. Mean Monthly Discharge at USGS Gage 11303000 (Stanislaus River at Ripon, CA), water Years 1940-2016

Upstream reservoirs on the San Joaquin River include Millerton Lake and Mammoth Pool Reservoir. **Figure 12-4** shows mean monthly flow in the San Joaquin River as measured at the USGS stream gage near Crows Landing (USGS 11274550).



Source: USGS 2017c

Figure 12-4. Mean Monthly Discharge at USGS Gage 11274550 (San Joaquin River near Crows Landing, CA), Water Years 1995-2016

No stream gage exists on Dry Creek, but it can be assumed that flows follow a generally similar pattern, with higher flows in the winter and spring and lower flows in the summer and fall.

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]
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
		Mercury	Unknown	2006	5A	2012
		Temperature, water	Unknown	2010	5A	2021
		Toxaphene	Unknown	2006	5A	2019
		Unknown Toxicity	Unknown	2006	5A	2019
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
Stanislaus River, Lower	53530000 / 18040002	Chlorpyrifos	Unknown	2010	5A	2021
		Diazinon	Unknown	1998	5A	2008
		Group A Pesticides	Unknown	1998	5A	2011
		Mercury	Unknown	2002	5A	2020
		Temperature, water	Unknown	2010	5A	2021
		Unknown Toxicity	Unknown	1998	5A	2019

Water Body	Watershed CalWater / USGS HUC	Contaminant	Source	First Listed	TMDL Status[1]	Completion Date[2]
Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)	53550000 / 18040002	Chlorpyrifos	Unknown	2012	5A	2021
		Diazinon	Unknown	2002	5A	2010
		Group A Pesticides	Unknown	2006	5A	2011
		Mercury	Unknown	2010	5A	2021
		Temperature, water	Unknown	2010	5A	2021
		Unknown Toxicity	Unknown	2006	5A	2022

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.

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., Program components in East Modesto, Ceres, Empire, and Turlock) also would be located in the Turlock Subbasin. The proposed components in Grayson would be located in the Delta-Mendota Subbasin of the San Joaquin Valley Groundwater Basin.

The western portions of the Modesto and Turlock subbasins generally have two principal aquifers: one above and one below the Corcoran clay[1] (STRGBA 2005). East of the Corcoran clay, the aquifers are generally unconfined. Groundwater in the Delta-Mendota subbasin occurs in three water-bearing zones, including a lower zone, upper zone, and shallow zone. The Corcoran Clay also underlies this subbasin at depths ranging from 100 to 500 feet, which creates confining conditions (DWR 2006a). In the area of Modesto, groundwater flows from east to west-southwest following the topography of the land and differences in mean groundwater levels. Groundwater contours suggest that groundwater is discharged to the Tuolumne River along most reaches of the river.

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 2006b). Groundwater levels in the Delta-Mendota Subbasin declined an average of 2.2 feet from 1970 through 2000 (DWR 2006a). 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 2017f). 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. 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).

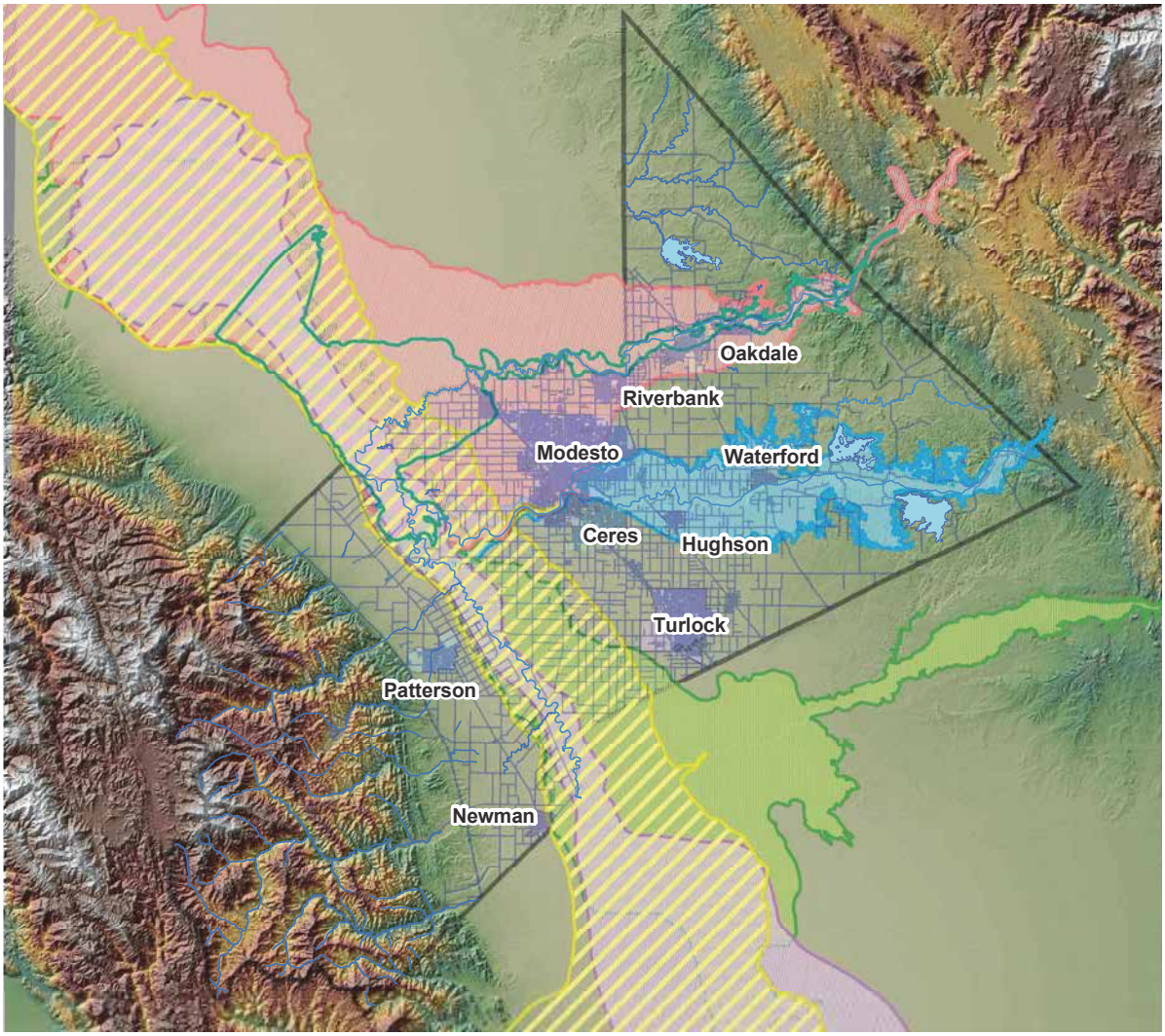
Groundwater quality throughout the San Joaquin Valley region is suitable for most urban and agricultural uses; however, localized areas of high total dissolved solids (TDS), nitrates, boron, chloride, arsenic, selenium, dibromochloropropane (DBCP), and radon exist (Stanislaus County 2016b). Elevated 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).

[1] 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 (DWR 2004, 2006b).

12.3.6 Floodplains and Dam Inundation Areas

Several Proposed Program improvements would be located within the 100-year (i.e., 1-percent annual chance flood) floodplain mapped by FEMA; however, all would be buried pipelines with no above-ground components. Mapped FEMA flood zones are depicted in Figure 12-1. 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 improvements, is within the inundation area for multiple dams. The figure (reproduced as **Figure 12-5** here) shows that Modesto and potentially North Ceres are within the inundation area for New Melones and New Don Pedro 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 12-5. Stanislaus County Dam Inundation Hazards Map

Prepared by:

Horizon WATER and ENVIRONMENT

City of Modesto Water Master Plan EIR

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 the CEQA significance criteria. As described throughout this DEIR, all impacts are evaluated at a program level of detail.

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 (*Less than Significant with Mitigation*)

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 potentially seep into groundwater or be washed into nearby water bodies. Use of trenchless construction methods (e.g., jack and bore, horizontal directional drilling [HDD] also could present hazards to water quality, such as from frac-out[2] 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.

Testing, disinfection, and flushing of pipeline improvements prior to use also would require disposal of de-chlorinated flushing water to the storm drainage system or sanitary sewer system. As described in Chapter 2, *Program Description,* one of the prescribed disinfection methods in the City's standard specifications, which comply with American Water Works Association (AWWA) standard methods, would be used to disinfect all new water mains and appurtenances. After completion of the disinfection process, the heavily chlorinated water would be de-chlorinated and flushed from the new pipelines/water system facilities until the residual chlorine concentration meets the City's established requirements, which are protective of water quality in receiving waters. Discharges of this water would not substantially affect receiving waters or result in a violation of water quality standards or waste discharge requirements; refer to Chapter 17, *Utilities and Service Systems* for additional discussion of impacts on the stormwater and sewer system from discharge of testing, disinfection and flushing water.

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

[2] "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 (California Public Utilities Commission [CPUC] 2003).

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 all projects less than one acre 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. Implementation of these requirements included in the City's Standard Specifications would ensure that impacts on water quality related to erosion for Program components that disturb less than one acre would be less than significant.

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.

To ensure that the Proposed Program would not adversely impact water quality from proposed trenchless pipeline installation methods (e.g., new water distribution pipelines underneath the Tuolumne River or Dry Creek), 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 (CPUC 2003). Implementation of this mitigation measure would reduce adverse water quality impacts from frac-out associated with trenchless activities to a level that is less than significant.

Operation of the Proposed Program improvements would not be likely to have significant adverse impacts on water quality. Operational activities would be very similar to existing maintenance, operation, and repair activities for the existing water system. The proposed aquifer storage and recovery (ASR) program would use water treated to drinking water standards to recharge groundwater, and therefore would not present an opportunity for groundwater quality contamination. Operational water quality impacts would be less than significant.

Overall, 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.

The City of Modesto's drilling contractor for trenchless pipeline installation activities (e.g., horizontal directional drilling or microtunneling) 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: 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 (*Significant and Unavoidable*)

The Proposed Program involves the construction and operation of impervious features such as storage tanks, buildings to house booster pump stations and groundwater wells, and a corporation yard. These features are expected to result in only a small incremental increase in impervious surfaces and would not substantially affect percolation of rainfall or groundwater recharge.

The City of Modesto's Proposed Program includes new and replacement groundwater wells within the contiguous and outlying Modesto water service areas. Typically, the wells would have a pumping capacity between 750 and 2,000 gallons per minute (gpm). Although it cannot be determined how much groundwater pumping may increase under the Proposed Program, as it is not known how frequently and at what capacity the new wells would operate, it can be assumed that groundwater pumping would increase over time in accordance with the City's growth and development. **Table 12-3** below shows projected increases in water demand and groundwater extraction in the City's service area.

Table 12-3. City of Modesto – Projected Retail Water Supplies

Water Supply	Projected Water Supply (Acre-feet)				
	2020	2025	2030	2035	2040
Purchased or Imported Water[1]	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: [1]Purchases from Modesto Irrigation District.

Source: City of Modesto 2016

As described in Chapter 4 of the WMP, a model was developed to analyze the system and determine the existing and future water system needs. To determine the water supply needs in

the outlying communities where groundwater is the primary or only source of water, the maximum operating yield of the Modesto and Turlock groundwater sub-basins was incorporated into the model.

The Proposed Program was developed in consideration of the operating yield of the Modesto and Turlock groundwater sub-basins. This operating yield was calculated to better manage the groundwater basin in consideration of estimates of annual recharge and pumping activities, and to prevent lowering of the groundwater table. Therefore, by design, operation of existing and proposed wells in the study area should not substantially lower the overall basin-wide level of water or the capacity of the groundwater basins. Individual wells would also be designed and operated to avoid localized reductions in groundwater levels that could substantially affect nearby wells and groundwater beneficial uses.

The City is a participant in the Groundwater Sustainability Agencies that have been formed for the Modesto and Turlock subbasins. Both GSAs are currently developing Groundwater Sustainability Plans per the requirements of SGMA. The City, along with other agencies or private entities, will implement the recommendations of the GSP, when available, in accordance with SGMA.

That said, groundwater development in the Modesto, Turlock, and/or Delta-Mendota subbasins by other agencies or private entities could, in combination with the City's use of groundwater, result in overall groundwater pumping which exceeds the sustainable yield of the aquifer(s). Pumping by other entities is outside of the City's control. SGMA requires users of groundwater in a basin to develop a GSP which will define the sustainable yield of the aquifer and allocate pumping amounts to individual users (or identify other measures) which will ensure that overall pumping is sustainable. The City will be a participant in development of the GSPs. However, because the GSP has not been developed, and the measures or allocations it will contain are currently unknown and would not be entirely within the City's control, the GSP cannot be relied upon as the basis for concluding that the City's use of groundwater (in combination with other users) would not exceed the sustainable yield of the basin(s); this would be improperly deferred mitigation under CEQA.

While the City fully expects that the SGMA process and the planning surrounding the WMP will prevent overdraft, due to the stage of the SGMA planning process, the City has conservatively concluded that impacts are potentially significant. The City has not identified feasible mitigation beyond that which would be identified in the future pursuant to SGMA, and such measures would be outside of the City's control, to the extent they would need to be implemented by other entities (e.g., other users of groundwater in the basin(s). For these reasons, this impact is considered **significant and unavoidable.**

Impact HYD/WQ-3: 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*)

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 water pipelines) and would have no potential to alter drainage patterns. The Proposed Program would include construction of several new pipelines crossing the Tuolumne River and Dry Creek; these

would be installed using trenchless methods beneath the water bodies, or be incorporated into pedestrian or vehicular bridges, and would not affect the existing drainage patterns.

Certain Program components 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), but these changes would not be substantial and would not result in substantial siltation, erosion, or flooding on- or off-site.

During construction of individual Program improvements, the Proposed Program could temporarily alter the drainage patterns of individual project sites. Trenching for installation of water lines, excavation and foundation work for installation of new storage tanks and associated facilities, and related activities could temporarily change the ground surface and expose loose soils to erosive forces (e.g., water, wind). These changes could result in substantial erosion on-site, a significant impact.

For CIP projects that exceed one acre in size, 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 CIP projects in close proximity to Designated Floodways along the Tuolumne River, Dry Creek, and San Joaquin River, the City would apply for appropriate encroachment permits from the CVFPB and State Reclamation Board prior to construction. For CIP projects with less than one acre in size, the City would implement requirements in its Standard Specifications for a Local SWPPP, which would prevent substantial impacts related to erosion and siltation. Therefore, this impact would be **less than significant.**

Impact HYD/WQ-4: 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*)

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 improvements. Most improvements 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 improvements (many of the improvements 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.

Given the nature of the Proposed Program components, these facilities would not provide 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.

Therefore, this impact would be **less than significant.**

Impact HYD/WQ-5: Place Within a 100-year Flood Hazard Area Structures Which Would Impede or Redirect Flood Flows (*Less than Significant*)

Several proposed components would be located within the 100-year flood hazard area (i.e., 1-percent annual chance flood zone), as shown on Figure 12-1; however, all of these would be buried pipelines with no above-ground components. Therefore, these proposed components would not impede or redirect flood flows and would not increase flood hazards for other nearby structures. As a result, this impact would be **less than significant.**

Impact HYD/WQ-6: 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). These dams are routinely evaluated for seismic stability by the California Division of Safety of Dams to ensure the integrity of the structures (DWR 2017g). 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

Existing land uses in the study area and applicable land use policies and regulations for the City of Modesto, City of Turlock, City of Ceres, 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),
- the *Ceres General Plan 2035* (2018),
- the *City of Turlock General Plan* (2012), 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 sphere of influence (SOI) (e.g., Empire, Salida, Grayson, and Del Rio). The water storage tank and groundwater well site located northwest of Modesto, and two groundwater well sites located west of Modesto are designated for agricultural uses. The Agriculture designation recognizes the value and importance of agriculture by acting to preclude incompatible urban development within agricultural areas. The designation is intended for areas of land which are presently or potentially desirable for agricultural usage. While the designation establishes agriculture as the primary use in land, it also allows dwelling units, limited agriculturally related commercial services, agriculturally related light industrial uses, and other uses which by their unique nature are not compatible with urban uses, provided they do not conflict with the primary use (Stanislaus County 2016).

The groundwater well site near Charity Way and Bitritto Way is designated as Planned Industrial (PI), and the well site near Coffee Road and Claratina Avenue is designated as Planned Development. The Planned Development designation is intended for land which, because of its unique characteristics, may be suitable for a variety of uses without detrimental effects on other property (Stanislaus County 2016).

The three well sites located northeast of Modesto (one at the Oakdale Road and Claribel Road intersection, one located west of Roselle Avenue, and the third located near the intersection of Plainview Road and Litt Road) are designated as Urban Transition. The water storage tank site near Gomes Road is also designated as Urban Transition. The purpose of the Urban Transition designation is to ensure that land remains in agricultural use until urban development consistent with a city's (or unincorporated community's) general plan designation is approved. In general, urban development on these lands would only occur upon annexation to a city but such development may be appropriate prior to annexation provided the development is not inconsistent with the land use designation of the general plan of the affected city (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.

Del Rio Community Plan

Stanislaus County prepared the *Del Rio Community Plan*, which was adopted by the Stanislaus County Board of Supervisors in 1992. The community plan designates land uses in two development areas. The northern portion (Area I) of Del Rio is designated as low-intensity residential and agriculture, while the southern portion (Area II) is designated as agriculture and future-specific planning. The Community Plan proposed to develop Del Rio as a mixed residential, recreational, and agricultural community with natural open space/recreational uses. Goals of the Del Rio Community Plan that relate to land use and planning for the Proposed Program include the following:

Goal 1: Future development should occur in an orderly manner to meet the needs of existing and future residents.

Policy A: Until the plan is updated, future development for Del Rio shall be in accordance with the Community Plan.

Goal 2: Prime agricultural land in the Del Rio vicinity should be preserved in areas where incompatibility impacts between agricultural and residential uses can be minimized.

Goal 3: Further development in the Del Rio area should be planned to ensure that adverse impacts on services and utilities, schools, transportation and circulation, agriculture, water and air quality are appropriately mitigated.

Policy A: All future developments in Del Rio shall be Planned Developments and, in Area II, approved only after specific plan and EIR are prepared for Area II which address cumulative development impacts on the entire Del Rio area, Community Plan conformance, and methods of plan implementation.

Goal 5: Future development shall be served by adequate public infrastructure.

Policy A: All future development in Del Rio shall require underground utilities and facilities for community-wide secondary sewage treatment and water supply systems.

Salida Community Plan

Stanislaus County prepared the *Salida Community Plan, which* was adopted by the Stanislaus County Board of Supervisors in August 2007. The Salida Community Plan provides land use planning and guidance for development of approximately 4,600 acres in the Salida area. Land uses included in the planning area include Business Park, Low-Density Residential, Medium Density Residential, High-Density Residential, Commercial, Planned Industrial, and Agriculture. The majority of planned land uses include Planned Industrial (1,259 acres or 37.2 percent of the Amendment Area). Most of these lands are in the northeastern portion of Salida. Collectively, the land uses, goals, and policies of this document are intended to promote job creation, retail opportunities, tax generation, expanded recreational amenities, expanded housing opportunities, preservation of open space, and effective transitions between urban and agricultural environments. The *Salida Community Plan* acknowledges that new public utilities such as an adequate water supply must be secured and demonstrated for new development.

Stanislaus County Zoning Ordinance

According to the Stanislaus County Zoning Ordinance, public utilities including underground pipelines, are permitted in all zoning districts.

Two new water storage tanks (one east of Dale Road near Salida, one in eastern Modesto south of Gomes Road) and seven groundwater wells would be installed on lands zoned A-2 General Agriculture (Stanislaus County 2017). **Figure 13-1** shows the locations of WMP elements relative to the County's zoning districts throughout the WMP study area. Permitted uses for 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 district allows development of certain uses that are not directly related to agriculture but may be necessary to serve the A-2 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 proposed groundwater well site near Charity Way and Bitritto Way (northern Modesto) is zoned as Planned Industrial (PI). Permitted uses for PI districts include public utilities, public and quasi-public buildings, and mini-warehouses.

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). 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.

- 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.

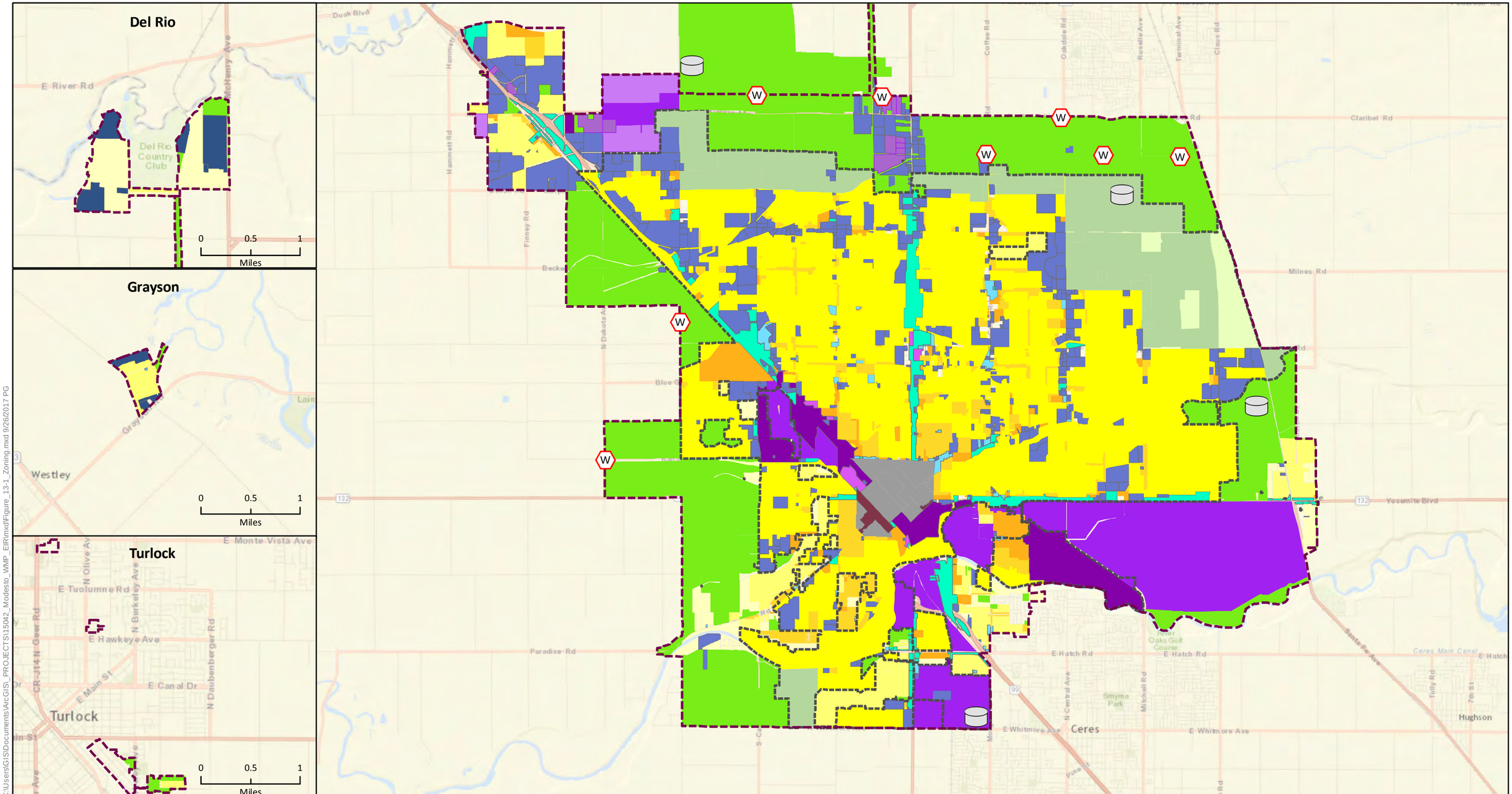
- Industrial – This designation provides for the full range of industrial uses, including but not limited to manufacturing, food processing, trucking, packing, and recycling. The guiding land use intensity for this designation is 0.50 square feet per square foot of gross area on an area-wide basis.

The *City of Modesto Urban Area General Plan* (2019) provides the following goals and 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.



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Zoning_Designation
WMP Study Area
Modesto City Limits
Future Tank Sites
Future Well Sites

General Agriculture
General Commercial
Neighborhood Commercial
Industrial/Heavy Industrial

Limited/Light Industrial
Planned Industrial
Planned Development
Rural Residential

Single Family/Low Density Residential
Medium Density Residential
Multiple Family/ Medium-high density Residential

Downtown
Specific Plan
Specific Plan-Holding

Sources: Stanislaus County 2017, City of Modesto 2017

Horizon WATER and ENVIRONMENT

Figure 13-1
General Zoning Districts in the WMP Study Area

City of Modesto
Water Master Plan EIR

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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.

The storage tank site proposed in northern Modesto (east of Mable Avenue and north of McReynolds Avenue) is zoned as Specific Plan (SP), which is intended to permit various land uses including residential, industrial, and commercial development through Specific Plans. This particular tank site is addressed under the City of Modesto's Village One Specific Plan, which envisions a future school in the near vicinity. The water storage tank site in southern Modesto (northeast of East Whitmore Avenue and Morgan Road intersection) is zoned as Heavy Industrial

(M-2). No other aboveground Program elements would be within the City's jurisdictional boundary.

According to the City of Modesto Code of Ordinances Title 10, Chapter 3 – Land Use Regulations, land uses for all minor public facilities (e.g., pumps and wells) are permitted for 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.

Ceres General Plan 2035

The *Ceres General Plan 2035* (2018) establishes land use designations in the following categories: Residential, Mixed Use, Commercial, Industrial, and Other. The following policies are applicable to the Proposed Program:

> **2.D.1 Promote Infill.** Promote infill development and reuse of underutilized parcels in the city to reduce pressure to develop on farmland or other "greenfield" sites on the periphery.
>
> **2.I.2 Area-wide Plans.** Use area-wide plans (i.e., master plans or specific plans) to comprehensively plan for new neighborhood developments. Each residential area-wide plan should at minimum address the following:
>
> - Provisions for development phasing to ensure orderly and contiguous development consistent with infrastructure expansions and anticipated market demand.
> - Provisions for minimizing conflicts between new development and adjacent agricultural uses.

City of Turlock General Plan

The *Turlock General Plan* (2012) establishes the following land use designations: Residential (Very Low Density, Low and Medium Density, and High Density), Agriculture, Vacant, Industrial, Commercial and Mixed Use, Public/Semi-Public/Community Facility, Park and Open Space, and Office. The primary land uses include Low and Medium Density Residential (37 percent) followed by Agriculture (16 percent), Vacant (12 percent), and Industrial (11 percent). The following policies are applicable to the Proposed Program:

> **2.9-b.** Urban land uses belong in incorporated areas. Work with Stanislaus County to direct growth to incorporated areas and established unincorporated communities.
>
> A key policy of the General Plan is the limited and orderly expansion of the City. This policy would be undermined by approval of urban activities in unincorporated areas.
>
> **2.9-f.** Work with County on mitigating impacts of growth. Work with Stanislaus County to implement financing mechanisms to ensure that development within the Planning Area pays its fair share of both City and County improvements required to mitigate the impacts of growth.

2.11-c. Facilitate new development. Define clear development standards and process development applications expeditiously.

3.1-a. Proactively manage growth. Proactively manage and plan for growth in an orderly, sequential and contiguous fashion.

3.1-b. Minimize negative effects through use of fiscal and infrastructure tools. Plan and implement growth so as to minimize negative effects on existing homes and businesses within and outside the City. This shall include working with the County to establish fiscal and infrastructure tools to ensure that improvements to County roads and other infrastructure are being made as new development proceeds.

3.1-f. Provide adequate public services. Ensure the adequacy and quality of public services and facilities for all residents.

3.1-j. Capital improvement program review. Continue to annually review the City's Capital Improvement Program in order to increase capacity of needed public services in response to City growth.

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. The Proposed Program does not have improvements directly within this planning area but does have proposed CIPs nearby.

13.3 Environmental Setting

Proposed components would occur within Modesto and unincorporated areas of Stanislaus County. The following sections generally describe land uses within the City of Modesto's contiguous service area (Modesto and its SOI including Salida, North Ceres, and Empire) and outlying service areas (Del Rio, Ceres, Grayson, and portions of Turlock).

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. Urbanized areas of Modesto including commercial uses are concentrated along SR 99, the Southern Pacific Railroad corridor, and major arterial roadways; industrial uses south of Yosemite Boulevard, adjacent to the Modesto City-County Airport; and mixed residential uses which occur throughout the city. 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 2017).

13.3.2 Ceres

The city of Ceres is located along SR 99, south of Modesto and the Tuolumne River, and north of Turlock in Stanislaus County. Ceres encompasses approximately 7 square miles and the majority of the city is designated for low-to-medium density residential uses.

13.3.3 Del Rio

Del Rio is an unincorporated census-designated place (CDP) in central Stanislaus County and is located approximately 2.5 miles north of Modesto. Del Rio encompasses 2.1 square miles, with approximately 1.8 square miles being residential and the remaining space being utilized as a golf course, open space, and water (U.S. Census Bureau 2010). The Stanislaus River runs along the northern edge of Del Rio, and the community is bounded by McHenry Avenue to the east, Ladd Road to the south, and Carver Road to the west. State Route 99 is approximately 5.8 miles west of Del Rio. Nearby cities include Escalon, Manteca, Modesto, and Riverbank. Del Rio is a predominantly residential community that began with the development of a golf course and country club.

13.3.4 Empire

The community of Empire is in unincorporated Stanislaus County, located immediately east of Modesto. Empire is south of Dry Creek and north of the Tuolumne River. The community encompasses approximately 1.6 square miles, and the majority of Empire is designated as residential land use.

13.3.5 Grayson

The community of Grayson is also in unincorporated Stanislaus County and located approximately 11 miles southwest of Modesto and 6.5 miles northwest of the city of Patterson. Grayson is a small rural residential and agricultural community that occupies roughly 2.7 square miles. The community is situated on the west bank of an old channel of the San Joaquin River.

13.3.6 Salida

Salida is located northwest of Modesto, along SR 99 and south of Ripon. The community encompasses approximately 5.2 square miles and like other "islands" of Stanislaus County, comprises mostly residential development. Other land uses in Salida include agricultural uses, open space, and industrial development.

13.3.7 Turlock

The City of Turlock is the second largest city in Stanislaus County and is located about 14 miles south of Modesto. The City of Turlock's planning area extends beyond their city limits and includes unincorporated communities of Keyes and Denair. Commercial uses are concentrated along SR 99, Golden State Boulevard, and other major arterials. The community is largely shaped by the California State University, Stanislaus and agricultural industry.

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 17), not in this land use analysis. Specifically, potential conflicts with SJVAPCD's air quality plans are discussed in Chapter 6, *Air Quality;* inconsistencies with the *Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region* are discussed in Chapter 12, *Hydrology and Water Quality;* and inconsistencies with the *Congestion Management Process for the Stanislaus County Region* are 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;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including a general plan, specific plan, local coastal program, or zoning ordinance) 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*)

The Proposed Program would occur within the city of Modesto, a portion of the city of Turlock, a portion of the city of Ceres, and unincorporated areas of Stanislaus County. Proposed CIPs would involve various components to the City's water supply system including storage tanks and booster pump stations, groundwater wells, pipelines, new emergency generators for booster pump stations, water security enhancements, SCADA system upgrades, replacement pumps, and other water quality and groundwater management studies.

Pipeline replacement projects would 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 2050. 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. For these reasons, the 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*)

The Proposed Program would include a series of CIPs that involve construction and operation of new storage tanks, groundwater wells, emergency generators, booster pump stations, water supply pipelines, and repair and replacement of aging water mains. These CIPs would be implemented to address existing deficiencies and capacity needs for the City's water distribution and supply system through 2040. These components are also expected to provide sufficient water service for new growth projected in the City's Urban Area General Plan, other areas in the City's contiguous service area (e.g., Salida, Empire, and North Ceres), and the City's outlying service areas (e.g., Del Rio, Ceres, Grayson, and portions of Turlock). Because water supply pipelines and water mains would be installed belowground, these CIPs would not pose any conflicts with Stanislaus County or City of Modesto zoning ordinances; therefore, consistency with local zoning regulations for these WMP components are not discussed further.

Consistency with Stanislaus County Zoning and General Plan Designations. In Salida, a new storage tank would be constructed northeast of the Dale Road and Pirrone Road intersection. This land is currently zoned and designated for agricultural uses in unincorporated Stanislaus County.

As discussed in Section 13.2.1, in the northern portion of Modesto, one new groundwater well north of Kiernan Avenue would be constructed on unincorporated Stanislaus County lands designated and zoned for agricultural uses (A-2). The two groundwater wells located west of Modesto would be installed on lands designated and zoned for agricultural uses. The future well planned near Charity Way and Bitritto Court would be constructed on County lands zoned and designated as Planned Industrial (PI). The future groundwater wells proposed at the Coffee Road and Claribel Road intersection, west of Roselle Avenue, and Plainview Road and Litt Road intersection would be constructed on lands zoned for agricultural uses but designated as either Planned Development (PD) or Urban Transition (UT) in the County's General Plan. In addition, the 5 MG tank site near Gomes Road is zoned for agricultural uses and designated as Urban Transition in the County's General Plan. This zoning and General Plan designation discussion is based on the most current available information; however, it should be noted that at least some of the Proposed Program's new well sites are conceptual and their locations may change in the future.

Based on the above, various Program components would be constructed on lands zoned and designated for various types of uses. Proposed water storage tanks and other water 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. Proposed Program components constructed on land zoned as PI would be consistent with the industrial zoning district as all new facilities are considered public facilities. Therefore, no conflicts with County zoning would occur under the Proposed Program. Some tank and well sites have General Plan land use designations including Agriculture, Urban Transition, and Planned Development. Since the General Plan includes policies requiring that utility infrastructure (e.g., water supply) be reasonably available for planned and future development areas, the Proposed Program would generally be consistent with the County's General Plan designations.

Consistency with City of Modesto Zoning and General Plan Designations. The new 2.9 MG storage tank proposed east of Mable Avenue is designated as Village Residential and zoned as Specific Plan (SP). As described in Section 13.2, the tank would serve a future school planned for in the Village One Specific Plan. The proposed 2.6 MG tank in southern Modesto (north of East Whitmore Avenue and west of Morgan Road) would be installed on land zoned as Heavy Industrial and designated as Industrial.

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 water storage tank and groundwater well, 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 new water storage tanks planned in the northeastern and southern areas of Modesto.

Consistency with the TRRP. The Proposed Program does not have improvements directly within the TRRP Master Plan's planning area but does have proposed CIPs nearby. No major Program components involve work along the Tuolumne River such that a potential conflict with the TRRP

Master Plan goals and actions for riparian restoration or planned recreational linkages between park planning districts would occur.

Conclusion. The Proposed Program would generally support general plan policies that call for safe and reliable water supply services and would not conflict with the Stanislaus County General Plan, local community plans, the City of Modesto Urban Area General Plan, the City of Turlock General Plan, the Ceres General Plan 2035, or local zoning districts. Proposed construction would occur within the planned urbanizing areas of each of the communities included in the Program, as analyzed by the County, Modesto, Ceres, and Turlock general plan EIRs. 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 pipeline components. Based on the above analysis, there would be no conflicts with applicable land use plans, policies, or regulations, and this impact would therefore be **less than significant.**

Chapter 14
NOISE AND VIBRATION

14.1 Overview

This chapter describes the existing noise environment in the vicinity of the project sites, 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.

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**.

For the protection of fragile, historic, and residential structures, Caltrans recommends a more conservative threshold of 0.2 in/sec PPV for normal residential buildings and 0.08 in/sec PPV for old or historically significant structures (Caltrans 2013).

Table 14-2. State Land Use Compatibility Standards for Community Noise Environment

Land Use Category	Community Noise Exposure - L_{dn} or CNEL (dB)						
	55	60	65	70	75	80	
Residential – Low Density Single Family, Duplex, Mobile Homes							
Residential – Multi-Family							
Transient Lodging – Motels, Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arenas, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

	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 2016a) 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 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 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 (2016a)

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 11-3 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 2019a) 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 Program.

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," (City of Modesto 2017) 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.

Ceres General Plan 2035

The following policies from Chapter 5, "Health and Safety," of the *Ceres General Plan 2035* (City of Ceres 2018) relate to noise:

5.L.3 Performance Standards. Use performance standards established in Table 5-5: Performance Standards for Stationary Sources to regulate operational noise associated with new non-residential development or changes of non-residential use.

Require, prior to approval of a project, that noise generated by the project be mitigated so as not to exceed the performance standards of Table 5-5 [provided below]. Standards apply to the noise sources themselves, as measured at the edge of the property line of residential or other sensitive uses; noise caused by motor vehicles traveling to and from the site is exempt from these standards.

Table 5-5. Performance Standards for Stationary Noise Sources

Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	55	45
Maximum sound level, dB	60	45

Sound level measurements shall be made at a point on the receiving property nearest where the sound source at issue generates the highest sound level. Each of the noise levels specified above shall be lowered by five dB for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

5.L.6 Acoustical Analysis. Require an acoustical analysis as part of the environmental review process for proposed non-residential land uses that are likely to produce noise levels exceeding the performance standards of Table 5-4: Maximum Allowable Noise Exposure for Transportation Noise Sources for existing or planned noise-sensitive uses to ensure that mitigation is included in the project design. The acoustical analysis shall meet the following requirements:

- It shall be the financial responsibility of the applicant;
- It shall be prepared by a qualified person, selected by the City, who is licensed through the State of California in the fields of environmental noise assessment and architectural acoustics;
- It shall include representative noise measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources;
- It shall include estimates of existing and projected cumulative (20 years) noise levels in terms of DNL or CNEL and/or the standards of Table 5-4: Maximum Allowable Noise Exposure for Transportation Noise Sources, and compare those levels to the adopted policies of the General Plan;
- It shall recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the noise section of the General Plan, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance;

- It shall include estimates of noise exposure after the prescribed mitigation measures have been implemented; and
- It shall describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures, when deemed necessary by the City.

The following policies from Chapter 9.36, "Noise," of the *City of Ceres Code of Ordinances* (City of Ceres 2017) are applicable to the Proposed Program:

> **E. Construction or Repairing of Buildings:** The erection (including excavating), demolition, alteration or repair of any building other than between the hours of seven o'clock (7:00) A.M. and eight o'clock (8:00) P.M., except that, by special permit issued by the Building Inspector or City Engineer, as the case may be, upon a determination that the public health and safety will not be impaired thereby, the erection, demolition, alteration or repair of any building or the excavation of streets and highways may be permitted within the hours of eight o'clock (8:00) P.M. and seven o'clock (7:00) A.M.

City of Turlock General Plan

The following policies from Chapter 9, "Noise" of the Turlock General Plan (City of Turlock 2012a) relate to noise:

> **9.4-d Required Noise Analysis.** Use the noise and land use compatibility matrix (Table 9-1) and Future Noise Contours map (Figure 9-2) as review criteria for all new development. For proposed development located where projected noise exposure would be other than "normally acceptable," and which require discretionary review, require that a noise analysis be conducted.
>
> A required noise analysis should:
>
> - Be prepared by a certified noise consultant or acoustical engineer;
> - Be funded by the applicant;
> - Include a representative, on-site day and night sound level measurement;
> - Include a delineation of current (measured) and projected (10 years) noise contours with and without the proposed project, ranging from 55 to 75 dBA (L_{dn}) within the proposed development site; and
> - Include a description of adequate and appropriate noise abatement measures where sound measurements exceed Table 9-2 standards for the proposed use.
>
> **9.4-h Non-Transportation Noise Sources—Required Mitigation.** Require mitigation of noise created by new proposed non-transportation noise sources so that it does not exceed the noise level standards of Table 9-3 as measured immediately within

the property line of lands designated for noise-sensitive uses. Appropriate mitigation measures include:

- Dampen or actively cancel noise sources;
- Increase setbacks for noise sources from adjacent dwellings;
- Use soundproofing materials and double-glazed windows;
- Screen and control noise sources, such as parking and loading facilities, outdoor activities, and mechanical equipment;
- Use open space, building orientation and design, landscaping and running water to mask sounds; and
- Control hours of operation, including deliveries and trash pickup.

This policy does not apply to noise sources associated with agricultural operations on lands zoned for agricultural uses.

The following policies from Chapter 5-28, "Noise Standards," of the *Turlock Municipal Code* (City of Turlock 2017) are applicable to the Proposed Program:

5-28-110 Prohibited acts.

The following acts are hereby prohibited:

(g). **Construction or demolition.**

(1) **Hours of operation.** Operation or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m. (or 8:00 p.m. and 9:00 a.m. on weekends or holidays) such that the sound therefrom creates a *noise* disturbance across a residential or commercial real property line, except for emergency work or public service utilities or by variance issued by the Noise Control Officer; and

(2) **Noise restrictions at affected properties.** Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum sound levels at affected properties will not exceed those listed in the following schedule:

(i) **Mobile equipment.** Maximum sound levels for nonscheduled, intermittent, short term operation (less than ten (10) days per month) of mobile equipment:

Mobile Construction Equipment			
Time Interval	**One- and Two-Family Residential (dBA)**	**Multiple-Family Residential (dBA)**	**Commercial and Industrial (dBA)**
Daily 7:00 a.m. – 7:00 p.m.	75	75	85
Weekends/Holidays 9:00 a.m. – 8:00 p.m.	70	70	85

(ii) **Stationary equipment.** Maximum sound levels for repetitively scheduled and relatively long-term operation (periods of ten (10) days or more per month) of stationary equipment:

Stationary Construction Equipment			
Time Interval	**One- and Two-Family Residential (dBA)**	**Multiple-Family Residential (dBA)**	**Commercial and Industrial (dBA)**
Daily 7:00 a.m. – 7:00 p.m.	70	70	85
Weekends/Holidays 9:00 a.m. – 8:00 p.m.	60	65	85

(h) **Vibration.** Operating or permitting the operation of any device which creates a vibration which annoys or disturbs at least two (2) or more reasonable persons of normal sensitivity who reside in separate residences (including apartments and condominiums) at or beyond the property boundary of the noise source. When the noise source is located on a public space or in the public right-of-way, the affected residence shall be located at least one hundred fifty (150') feet (forty-six (46) meters) from the *noise* source.

(i) **Motor vehicle noise limits.**

(1) **Motor vehicles.** It shall be the policy of the City to enforce those sections of the Vehicle Code of the State of California regarding motor vehicle noise limits and equipment violations which create noise problems, motor vehicle horns, sound levels emitted from off-highway vehicles operating off the public right-of-way, and successors thereof. Commercial maintenance equipment and machinery shall be equipped with proper mufflers and air-intake silencers in good working order.

5-28-114 Special variances.

(a) The Planning Commission is authorized to grant variances for exceptions from any provision of this chapter, subject to limitations as to area, noise levels, time limits, and other terms and conditions as the Planning Commission determines are appropriate to protect the public health, safety, and welfare from the noise emanating therefrom. This section shall in no way affect the duty to obtain any permit or license required by law for such activities.

(b) Any person seeking a variance pursuant to this section shall file an application with the Planning Commission. The application shall contain information which demonstrates that bringing the source of sound or activity for which the variance is sought into compliance with this chapter would constitute an unreasonable hardship on the applicant, on the community, or on other persons. The application shall be accompanied by a fee established by resolution of the City Council. A separate application shall be filed for each noise source; provided, however, several mobile sources under common ownership, or several fixed sources on a single property, may be combined into one (1) application. Notice of an application for a variance shall be published according to this Code. Any individual who claims to be adversely affected by the allowance of the variance may file a statement with the Planning Commission containing any information to support his claim. If at any time the Planning Commission finds that a sufficient controversy exists regarding an application, a public hearing will be held.

(c) In determining whether to grant or deny the application the Planning Commission shall balance the hardship of not granting the variance on the applicant, the community, and other persons against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the variance. Applicants for variances and persons contesting variances may be required to submit such information as the Planning Commission may reasonably require. In granting or denying an application, the Planning Commission shall keep on public file a copy of the decision and the reasons for denying or granting the variance.

(d) Variances shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The variance shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this chapter for which the variance was granted.

(e) A variance shall not exceed three hundred sixty-five (365) days after the date in which it was granted. Applications for the extension of the time limits specified in variances or for the modification of other substantial conditions shall be treated like applications for initial variances under subsection (b) of this section.

14.4 Environmental Setting

14.4.1 Noise-Sensitive Land Uses

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 Program components throughout Modesto, the outlying service areas, 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,* shows the locations of schools, an existing sensitive receptor category, with respect to Proposed Program components.

14.4.2 Existing Noise and Vibration Sources

The 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 study area (Stanislaus County 2016b).

The Proposed Program components include new and/or improvements to storage tanks, groundwater wells and treatment, pipelines to replace and extend water mains, pumps, emergency generators, security enhancements, water meters, and other water related programs and studies. The noise environment varies across the study area and is described generally in the City's 2019 Final Master Environmental Impact Report for the Modesto General Plan Update (City of Modesto 2019b) referred to here as 2019 General Plan EIR), the noise section of which is incorporated by reference and summarized here. Table V-3-8 and Figure V-3-3 in the 2019 General Plan EIR show the projected traffic noise levels at General Plan buildout in 2040 generated by traffic, the airport, and the railroads. Stationary sources, such as industries, are discussed qualitatively.

As the City's 2019 General Plan EIR discusses, substantial noise increases (3 dBA Ldn or greater) would occur along multiple roadways under 2040 General Plan buildout conditions. Existing residential land uses are located within the projected 65 dBA Ldn noise contours under 2040 General Plan buildout conditions along most of these existing roadways. In addition to projected traffic noise increases along existing roadway segments, traffic noise levels would increase in areas adjacent to proposed future roadways and roadway extensions.

The specific Proposed Program components, in particular the water pipelines, would be located in almost all areas of the City and would be within the range of all noise levels indicated in the 2019 General Plan EIR.

Areas outside of the City's 2019 General Plan EIR scope (i.e., the Proposed Program's outlying water service areas), would have similar noise contour trends as described for the City, and as supported in the noise sections from the City of Turlock's General Plan EIR (City of Turlock 2012b) and the Stanislaus County General Plan EIR (Stanislaus County Airport Land Use Commission 2016). Elevated noise levels greater than 70 dBA Ldn occur along SR 99 and various arterial streets in both Turlock and unincorporated areas of Stanislaus County. Primary noise generators in these outlying service areas are related to roadways and vehicle traffic.

14.5 Impact Analysis

14.5.1 Methodology

Construction and operation impacts of all Program components were determined using a qualitative approach. The qualitative analysis uses distances to sensitive receptors, project information and design, and information provided by City of Modesto staff.

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.

The last 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.

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, the City of Modesto, the City of Ceres, and the City of Turlock. 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 2016a),

Stanislaus County Municipal Code standards, City of Modesto General Plan Noise Element (City of Modesto 2019a), the City of Modesto Noise Ordinance, the Ceres General Plan 2035 Noise Element, the City of Ceres Noise Ordinance, the City of Turlock Municipal Code Noise Standards, or the City of Turlock General Plan Noise Element 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"), the City of Modesto Code Ordinances (Section 4-9.103, "Enumeration"), and the City of Turlock Municipal Code Noise Standards (Chapter 5-28, "Noise Standards"), since they will be conducted by a public agency and public utility. 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.

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*)

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 WMP 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, City of Turlock, and City of Ceres 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, WMP components involving new, upgraded, or replacement pipelines would not generate excess noise levels. However, operation of proposed tanks, wells, water pump stations, and emergency generators 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 includes wells, emergency generators, and booster pump station components in residential areas of Modesto and the outlying service areas, and the operation of these facilities would generate noise. For the purpose of this analysis, it is assumed that a single pump with an engine rating of up to 100 horsepower (hp) would be used at each new wellhead. Based on the current Proposed Program description, all pumps would be powered by electric engines. Data provided by U.S. Electrical Motors for a 100-hp electric motor running under no load (Roughton pers. comm. 2000) indicate that the motor would produce a sound level of 56 dBA at 50 feet. To approximate the sound level produced under a load, 3 dB were added to the no-load condition for a resulting source level of 59 dBA at 50 feet. The distance needed for a source of this level to attenuate to the lowest County noise-level standards is 250 feet for 45 dBA (nighttime standard). Noise at sensitive receptors located closer than 250 feet to proposed well locations or pumps could exceed the threshold of significance.

In the event that propane- or natural gas–powered engines are used at some of the proposed CIP locations, the sound level of a similarly-sized pump operated by a propane-fueled reciprocating engine was calculated using the equations for reciprocating engines from Noise Control for Buildings, Manufacturing Plants, Equipment and Products (Hoover and Keith 1996). Based on these calculations, a 100-hp, propane-fueled engine would produce a sound level of 75 dBA at 50 feet. This sound level would represent the highest potential noise level from well pumping activities, or the worst-case scenario at the proposed well locations. The distances needed for a source of this level to attenuate to the lowest County noise-level standards is 1,250 feet for 45 dBA (nighttime standard).

Currently, the level of design detail for all proposed CIPs is not sufficient to conduct a quantitative noise analysis; thus, operational noise impacts for these components are conservatively considered to be significant. The preliminary analysis indicates that there is the potential for noise from engines at proposed facilities with the maximum horsepower rating to exceed County nighttime noise standards at residences located within 250 feet of electric engines, or within

1,250 feet of a propane powered engine. For sensitive receptors within Modesto, the noise standard allows a higher exposure level, and the residences could be located closer than 250 feet. This impact is considered potentially significant. With implementation of **Mitigation Measure NOI-3 (Employ Noise-Reducing Methods during Operations)** this impact would be reduced to a less-than-significant level.

Overall Conclusion

Considering the WMP components as a whole, while construction-related noise impacts would be reduced to a less-than-significant level with implementation of Mitigation Measures NOI-1 and NOI-2. Design details and specific locations for some components (e.g., wells, emergency generators, booster pump stations) 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 noise-reducing design measures are incorporated into the design of these components. In conclusion, implementation of Mitigation Measures NOI-1, NOI-2, and NOI-3 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.

The following measures will be implemented by the City or its contractor to reduce adverse effects from construction and maintenance noise in locations where noise-sensitive receptors could be adversely affected:

- locating stationary equipment as far as practical from noise-sensitive land uses,
- using electrified or otherwise quieter equipment when practical,
- using sound-control devices on equipment that are more effective than devices originally provided on the equipment,
- using noise-reducing enclosures around noise-generating equipment, and
- installing temporary barriers between noise sources and noise sensitive land uses, or taking advantage of existing barrier features (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.

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 or that the project has received a variance or special permit following procedures outlined in the applicable noise ordinance to operate outside of these hours.

Mitigation Measure NOI-3: Employ Noise-Reducing Methods During Operations.

The City will implement noise-reducing methods so that noise from well operations and emergency generators does not exceed County noise-level standards at adjacent residences. Example measures may include but are not limited to:

- using 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.
- locating stationary equipment as far as practical from noise-sensitive land uses,
- using electrified or otherwise quieter equipment when practical,
- using sound-control devices on equipment that are more effective than devices originally provided on the equipment,
- installing permanent barriers between noise sources and noise-sensitive land uses, or taking advantage of existing barrier features (terrain and structures) to block sound transmission, and
- limiting 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.

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 compactors, jackhammers, and similar equipment, may be perceived hundreds of feet away and can cause damage to susceptible buildings located over 100 feet away. Loaded trucks, a substantial source of construction-related vibration, would likely be used during construction of Proposed Program-level components, which would involve travel along residential roads in Modesto and the outlying service areas. These trucks can generate vibration above the annoyance and human perception thresholds at distances up to 73 and 125 feet respectively.

As a result, vibration effects on sensitive receptors would be significant. Implementation of **Mitigation Measure NOI-4 (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, emergency generators, 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-4, this impact would be **less than significant with mitigation.**

Mitigation Measure NOI-4: Implement Vibration Reduction Measures.

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 Temporary, Periodic, or Permanent Increase in Ambient Noise Levels in the Project Vicinity Above Levels Existing Without the Proposed Program (*Less than Significant with Mitigation*)

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 Measure NOI-1, which includes several construction noise-reducing measures, would reduce short-term noise impacts to a less-than-significant level.

Operation of proposed tanks, wells, pipelines, water pump stations, and emergency generators would generate ongoing noise levels in areas that could expose people to substantial permanent increases in noise levels. The Proposed Program's components would be located near or in residential areas of Modesto, Ceres, Del Rio, and Turlock. As indicated in Impact NOI-1, implementation of Mitigation Measure NOI-3 would reduce potential operation-related noise levels such that the proposed components would not result in noise levels exceeding the relevant thresholds (a CNEL exterior noise levels shown in Table 14-4 or 3-dB increase if existing levels are above the ambient noise level), and thereby ensure that operation of new and upgraded facilities would not result in substantial permanent increases in noise levels. In conclusion, the Proposed Program's effects on ambient noise levels would be **less than significant with mitigation**.

Impact NOI-4: Expose People Residing or Working in the Study 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 Airport Land Use Commission 2016). However, the Program 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 Airport Land Use Commission 2016]), would be limited to upgraded or replaced tanks, well sites, emergency generators, booster pump stations, and pipelines. 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. 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 (2017);
- *Turlock General Plan* (2012) and Housing Element (2016);
- Del Rio Community Plan (1992) and Salida Community Plan (2007);
- California Department of Finance's (DOF's) City and Unincorporated Areas Estimates documents (DOF 2016, 2017); and
- U.S. Census Bureau American Fact Finder (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 (Stanislaus County 2016b).

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* (City of Modesto 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

The following policies from the *City of Ceres General Plan* (1997) related to population and housing are listed below.

Goal 1.B. To grow in an orderly pattern consistent with economic, social and environmental needs, maintaining Ceres' small-town character and preserving surrounding agricultural lands.

Policy 1.B.1. The City shall ensure that land is designated for development consistent with needs of the community and to maintain a positive fiscal balance for the City.

Policy 1.B.3. The City shall ensure that future development occurs in an orderly sequence based on the logical extension of public facilities and services.

2014-2023 Housing Element

The City of Ceres 2014-2023 Housing Element (City of Ceres 2016) does not identify specific policies or regulations related to population and housing.

Del Rio and Salida Community Plan

The Del Rio Community Plan (Stanislaus County 1992) and Salida Community Plan (Stanislaus County 2007), which were both incorporated into the *Stanislaus County General Plan*, do not identify specific policies or regulations related to population and housing.

City of Turlock 2012 General Plan

The Turlock General Plan (City of Turlock 2012) identifies the following policies related to population and housing:

Policy 2.5-c: Infill and existing neighborhoods. Preserve the scale and character of existing neighborhoods while allowing and encouraging appropriate infill development.

Policy 2.5-e: "No net loss" of housing. Do not allow development at less than the minimum density prescribed by each residential land use category, without rebalancing the overall plan to comply with the "no net loss" provisions of State housing law.

2015-2023 Housing Element

The City of Turlock 2015-2023 Housing Element (City of Turlock 2016) identifies the following objective and policy related to population and housing.

Objective 5-2: Reduce the incidence of displacement.

Policy 5-2-1: In development of public projects, require an analysis of potential displacement of existing residences with an emphasis on minimizing both temporary displacement and relocation.

15.3 Environmental Setting

15.3.1 Population

Stanislaus County

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, the total County population rose to 532,297, of which the unincorporated areas accounted for 113,772 persons (Stanislaus County 2016b). Population growth by 2025 is projected to reach over 637,000 according to the Stanislaus Council of Governments (StanCOG), which represents an approximately 20 percent increase from the County's 2015 population estimate with the majority of growth projected to occur in incorporated cities (City of Modesto 2017a). **Table 15-1** provides a breakdown of past population estimates and future projections from 2015 through 2050 for Modesto, Del Rio, Salida, Empire, Grayson, Turlock, and the total unincorporated Stanislaus County.

Modesto

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 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 (California Department of Finance 2016).

Del Rio

The community of Del Rio had a population of approximately 1,925 persons in 2015, which is an increase from a population of 1,186 in 2010 (U.S. Census Bureau 2015a, 2010a). The community's largest population by age group are people ranging from 55 to 59 years. This group accounted for approximately 20.7 percent of the total population in 2015 (U.S. Census Bureau 2015a). Del Rio is within the jurisdiction of unincorporated Stanislaus County.

Salida

The community of Salida, within unincorporated Stanislaus County, is located along the northwestern border of the City of Modesto and in the northern/central part of the County. The Salida community had an estimated population of 14,625 in 2010 and declined to 13,501 persons in 2015 (U.S. Census 2015b, 2010b). The largest population age groups for the community are adolescents from 10 to 14 years of age (11.1 percent) and 15 to 19 years of age (10.3 percent). In 2007, the County's general plan included a new Salida Community Plan, which projected a residential buildout of a total of 5,000 new dwelling units. The construction of these units would result in the projected local population to increase by an additional 15,063 persons. However, future development within the Community was placed on hold due to the economic crisis (Stanislaus County 2016b). Therefore, it is unknown how many of these new dwelling units have been completed and how much the population may have altered from the 2015 estimates.

Table 15-1. Population Growth Trends for the Cities of Modesto, Ceres, Turlock, and Unincorporated Stanislaus County Communities and Areas

Jurisdiction	2015	2020	2025	2030	2035	2040	2045	2050	Change (2015–2050)	
									Number	Percent Change
Modesto	210,341	220,865	232,622	244,662	256,545	268,176	279,460	290,555	+80,214	27.6
Del Rio	1,329	1,396	1,471	1,549	1,625	1,699	1,771	1,842	+513	27.8
Salida	14,764	15,978	17,335	18,724	20,095	21,437	22,739	24,019	+9,255	38.5
Empire	4,394	4,630	4,893	5,163	5,429	5,689	5,942	6,190	+1,796	29.0
Grayson	983	1,019	1,059	1,099	1,139	1,179	1,217	1,254	+271	21.6
Turlock	72,229	76,475	81,219	86,077	90,872	95,564	100,117	104,594	+32,365	30.9
Ceres	48,029	51,049	54,424	57,879	61,290	64,628	67,866	71,050	+23,021	32.4
Unincorporated Stanislaus County*	N/A	117,807	N/A	125,879	N/A	141,627	N/A	N/A	+23,820	16.8
Totals	**N/A**	**489,219**	**N/A**	**541,032**	**N/A**	**599,999**	**N/A**	**N/A**	**--**	**--**

*Source: StanCOG 2016; *Stanislaus County 2016b*

Empire

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 into 2050 (StanCOG 2016). Empire's most common age group in 2015 was 25 to 34 years, which accounted for an estimated 15.4 percent of the entire population. People from ages 35 to 44 years accounted for the second largest percentage of the population at an estimated 12.5 percent (U.S. Census Bureau 2015c).

Grayson

Grayson is an unincorporated community in Stanislaus County (Stanislaus County 2016b). Grayson had an estimated population of 983 in 2015, and is projected to increase by approximately 271 persons by 2050 (StanCOG 2016). The most populous age group within this community was people from 25 to 34 years of age in 2015, accounting for an estimated 25.3 percent of the total population. (U.S. Census Bureau 2015d).

Turlock

The total population in the City of Turlock was estimated at 72,229 persons in 2015, an increase from an estimated population of 68,549 in 2010 (Stanislaus County 2016b). In 2015, the most populous age group within the City was people between 25 and 34 years of age (14.3 percent). The second most populous group was people between 35 and 44 years of age (13.3 percent) (U.S. Census Bureau 2015e). Population counts as of 2016 were estimated at 72,796 (U.S. Census Bureau 2016).

Ceres

The City of Ceres had an estimated population of 47,754 as of January 2017 (DOF 2017). The City's projected population for the year 2050 is projected to increase from the current population by an estimated 23,021 persons (StanCOG 2016).

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 was 0.54, with 68,086 employed jobs to just 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. **Table 15-2** shows housing unit growth trends for following cities and/or communities from 2015 to 2050: Modesto, Del Rio, Salida, Empire, Turlock, Grayson, and Ceres.

Table 15-2. Housing Unit Growth in Modesto, Ceres, Turlock, and Unincorporated Stanislaus County Communities (2015–2050)

City	2015	2020	2025	2030	2035	2040	2045	2050	Change (2015–2050)		
									Numerical	Percent Change	Average Annual Percent Change
Modesto	72,897	77,383	81,861	86,253	90,184	94,105	97,742	101,314	+28,417	28.0	+0.8
Del Rio	512	544	576	607	635	663	689	714	+202	28.2	+0.8
Salida	4,298	4,730	5,161	5,584	5,962	6,340	6,690	7,034	+2736	38.9	+1.1
Empire	1,287	1,371	1,456	1,539	1,614	1,688	1,756	1,824	+537	29.4	+0.8
Grayson	260	271	283	294	304	314	324	333	+73	21.9	+0.6
Turlock	24,251	26,001	27,748	29,462	30,996	32,526	33,945	35,338	+11,087	31.3	+0.9
Ceres	13,577	14,624	15,670	16,695	17,613	18,528	19,377	20,211	+6,634	32.8	+0.9
Totals	**117,082**	**124,924**	**132,755**	**140,434**	**147,308**	**154,164**	**160,523**	**166,768**	--	--	--

* Housing unit estimates in 2015 by the U.S. Census Bureau and by the Stanislaus Council of Governments (StanCOG) (see table 15-2) differ slightly. However, the U.S. Census Bureau gives their estimate a margin of error of +/-84, which contains StanCOG's estimated count of 1,351 (U.S. Census Bureau 2015c; StanCOG 2016). 2015 housing unit estimates from StanCOG were used in Table 15-2 in order to maintain consistency with the document's projected forecast values.

Source: StanCOG 2016

Modesto

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 (DOF 2017).

Del Rio

The community of Del Rio is considered to be an upscale community within Stanislaus County. This community has a potential dwelling capacity of 156 units that can be built on the available vacant parcels (Stanislaus County 2016b). As of 2015, there were approximately 630 total housing units with a margin of error of +/-131 within the community, all of which are occupied (U.S. Census Bureau 2015f).

Salida

The community of Salida is considered to have a diverse mix of residential land uses and housing types with a wide range of prices (Stanislaus County 2016b). In 2007, the County's general plan included a new Salida Community Plan, which projected a residential buildout of a total of 5,000 new dwelling units. 2,754 of these units would be Low Density, while 1,306 would be Medium Density and 940 for Medium-High Density. Medium-Density lot sizes would be between 2,000 and 3,000 square-feet compared to the County's traditional minimum of 6,000 square-feet. This would allow the community to accommodate a greater capacity of small-lot single-family dwelling units (Stanislaus County 2016b). During the economic housing crisis, 1 in every 724 dwelling units was considered to be in an active state of foreclosure (Realtytrac 2014 as cited in Stanislaus County 2016b). This crisis particularly affected the implementation of the Salida Community Plan, resulting in a temporary hold on development until the economic climate improves (Stanislaus County 2016b).

Empire

The Community of 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% (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).

Grayson

The Community of Grayson had a total of 260 housing units in 2015 with a projected growth of 73 additional units through 2050 (StanCOG 2016).

Turlock

The City of Turlock had a total of 24,896 housing units as of January, 2017. Out of these homes, 23,165 were occupied, resulting in a vacancy rate of 7.0 percent (DOF 2017). Housing growth projections estimate an 11,087-unit increase to 35,338 by 2050 (StanCOG 2016).

Ceres

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).

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 15-3** presents a more in-depth projection of employment numbers for the County between 2015 and 2040.

Table 15-3. 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	236,749
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 2016a

Unincorporated Stanislaus County

Total employment in the unincorporated portions of Stanislaus County, which includes the communities of Del Rio, Salida, Grayson and Empire, was approximately 68,086 employees in 2010. This number increased by 4,439 employees by 2015, reaching 72,525 total employees. Growth projections predict that employment numbers will continue to increase through 2040, reaching 94,721 total employees by 2040. Based on these projections, the projected annual percent increase in employment is 2.8, or approximately 634 employees per year, up to 2040 (City of Modesto 2017a).

Modesto

Employment numbers for the City of Modesto totaled approximately 56,000 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 jobs in the City, while production and transportation account for 15.5 percent (2013 U.S. Census as cited in City of Modesto 2017a).

Turlock

The City of Turlock's most recent total employment count was approximately 28,635 employed persons as of 2013, accounting for approximately 14.1 percent of employment within Stanislaus County. The City's major sectors of employment in 2013 were health care and social assistance, accounting for an estimated 15 percent of the City's workforce, manufacturing (13 percent), retail/trade (12 percent) and educational services (12 percent). In total, these sectors accounted for approximately 40 percent of the total jobs in Turlock (2013 American Community Survey, as cited in City of Turlock 2016). The City's unemployment rate reached a 10-year high in 2010 at 13.3 percent, but have slowly dropped off since then. In 2014, the unemployment rate was recorded at 10.1 percent (U.S. Bureau of Labor Statistics as cited in City of Turlock 2016).

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, Turlock, Ceres and Stanislaus County's housing and employment data. The evaluation is based on the Proposed Program's effects on housing and population in Modesto, Turlock, Ceres, Grayson, Del Rio, 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 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 Population Growth, Both Directly and Indirectly, during Construction (*Less than Significant*)

WMP improvements would not directly or indirectly induce substantial population growth during construction. Construction of each improvement would be temporary and the overall implementation of the WMP would be phased over a period of 35 years. As described in Section 15.3, *Environmental Setting*, 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 (*Less than Significant*)

The Proposed Program involves construction of various CIPs in the cities of Modesto, Turlock, and Ceres, and in communities and areas of unincorporated Stanislaus County. The locations of all wells, booster pump stations and storage tanks have not been finalized, but the City would generally avoid using sites with existing housing for its proposed CIPs. In addition, due to the relatively small number of proposed well or tank CIPs, the extended period over which these CIPs might be constructed, and the available vacant housing in the Program vicinity, even if removal of housing were required, construction of these facilities would not displace a substantial number of people or housing.

Proposed future or buildout pipelines and existing system pipeline improvements would occur within the limits of city or County right-of-way boundaries to the extent feasible. 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, and crews may close one lane of traffic temporarily during pipeline installation if needed. 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*.

For these reasons, it is unlikely that the construction of the Proposed Program's infrastructure would be built on lands with substantial housing units or result in the displacement of substantial numbers of people or houses. As a result, this impact would be **less than significant.**

Impact PH-3: Long-term Inducement of Substantial Population Growth, Both Directly and Indirectly (*Less than Significant with Mitigation*)

As noted above, the Proposed Program includes upgrading the City's groundwater treatment, and water storage and distribution systems to provide improved water service to the City's contiguous and outlying service areas. The Program would not directly induce growth as it does not entail construction of new housing. However, by upgrading the treated water distribution system to deliver more water, it 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, such growth could not occur without the proposed water system 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). Population growth is also projected in the cities of Turlock and Ceres as well as the unincorporated communities of Del Rio, Salida, Grayson, and Empire. The contiguous service area projections are presented in **Table 15-4** (City of Modesto 2017b).

Based on the estimates provided above, the total population increase within the total contiguous and outlying service areas is estimated to increase by 134,407 people between 2015 and 2050 (City of Modesto 2017b). This accounts for all growth within all of the cities and communities where the Proposed Program improvements will be made.

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, and energy.

Growth-inducing and secondary impacts are addressed by the policies of general plans and community plans of Stanislaus County, Modesto, Del Rio, Salida, Empire, Turlock and Ceres. 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 and community plans mitigate for impacts through advanced planning and the implementation of growth management strategies, the provision of adequate public services and utilities such as treated water distribution, wastewater collection, and the protection of open space and habitat areas.

In conclusion, proposed improvements to the City's water distribution and storage system would remove an obstacle to urban development and population growth within the Program 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 and community plans, in particular Policy No. V.C.4[b], 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 be required to comply with CEQA, which may result in additional mitigation for growth and its effects. For these reasons, this impact is considered **less than significant with mitigation**.

Table 15-4. Projected Population for the City's Water Service Area

Year	Contiguous Service Areas				Outlying Service Areas				Total Contiguous Service Area[1]	Total Contiguous and Outlying Service Areas[2]
	City of Modesto	Salida	Empire	North Ceres (Bystrom)	Del Rio	Ceres (Walnut Manor)	Grayson	Turlock (Portions)		
2015	218,375	13,750	4,189	4,008	1,021	154	960	1,146	255,906	259,187
2020	232,943	14,667	4,189	4,008	1,233	154	996	1,146	271,392	274,920
2025	248,483	15,646	4,189	4,008	1,444	154	1,032	1,146	287,910	291,686
2030	265,060	16,690	4,189	4,008	1,656	154	1,068	1,146	305,531	309,555
2035	282,743	17,803	4,189	4,008	1,868	154	1,104	1,146	324,327	328,599
2040	301,605	18,991	4,189	4,008	2,079	154	1,140	1,146	344,377	348,896
2045	321,726	20,258	4,189	4,008	2,291	154	1,176	1,146	365,765	370,352
2050	343,189	21,609	4,189	4,008	2,502	154	1,212	1,146	388,579	393,594

Notes:

[1] The Total Contiguous Service Area population includes the population of the contiguous communities shown above as well as the populations of Bret Harte, Shackelford, and West Modesto, which are county areas served by the City. The Bret Harte, Shackelford, and West Modesto communities are built out and have populations, respectively, of 5,152, 4,750, and 5,682.

[2] The Total Contiguous and Outlying Service Area populations includes the contiguous and outlying service area populations of the communities shown above as well as the additional communities Bret Harte, Shackelford, and West Modesto in the contiguous service area.

Source: City of Modesto 2017b.

Chapter 16
TRANSPORTATION

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 are described; and the 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 2019a) and EIR (City of Modesto 2019b);
- *Stanislaus County General Plan* (Stanislaus County 2016);
- *Ceres General Plan 2035* (2018);
- *Turlock General Plan* (2012); 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 (Fehr & Peers, pers. comm., 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	3,920	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	2,1900	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.

Source: Fehr & Peers, pers. comm., 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

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.

City of Modesto Urban Area General Plan

The *City of Modesto Urban Area General Plan* (City of Modesto 2019a) 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)

Del Rio Community Plan

The *Del Rio Community Plan* (Stanislaus County 1992) includes a goal (Goal 3) that further development in the Del Rio area should be planned to ensure that adverse effects on transportation and circulation are appropriately mitigated.

Salida Community Plan

The *Salida Community Plan* (Stanislaus County 2007) does not include any goals or policies related to transportation and traffic.

Ceres General Plan 2035

The *Ceres General Plan 2035* (2018) includes the following goals and policies related to transportation and traffic:

Goal 3.A Provide for the long-range planning, development, and maintenance of the city's roadway system to ensure the safe and efficient movement of people and goods through a variety of travel modes.

Policies

3.A.1 Multi-Modal Network. Provide for a comprehensive, integrated transportation network in accordance with the functional classification system described in this chapter and reflected in the Circulation Diagram with infrastructure and design that allows safe and convenient travel along and across streets for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility.

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.

Goal 3.B Maintain acceptable multi-modal travel flow along Ceres' major corridors.

Goal 3.C Protect residential areas from high-volume and high-speed traffic and its effects and promote bicycling and walking on residential streets.

Goal 3.E Promote provision of safe and efficient transit service to reduce congestion, improve the environment, and provide viable non-automotive means of transportation within and connecting to Ceres.

Goal 3.F Provide a safe, comprehensive, and integrated system of facilities for non-motorized transportation.

City of Turlock General Plan

The *City of Turlock General Plan* (2012) includes the following policies related to transportation and traffic.

Guiding Policies

5.2-a A safe and efficient roadway system. Promote a safe and efficient roadway system for the movement of both people and goods.

5.3-c Develop a safe and efficient non-motorized circulation system. Provide safe and direct pedestrian routes and bikeways between places.

5.4-a Promote safe, efficient, and convenient public transportation. Promote the use of public transportation for daily trips, including to schools and workplaces, as well as other purposes.

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 Government's (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

The proposed WMP components would occur within or along numerous roadways within Modesto and the outlying areas served by the City of Modesto, such as Del Rio, Grayson, and Turlock. Modesto is a densely developed urban area. Outlying areas are typically dominated by agricultural land uses. Regional transportation access is provided by Highway 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.

Roadway capacities vary within the study area, from small residential streets to collectors to arterials. Program components would not be constructed within freeways. 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
Roselle	Claratina to Sylvan	Rural	2	13,800	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
Briggs-more	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
Maze	Carpenter to Emerald	Arterial	2	11,800	E
Crows Landing	7th Street to SR 99	Arterial	2	13,700	E
Carpenter	Paradise to Hatch	Collector	3*	19,200	E
Hatch	Crows Landing to Jim Way	Collector	3*	17,600	E

* 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 2019b

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.

16.4 Impact Analysis

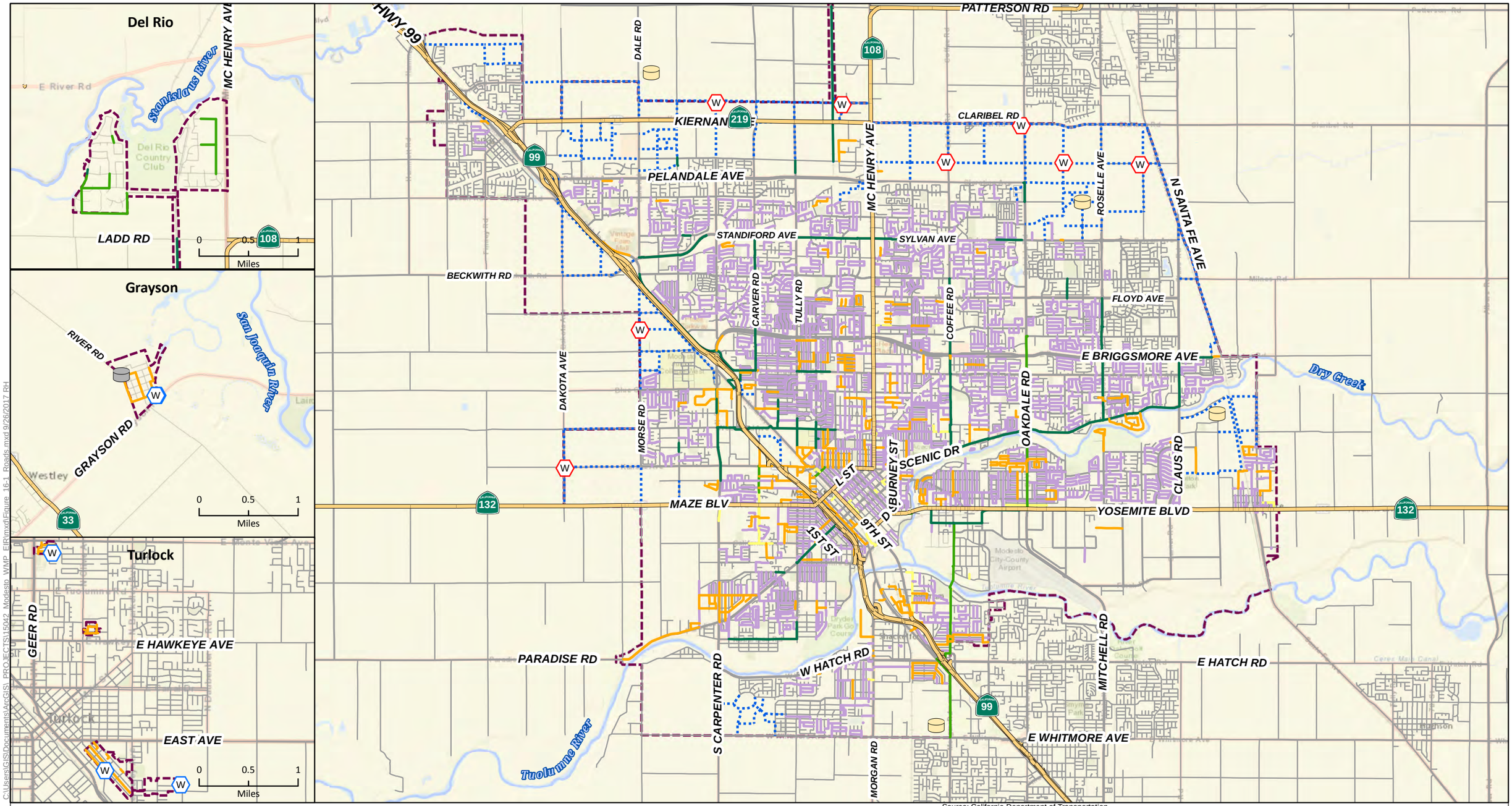
16.4.1 Methodology

Because specific construction details related to individual CIPs are not yet available, construction-related impacts to transportation and traffic were evaluated qualitatively based on consideration of ways in which construction of the Proposed Program components could affect existing roadway operations and LOS. 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.



Source: California Department of Transportation

N

0 0.5 1 2
Miles

Horizon WATER and ENVIRONMENT

Proposed Components for Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

Other Features

- Major Roads
- Roads
- WMP Study Area

Figure 16-1
Roads and Highways in the Proposed Program Vicinity

City of Modesto
Water Master Plan EIR

C:\Users\GIS\Documents\ArcGIS_PROJECTS\15042_Modesto_WMP_EIR\mxd\Figure_16-1_Roads.mxd 9/26/2017 RH

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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 water distribution and storage 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 an Applicable Plan, Ordinance, or Policy Establishing Measures of Effectiveness for the Performance of the Circulation System (*Less than Significant*)

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 water infrastructure, to address existing needs and accommodate future growth in the City and in outlying areas served by the City's water storage and distribution system. Please refer to Impact PH-3 in Chapter 15, *Population and Housing*, for a 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, and would not change substantially compared to existing conditions.

During construction of individual components, the Proposed Program would temporarily increase traffic and congestion in the immediate area of the construction. 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.

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 City's Standard 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) 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 effects 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**.

Impact TR-2: Conflict with an Applicable Congestion Management Program (*Less than Significant*)

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 improvements 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 components would primarily be limited to routine operation and maintenance trips to facilities by City staff, and would be similar to existing conditions. As such, the Program components would not substantially affect existing LOS or conflict with objectives, policies, or performance standards in the CMP for Stanislaus County.

During construction of individual Program components and depending on their location and nature, some components could result in temporary congestion and traffic. Trenching within the roadway for new water pipelines 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 new water storage tanks, groundwater wells, and other proposed facilities may marginally affect existing traffic conditions.

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 temporary construction impacts from the Program improvements. Therefore, this 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 water 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 fire flow and distribution pipelines), 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., new water storage tanks), 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*)

Program components would not permanently alter any roadways, bicycle lanes, sidewalks, or other non-motorized transportation facilities. Many of the Program improvements would be buried underground (e.g., water pipelines). Where features would be built above-ground, these features would be on parcels out of the road right-of-way.

Construction of Program improvements could temporarily interfere with bicycle, pedestrian, and transit vehicle movement (e.g., from trenching for installation of facilities) 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 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, this 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, services, and energy resources from the Proposed Program. Resources used to prepare this section include information and regulations from applicable local planning documents and from the various utility service providers, as referenced below:

- The Stanislaus County (2016), City of Modesto (2019), City of Ceres (2018), and City of Turlock (2012) General Plans;
- The Del Rio (Stanislaus County 1992) and Salida (Stanislaus County 2007) Community Plans;
- City of Modesto 2015 *Urban Water Management Plan* (City of Modesto 2016, prepared by West Yost Associates); and
- State and local 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 an even more ambitious goal of 75 percent recycling, composting, or source reduction of solid waste by 2020 called AB 341. 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 2017a).

SB 610

Senate Bill 610 amended state law in order to improve the link between water supply availability information and land use decisions made by cities and counties. Along with SB 221, this bill sought

to promote more collaborative planning between local water suppliers and cities and counties. Under SB 610, water assessments for certain projects, as defined in Water Code 10912[a] and subject to the CEQA, must be furnished to local governments for inclusion in any environmental documentation. The Proposed Program would not be considered a "project" under the applicable criteria for SB 610 (as defined in Water Code section 10912), which define residential, commercial, or industrial projects that would be required to comply with SB 610 based on their land use types, building sizes, areas of development, water use demands, and/or employee quantities (DWR 2003). Therefore, SB 610 would not be applicable to the Proposed Program, although it could be required for projects which use the water that would be provided by the Proposed Program.

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, prepare an urban water management plan (UWMP). 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. UWMPs must be submitted to DWR for approval every five 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.

Water Conservation Act of 2009

The Water Conservation Act of 2009 (SB X7-7 2009) requires all water suppliers to increase water use efficiency by reducing per capita urban water use by 20 percent by December 31, 2020. In order to achieve this goal, the state established an incremental benchmark goal of reducing water use by 10 percent by December 31, 2015. Based on this goal, each urban retail water supplier would be required to develop long-term and interim urban water use targets. Agricultural water suppliers would be required to implement efficient water management practices. Under this bill, the DWR, in consultation with other state agencies, developed a single standardized water use reporting form for use by urban and agricultural water agencies. As a response to a multi-year drought that affected California between 2012 to 2017, a series of Executive Orders were enacted to further limit water usage. Executive Order B-40-17 was enacted on April 7, 2017 and is the latest of such orders (DWR 2017). This order effectively ended the drought state of emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. For these counties, emergency drinking water projects would continue to help address diminished groundwater supplies. Water reporting requirements and prohibitions on wasteful practices would continue to be enforced as well (DWR 2017).

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* (2019) 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, operate, maintain, and replace water infra-structure 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.

City of Modesto Rebate Programs

Currently, the City of Modesto Utilities Department offers a number of water rebate programs for its customers. Among these programs are the following (City of Modesto N.D.):

- **Drip Irrigation Rebate Program** – customers may be eligible for a rebate when they convert their existing overhead spray system to Drip Irrigation or install a Drip Irrigation system in an existing garden bed.
- **High-Efficiency Clothes Washer Rebate** – customers in single and multi-family homes may be eligible for a rebate when they replace their old clothes washer with a new high efficiency clothes washer.
- **High-Efficiency Toilet Rebate** – customers in single and multi-family homes may be eligible for a rebate when they replace their old high-water use toilets.

- **Turf Replacement Program** – customers may be eligible for a rebate when they replace their grass with polyethylene/nylon artificial turf products or any qualifying drought tolerant landscape products.
- **High Efficiency Sprinkler Nozzles Rebate Program** – customers may be eligible for a rebate when they upgrade from their old conventional spray head sprinklers to the High Efficiency Sprinkler Nozzles.
- **Rain Barrel Rebate Program** – customers may be eligible for a rebate when they purchase and install an approved Rain Barrel.
- **Smart Irrigation Controller Rebate Program** – customers may be eligible for a rebate when they upgrade or purchase a new smart irrigation controller.

Del Rio Community Plan

The Del Rio Community Plan (Stanislaus County 1992) provides goals, policies, and recommendations for future development. The plan is considered part of the Stanislaus County General Plan. Areas of development such as drainage/flood control, water, sewer, utilities, and other services throughout the community are addressed in this Community Plan. The following regulations would apply to the Proposed Program:

Drainage/Flood Control

"It is desired that all future development within the Del Rio Community Plan (DRCP) area include curb and gutters that connect to adequate development wide drainage systems."

Sewer

"No future developments within the DRCP area shall use septic systems for treatment of sewage."

Utilities

"All further development in the DRCP area shall incorporate below ground utilities exclusively."

Salida Community Plan

The Salida Community Plan (Stanislaus County 2007), which was incorporated in the *Stanislaus County Plan,* identifies the following requirement related to utilities:

Water Supply

"An adequate water supply must be secured and demonstrated for development in accordance with applicable law."

Ceres General Plan 2035

The *Ceres General Plan 2035* (City of Ceres 2018) establishes the following goals and policies related to utilities:

Stormwater Drainage

Goal 6.F: Collect and dispose of stormwater in a manner that minimizes inconvenience to the public, reduces burden on existing stormwater facilities, encourages groundwater recharge, minimizes potential water-related damage, and enhances the environment.

> **6.F.4 New Development Stormwater Mitigation.** Require new development to mitigate increases in stormwater peak flows and/or volume. Mitigation measures, such as low impact development (LID) strategies, should take into consideration impacts on adjoining lands in the city and immediately adjacent to the city in unincorporated Stanislaus County.
>
> **6.F.5 Drainage System Design.** Design all drainage systems to be in accordance with the accepted principles of civil engineering, the adopted Storm Drainage Master Plan, and adopted storm drainage design standards and specifications.
>
> **6.F.7 Grading.** Require appropriate mitigation, such as temporary mulch or revegetation, for grading activities during the rainy season to avoid sedimentation of storm drainage facilities.
>
> *See Municipal Code Chapter 13.18.120.*

Solid Waste Collection and Disposal

Goal 6.G: Ensure the safe and efficient disposal, composting, or recycling of solid waste generated in Ceres.

> **6.G.1 Waste and Recycling for New Development.** Require waste and recycling collection in all new development, and require that all new development complies with applicable provisions of the City of Ceres Source Reduction and Recycling Element and the Stanislaus County Integrated Waste Management Plan.

City of Turlock General Plan

The *City of Turlock General Plan* (City of Turlock 2012) does not identify any goals or policies related to utilities for the Proposed Program.

17.3 Environmental Setting

17.3.1 Water

Water Supply

The City of Modesto is the primary domestic water purveyor in Stanislaus County, serving not only the City of Modesto, but also Salida; Ceres (Walnut Manor); Grayson; Del Rio (Hillcrest); and

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 a 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 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 community 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 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 Chapter 18, *Other Statutory Considerations,* 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**, below, 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 supplies 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. With the expansion of the MRWTP with an additional 30 mgd of capacity to help meet demand north of the Tuolumne River, available surface water supply provided by MID increased to 67,204 af/yr (60 mgd) and became the primary water supply for the City of Modesto. By 2035, the surface water supply purchased from MID is projected to reach 67,200 af/yr (MID 2011).

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).

Groundwater management requirements of state regulations, specifically the Sustainable Groundwater Management Act, are discussed in Chapter 12, *Hydrology and Water Quality*.

Water Demand

City of Modesto 2015 Urban Water Management Plan

The *2015 Urban Water Management Plan* (City of Modesto 2016) 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**. below 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.

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 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 (City of Modesto 2016).

Water Treatment Facilities

The water treatment facility that operates within the City of Modesto is the MRWTP owned and operated by the Modesto Irrigation District. Water is supplied to the plant through the Modesto Reservoir, which receives its water from the Tuolumne River. In 2016, MID completed Phase II of

this plant, which expanded the existing facility with an additional 30 million gallons per day (mgd) for a total annual average of up to 60 mgd (MID 2017c).

17.3.2 Wastewater

Modesto's wastewater collection system conveys wastewater from residential, commercial, and industrial customers in its service area to treatment plants. 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 R5-2012-0031, NPDES No. CA0079103), discharge of secondary treated wastewater to the San Joaquin River is only allowable between October and May until the year 2018. 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). In June and July 2019, the City circulated a Draft Environmental Impact Report for its Wastewater Master Plan, which defines the City's long-term wastewater collection and treatment needs and guides management of its wastewater collection and treatment system through proposed improvement projects for the City's wastewater systems.

Additional wastewater utility providers in the study area include:

- Salida Sanitary District serves the Salida area, with a wastewater treatment plant capacity of 2.4 mgd.
- City of Ceres operates and maintains the City's 2.7+ mgd Wastewater Treatment Plant and Wastewater Collection System, including 190+ acres of percolation - evaporation basins and grounds, 14 lift stations and 133 miles of pipeline within the collection system.
- Grayson Community Services District was formed in 1969, and provides street lighting and sewer services to the residents.

- The Turlock Regional Water Quality Control Facility provides tertiary treatment of wastewater from the City of Turlock, Ceres and the community service districts of Keyes and Denair.

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 2007). The retention pond does not discharge to the Stanislaus River (Stanislaus County 2007). Stormwater needs in the small Grayson community is primarily provided by roadside percolation but some areas include storm drainage pipes and a detention basin that discharges to the San Joaquin River (Stanislaus County 2007). The condition of these facilities is good (Stanislaus County 2007). 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 storm water catch basins and a total of 102 miles of storm drain pipe (City of Turlock 2003). Ultimately, storm water percolates down to recharge the groundwater or flows to the San Joaquin River.

17.3.4 Solid Waste

In 2015, the City disposed of 104,468 tons of solid waste (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).

Solid waste is managed by Turlock Scavenger for the Program outlying service areas located in the City of Turlock. Turlock Scavenger provides residential, commercial, and industrial solid waste,

recycling, and green waste collection services to the City of Turlock and adjacent portions of Stanislaus County. They also operate a public recycling buyback and processing facility.

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 I-5 near the town of Crown Landing, where it receives solid waste from all of the cities and unincorporated areas within the county.

Categorized as a Class II and III landfill for nonhazardous municipal solid waste, its maximum permitted throughput is 2,400 tons per day. It had 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 2017b). The landfill is currently considering alternatives for facility expansion, which would extend the closure date to approximately 2030.

As noted above, the solid waste programs operated by Modesto and Turlock include recycling programs; Stanislaus County operates a similar program. These include curb-side recycling and operation of recycling centers throughout their various jurisdictions within the Program area. There are also several private recycling companies that are not affiliated with those who have specific contracts with the cities or counties.

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 Proposed Program area.

17.4.2 Criteria for Determining Significance

The Proposed Program would result in a significant impact on utilities and service systems and energy resources if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

- Require or result in the construction of new 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 storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Comply with federal, state, and local statutes and regulations related to solid waste.

The second criterion listed above is not applicable because construction of new and upgraded water infrastructure services is the primary subject of this DEIR and the environmental effects of the Proposed Program are described throughout this document. In addition, the Proposed Program would not directly result in any wastewater discharges that would require additional wastewater facilities; temporary portable wastewater facilities would be used during construction activities, and temporary pipeline flushing wastewater volumes would be negligible. Indirect/growth-related impacts on water or wastewater infrastructure from the Proposed Program are addressed in Chapter 15, *Population and Housing*. Therefore, this criterion does not require further discussion in this chapter.

The fifth criterion listed above is not applicable because the Proposed Program's water infrastructure improvements would not result in any permanent wastewater discharges. Some wastewater may be discharged to the local wastewater treatment system or stormwater system during construction activities as part of the required pipeline flushing activities. However, these activities would not be conducted without the City's or other local agency's pre-authorization as described in Chapter 2, *Program Description*, and, as such, would not exceed the wastewater treatment provider's capacity. Therefore, this criterion does not require further discussion in this chapter.

17.4.3 Environmental Impacts

Impact UTL-1: Exceed Wastewater Treatment Requirements of the Applicable Regional Water Quality Control Board (*Less than Significant*)

The Proposed Program would result in the construction of infrastructure to address the City's existing and future water system deficiencies. These improvements would replace and repair aging water storage and distribution system infrastructure or ensure adequate water infrastructure to accommodate growth in the City's service area. Construction activities for the Proposed Program would require the disinfection and flushing of newly constructed pipelines,

and other water facilities (tanks/wells) prior to connection to the existing system and operation of the new facilities. Disinfection activities would involve heavily chlorinating the water in the water facilities (tanks/pipelines), and then flushing it and dechlorinating the water. De-chlorinated water from the disinfection and flushing tank and pipeline processes would be discharged to the City's, or, for the outlying service areas, other local agencies' storm drainage systems or wastewater collection systems. As a result, this flushed water would not contain chemicals or pollutants such that it would affect the local agency's ability to comply with its applicable stormwater NPDES permit or the wastewater treatment processes or requirements. (Specific permitting requirements for the City and outlying service areas are further described in Chapter 12, *Hydrology and Water Quality*.) Operation of the Proposed Program would not directly require wastewater treatment. Based on this information, any change in the quantity or quality of wastewater caused by the Proposed Program would be accommodated by the City's wastewater system and would not result in a violation of any wastewater treatment or discharge requirements. As a result, this impact would be **less than significant.**

Impact UTL-2: 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 result in the construction of new water storage tanks, booster pump stations, groundwater wells and new water main pipelines. These improvements would require site preparation activities such as clearing, grubbing and trenching, which would result in excavated soil that has the potential to be washed into the City's stormwater drainage system. As discussed 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. As a result, new facilities or expansion of existing stormwater facilities would not be required.

The construction of the storage tanks and booster pump stations would result in the construction and operation of new impervious surfaces that would lead to a small degree of runoff. While some on-site stormwater drainage may be needed for these facilities, given the relatively small scale of the storage tanks and booster pump stations, the environmental effects of constructing any new stormwater drainage facilities would be minimal. Furthermore, the operation of this new infrastructure would not significantly contribute to runoff. As a result, this impact would be **less than significant.**

Impact UTL-3: 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 activities. Construction crews would likely use publicly available recycled water for most construction uses throughout the various construction phases. As a result, construction of proposed improvements would not substantially affect local water supplies.

The Proposed Program involves the construction and operation of water system infrastructure as well as the implementation of water management programs. The Proposed Program's water infrastructure would not require any new or expanded water supply entitlements. In addition, the

Proposed Program would result in a beneficial impact on the City's overall ability to use existing water supply entitlements to meet existing and future water demands, as discussed further below.

Operation of the Proposed Program would enhance the use of available, existing water supply entitlements by improving the City's water system infrastructure to accommodate increased surface water supplies from the MRWTP's Phase II, and by implementing groundwater management programs and infrastructure. The Proposed Program's groundwater management activities, groundwater aquifer storage and recovery (ASR) program, proposed wellhead treatment activities, and construction of replacement and new wells would allow for use of the existing groundwater supply entitlements by the City. This would alleviate pressure on the need to expand the City's water supply entitlements. Additional or new water supply entitlements would not be required to support the operation of the Proposed Program's facilities. As a result, there would be **no impact.**

Impact UTL-4: 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). These practices can be found in 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 could 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 would be **less than significant**.

Impact UTL-5: 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 requirements, 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 (Impact AG-1)
- Involve Other Changes in the Existing Environment Which, Due to Their Location or Nature, Could Result in Conversion of Farmland to Non-agricultural Use (Impact AG-3)
- 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)
- 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 (Impact HYD/WQ-2)
- Cumulative Impacts on Agriculture (Impact CUM-2)
- Cumulative Impacts on Air Quality and GHG (Impact CUM-3)
- Cumulative Impacts on Hydrology and Water Quality (Impact CUM-6)

18.3 Growth Inducement

Section 15126.2(d) of the State CEQA Guidelines requires an EIR to include a discussion of a proposed project's 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 water service infrastructure as an obstacle to growth. Refer to Impact PH-3 in Chapter 15, *Population and Housing,* for a detailed discussion of the secondary effects of growth and direct 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 Program;
- 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.

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 both the Proposed Program and 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 that could be affected by the Proposed Program. In addition, regional or global conditions that might lead to cumulative impacts (e.g., greenhouse gas [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. GHG 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 is 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 the 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 Program 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 California Building Standards Code 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.
Hazards and Hazardous Materials	The Proposed Program's effects related to hazards and hazardous materials would be site-specific, temporary, and/or mitigated to a level that is less than significant. As described in Chapter 11, *Hazardous Materials,* City standards and policies require 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.

Resource Topic Not Discussed Further	Rationale
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 Program 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 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 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: 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 operational 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 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 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 outlying service areas	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 and outlying service areas, 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 the character of Modesto and its surrounding area. Other projects in the vicinity of Modesto and the outlying service areas that affect agricultural land, in combination with the Proposed Program, could result in cumulative effects.
Biological Resources	Modesto and the outlying water service areas 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 outlying service areas, as well as Stanislaus County as whole.
Cultural, Tribal, and Paleontological Resources	Modesto and the outlying service areas	Cultural, tribal, and paleontological resource impacts from the Proposed Program would be limited to the immediate area or footprint of the proposed components. Other projects in Modesto, the outlying service areas, and the vicinity that would disturb the ground surface could affect cultural resources (including tribal cultural resources) in a similar manner to the Proposed Program, potentially leading to significant cumulative impacts.

Resource	Geographic Scope	Explanation for the Geographic Scope
Hydrology and Water Quality	Immediate vicinity of Modesto and the outlying service areas, including adjacent 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 Modesto and the outlying service areas	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 Modesto and the outlying service areas	The Proposed Program would not add substantial numbers of vehicle trips over the long term. Therefore, the Proposed Program's impacts on transportation and traffic would primarily be limited to construction-related effects (i.e., temporary closures of up to one lane of traffic for installation of pipelines). Cumulative impacts could result if other nearby projects were to be constructed at the same time as the proposed components.
Utilities and Service Systems	Immediate vicinity of Modesto and the outlying service areas and regional landfills that may be used by the Proposed Program	The Proposed Program would improve water service within the City's service area and would not involve wastewater collection, conveyance, or treatment. The Proposed Program may require disposal of excavated and demolished material at a local landfill. Other projects in the Modesto area that may require disposal of large volumes of waste at a landfill, in combination with the Proposed Program, could 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, the 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 sufficiently comprehensive to be 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 Program 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: the Legion Park/Airport Area, the Gateway Parcel, Mancini Park, the Dryden Park Golf Course Area, and the Carpenter Road Area. The City is currently constructing recreational trails on the Gateway Parcel, which will establish a connection to the downtown corridor and existing pathways along the Tuolumne River (including those adjacent to Beardbrook Park and farther east toward the Modesto Airport). The new development on the Gateway Parcel includes a backwater channel, additional seating, an outdoor classroom, and a pedestrian bridge spanning the mouth of the channel on the bank of the Tuolumne River (Ortega pers. comm. 2017).	Overlaps Proposed Program study area

No.	Project Title	Brief Project Description	Distance from Program 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. An initial study was circulated in March-April 2017 (Stanislaus County 2016a).	Approximately 3.5 miles south of proposed future tank
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). The project has been approved but has not yet been constructed.	Overlaps Proposed Program 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.	Approximately 0.4 mile north of buildout pipeline
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 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). Following the resolution of legal challenges, construction began in early 2017 and will be completed in 2018.	Overlaps Proposed Program study area

No.	Project Title	Brief Project Description	Distance from Program 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 4.3 miles south of proposed future pipelines
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 stormwater basin and construction of an underground storage and percolation system, cold and/or dry storage, and pasteurization buildings. This project is currently undergoing CEQA review (Stanislaus County 2016b).	Overlaps Proposed Program 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 1.2 miles from proposed buildout pipelines
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 2016c).	Overlaps Proposed Program study area

No.	Project Title	Brief Project Description	Distance from Program 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).	Overlaps Proposed Program 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.	Approximately 2.7 miles east of proposed future pipelines
12.	Amendment to Planned Development 190	This project would amend Planned Development 190 for Lander Crossings commercial center to change the use on one parcel (1831 Lander Avenue) from a 12,000-square-foot retail building to a 93-room hotel. The approved use for Parcel 2 (1811 Lander Avenue) would also be amended from retail to additional parking to support the Lander Crossings commercial center.	Approximately 2.8 miles southwest of proposed fire flow improvement pipelines
13.	Sikh Temple Turlock	The project includes construction of a new two-story, approximately 21,000-square-foot building. The first floor of the building would consist of a dining area and kitchen, and the second floor would have a conference room, priest residence, and guest rooms. A six-foot-tall, externally illuminated monument sign is also proposed. The subject property is located at 1391 Fifth Street, Stanislaus County.	Approximately 0.5 mile southwest of proposed fire flow improvement pipelines
14.	Northwest Triangle Specific Plan	The Northwest Triangle Specific Plan was adopted in 1995 and was amended in 2004. This project would update the specific plan, which covers 800 acres, to re-designate six properties within the Specific Plan area. The General Plan designation will be amended for select parcels to Community Commercial from existing designations of Highway Commercial. For additional parcels, the designations will be changed from Community Commercial to Community Commercial/Medium Density Residential.	Approximately 1.2 miles west of proposed fire flow improvement pipelines

No.	Project Title	Brief Project Description	Distance from Program Area
		Minor updates will also be made to the Specific Plan to ensure consistency with the updated 2012 General Plan policies and current regulation. An Initial Study was adopted and the project was approved in May 2017.	
15.	Assyrian Pentecostal Church	The project involves construction of a 12,000-square-foot sanctuary building and a 13,000-square-foot multi-purpose building for the Assyrian Pentecostal Church. Many of the on-site improvements, such as the construction of the parking lot with 175 spaces, have already been installed as part a previously approved project. The new project would be developed in phases. The project would construct a smaller 9,854-square-foot multi-purpose building first, with the sanctuary to be constructed at a later date. Landscaping and other site improvements would be required in accordance with updated standards. An application for a time extension to a previously approved minor discretionary permit from the City of Turlock was received in August 2017.	Approximately 1.9 miles northwest of proposed fire flow improvement pipelines
16.	Turlock Assisted Care Center	The project is an approved licensed assisted living and memory care community, involving the construction of a two-story, 67,430-square-foot building that will include a total of 82 assisted living apartments. An existing oak tree will be retained and incorporated into the wandering garden. On-site and off-site improvements include landscaping, parking, commercial driveways, and two monument signs. A time extension for this project was granted in June 2017 by the City of Turlock.	Approximately 0.4 mile south of proposed fire flow improvement pipelines
17.	Sunburst Disease Plant	The project would develop an approximately 5-acre property for the new headquarters for a full-service agricultural laboratory. The project would include the construction of two buildings totaling 16,256 square feet that would house the offices and laboratories and six 4,900-square-foot greenhouses. The office and laboratory buildings would be connected with a covered walkway. The project applicant requested a time extension from the City of Turlock in August 2017 for this previously approved project.	Approximately 2.4 miles west of proposed fire flow improvement pipelines
18.	Super Store Industries	The Super Store Industries project consists of the development of three parcels totaling approximately 26 acres for the construction of a new processing plant, guard shack, and parking lot for Super Store Industries. The project would be constructed in two phases that would generally involve constructing two parking lots (total of 339 spaces) in Phase 1 within one year of project approval, and,	Approximately 2.1 miles west of proposed fire flow improvement pipelines

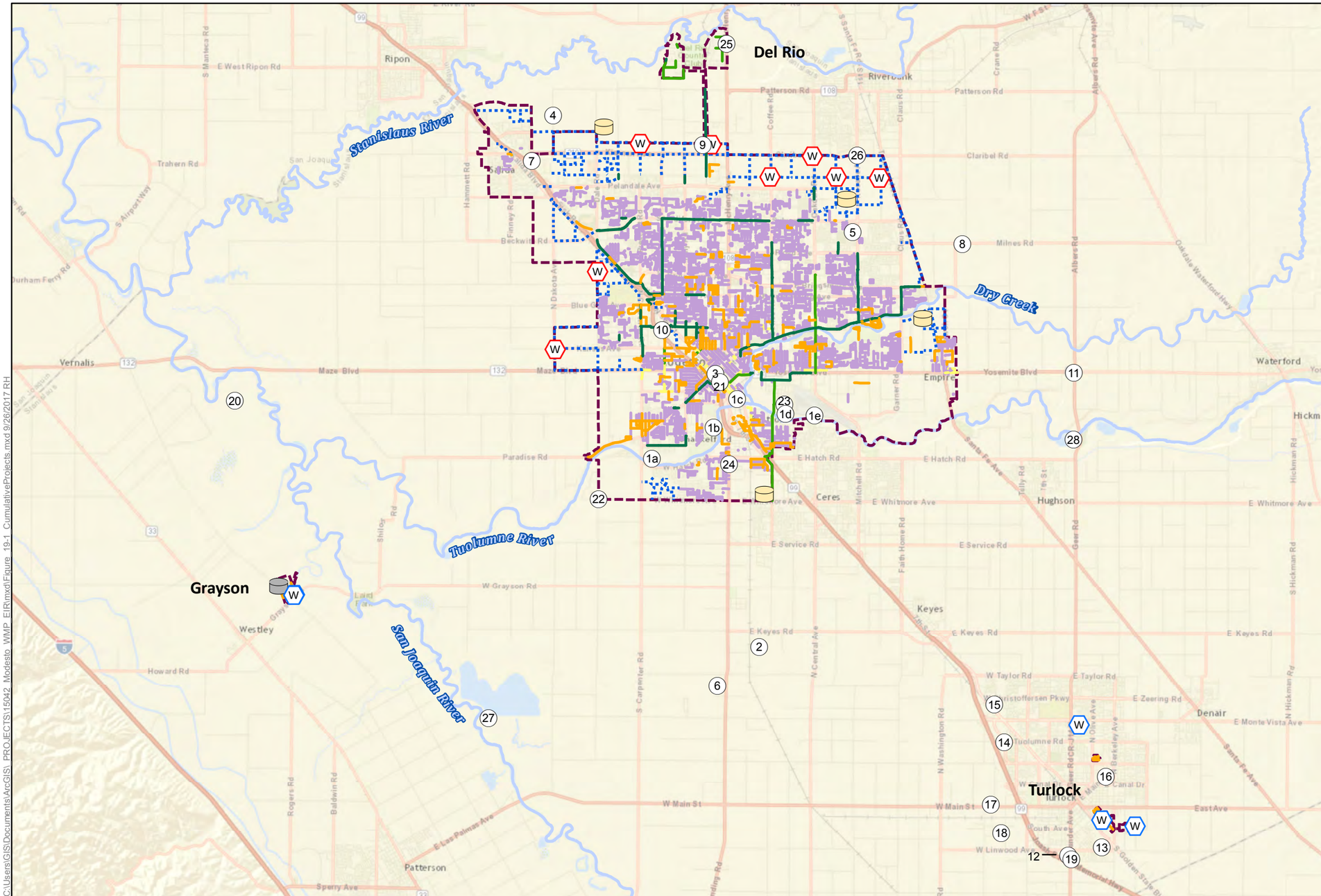
No.	Project Title	Brief Project Description	Distance from Program Area
		in Phase 2, constructing a 157,018-square-foot processing plant to connect to an existing 155,728-square-foot processing plant. The guard shack and truck scale will include an off-street stacking lane for incoming delivery trucks. The proposed project will be an expansion of the current facility, which makes packaged dairy and juice products, and will increase the production of the same packaged dairy and juice products. The facility currently operates 24 hours a day, seven days a week and will continue to do so with the new expansion. Both processing plants will operate with a total of 110 employees per shift and approximately 435 truck deliveries/ loadings per day. An Initial Study was completed and the City of Turlock approved the project in August 2017.	
19.	Century Chevron	The project would remove and reconstruct an existing convenience mart, fuel island, and detached car wash on an approximately 1-acre parcel. The new 5,312-square-foot convenience mart would be constructed on the southern portion of the property. A new 6-tank fuel island and canopy would be constructed in the same location as the existing fuel island. The existing fuel tanks would remain in place. A new freestanding drive-through car wash would be located on the eastern side of the property. A new freestanding price sign would be constructed. New exterior wall signs for the convenience mart, car wash, and fuel canopy would also be constructed. The project was approved by the City of Turlock in June 2017.	Approximately 1.9 miles southwest of proposed fire flow improvement pipelines
Public Works Projects			
20.	City of Modesto Wastewater Master Plan Update	The City of Modesto is in the process of updating and replacing its Wastewater Master Plan and EIR to guide management of its wastewater service system. The Wastewater Master Plan would include various Capital Improvement Projects collectively intended for system-wide implementation to increase sewer capacity, extend service to new development, replace and repair existing sewers, reduce infiltration and inflow of stormwater into the sanitary sewers, reduce flooding impacts at the Sutter Plant site, increase treatment process operational flexibility and efficiencies by constructing new primary treatment and solids handling facilities at the Jennings Plant, and removing primary treatment and handling facilities from the Sutter Plant. The City proposes to construct and operate numerous improvements to its collection system and upgrades to the Sutter and Jennings plants. These include collection system	Overlaps contiguous service area

No.	Project Title	Brief Project Description	Distance from Program Area
		and treatment plant CIPs located throughout the City's service area and unincorporated Stanislaus County.	
21.	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 (California Department of Transportation 2013).	Overlaps Proposed Program study area
22.	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).	Overlaps Proposed Program study area
23.	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 is scheduled to end in fall 2017 and 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 Proposed Program study area
24.	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).	Overlaps Proposed Program study area

No.	Project Title	Brief Project Description	Distance from Program Area
25.	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 will 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 shown as being in the design phase on the County's website as of August 2017 (Stanislaus County N.D.d).	Overlaps Proposed Program study area
26.	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 2016d).	Overlaps Proposed Program study area
27.	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 this project is currently underway and is anticipated to be complete by the end of 2017 (City of Modesto 2016).	Modesto Water Quality Control Facility discharge site is approximately 5.4 miles southeast of Grayson improvements

No.	Project Title	Brief Project Description	Distance from Program Area
28.	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.	The infiltration gallery, pump station, and water treatment plant would be located on the south bank of the Tuolumne River at Geer Road, approximately 3.9 miles southeast of the nearest CIP

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



Cumulative Projects

1a, TRRPMP - Carpenter Road Area
1b, TRRPMP - Golf Course Area
1c, TRRPMP - Gateway Parcel
1d, TRRPMP - Legion Park Area
1e, TRRPMP - Airport
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, Amendment to Planned Development 190
13, Sikh Temple Turlock
14, Northwest Triangle Specific Plan
15, Assyrian Pentecostal Church
16, Turlock Assisted Care Center
17, Sunburst Disease Plant
18, Super Store Industries
19, Century Chevron
20, City of Modesto Wastewater Master Plan Update (not shown – overlaps contiguous WMP study area)
21, California High-Speed Rail Passenger Station
22, Carpenter Rd. at Whitmore Ave. Intersection and Bridge Widening
23, Airport Neighborhood Sewer (Phase II)
24, Crows Landing Road Corridor Improvement Project
25, McHenry Avenue Widening Phase II
26, Claribel Rd. at Roselle Ave. Intersection Road Widening Project
27, North Valley Regional Recycled Water Program
28, Surface Water Supply Project

N

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Miles

Proposed Components for Existing Water System

- Tank
- Well
- Fire Flow Improvements
- Grid Improvements

Proposed New Water System Components

- Future Tanks
- Future Well Sites
- Build Out Pipelines
- Fire Flow Improvements
- Grid Improvements
- Strengthen and Replace

WMP Study Area

Cumulative Projects

Horizon WATER and ENVIRONMENT

Figure 18-1
Cumulative Projects

City of Modesto
Water Master Plan EIR

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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 2035. 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). (City of Modesto 2019).
Stanislaus County General Plan (2016f)	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 2016f). 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 2016e).
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 as part of Ceres through the year 2015. This area

Document	Summary
	is further divided into two phases of development to ensure orderly development and prevent premature conversion of agricultural lands.
City of Turlock General Plan (2012)	The General Plan governs all City actions relating to Turlock's growth and development. It is both a long-range vision and a guide to ongoing decision-making and near-term actions. The defined policies, maps, standards, and guidelines outline what actions must be implemented in order to accommodate population and employment growth over a 20-year time period. Guiding policies in each chapter are statements of vision and overall intent. There are approximately 8,730 acres in the current city limits (not including the County islands), and an additional 8,560 acres of land are contained within the Study Area outside of city limits. According to their General Plan Land Use designations, infill sites (those that are vacant or substantially underutilized) have a maximum capacity for approximately 5,000 new housing units. However, given site constraints, property owners' intentions, and other factors, it is likely that only a portion of these sites will actually develop over the next 20 years; an estimate is 60 percent (3,000 units). The remainder of the development needed to house Turlock's projected growth would be within new neighborhoods in master plan areas, several of which are outside of the current city limits. The WMP would affect North, Central, and South Turlock (see Figure 1-2), all of which are infill areas. Turlock has a number of unincorporated "County Islands," areas of unincorporated county land that are surrounded by incorporated Turlock on all sides. Generally, the county islands are not served by City infrastructure or services; some have no curb and gutter improvements and their roads are not maintained to City standards. Similarly, Stanislaus County is technically responsible for their public safety services. Turlock has an interest in incorporating the county islands and bringing their public infrastructure up to City standards, as this would help ameliorate public health and safety concerns. Turlock is in the process of negotiating a cost-sharing strategy with the County that would split the cost burden between the two jurisdictions.

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.

Agricultural 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 2015b). 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 2016f).

Cultural, Tribal Cultural, and Paleontological Resources

A number of cultural resources have been identified in the Modesto urban area, including four sites recorded at the Central California Information Center, 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 2016f), but none are located within the Proposed Program's outlying service areas. Paleontological resources have been found in the Modesto Formation of Stanislaus County. 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 also exist in the Modesto and Turlock Groundwater Sub-basins. 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) 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 33, 99, 132, 108, and 219, create elevated ambient noise levels in large portions of the Program 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 Program area include SR 33, 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 2016f). 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 2016f). 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 impact on wastewater and would not require the construction of new or expanded stormwater facilities or require new wastewater service. 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 northeastern Modesto, the Marketplace Shopping Center Project is planned within one mile of a new storage tank to be constructed under the Proposed Program. Residences and recreationists located in close proximity to these facilities may have views of both the new water storage tank and shopping center. 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 large scale of the new water storage tanks, 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.

Construction of Program components could adversely affect the visual quality and visual character of a particular site during construction, 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, could alter the visual landscape in the study area. However, with implementation of Mitigation Measure AES-2 to incorporate aesthetic considerations into the design of these components, 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 Important Farmland, to non-agricultural uses. Additionally, build out of the City of Modesto, Stanislaus County, City of Ceres, and City of Turlock 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 Prime Farmland or Unique Farmland to non-agricultural use associated with development of four storage tanks and six groundwater wells in the Program area.

Given the importance of agriculture to Stanislaus County and that loss of Prime Farmland has been occurring in recent years and is an ongoing concern with increasing urban development in the region, the loss of Prime 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 Air Quality and GHG Emissions (*Significant and Unavoidable*)

As stated in Table 18-3 above, cumulative impacts of air quality are evaluated in Chapter 6, *Air Quality* (Impact AQ-3) and Chapter 10, *Greenhouse Gas Emissions and Energy* (Impacts GHG-1 and GHG-2).

Impact CUM-4: 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 Program would not convert large 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-5: Cumulative Impacts on Cultural, Tribal, and Paleontological Resources (*Less than Significant with Mitigation*)

While unlikely, it is possible that construction of WMP components in the Program study area could impact buried cultural or archaeological resources. Any project that would disturb the ground surface would have the potential to disturb buried cultural, archaeological, or paleontological resources. 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, City of Turlock, and Stanislaus County General Plans, could impact buried archaeological or paleontological resources. 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 and paleontological 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, along with implementing the City's standards and policies, the Proposed Program would implement Mitigation Measure CR-1 to avoid and/or minimize impacts to cultural and tribal cultural resources. This would include requirements to conduct cultural resources awareness training before beginning construction on CIP projects. With implementation of this measure, the Proposed Program would not substantially affect cultural, tribal cultural, and paleontological resources and would not contribute considerably to any cumulative impacts on such resources in the Program area or greater Stanislaus County. Therefore, this impact would be **less than significant with mitigation.**

Impact CUM-6: Cumulative Impacts on Hydrology and Water Quality *(Significant and Unavoidable)*

Projects listed in Table 18-3, and those that may be constructed in the future in accordance with the City of Modesto, City of Ceres, City of Turlock, 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, Stanislaus River, 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 on hydrology and water quality, apart from groundwater supply impacts, would be avoided and/or minimized through compliance with the NPDES General Construction Permit, the City's Standard Specifications related to erosion control, and implementation of Mitigation Measures 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, Stanislaus, 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, Stanislaus, 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.

Several of the CIP projects listed in Table 18-3 could add impervious surface area to the region or require additional use of groundwater supplies. The 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. However, any additional groundwater use by the projects listed in Table 18-3 and the Proposed Program's groundwater needs could contribute to declining groundwater levels and potential overdraft of the aquifer. As discussed in Impact HYD/WQ-2, although the Sustainable Groundwater Management Act (SGMA) process and the future development of a groundwater sustainability plan (GSP) would include measures or allocations to prevent groundwater overdraft, these GSP measures or allocations have not yet been developed and the aquifers' sustainable yields may be exceeded by the Proposed Program (in combination with other users) before these measures and allocations are in place. Thus, while it is the intent of the City to avoid use of groundwater in a manner which would contribute to overdraft, because overall use of groundwater in the relevant aquifers is partially outside of the City's control, and the GSP has not yet been developed to address this issue, the Proposed Program's groundwater use has been conservatively concluded to make a considerable contribution to the cumulative groundwater use and cumulatively exceedance of the local aquifers' sustainable yields. Therefore, following mitigation, the Proposed Program's contribution to cumulative impacts on hydrology and water quality could be considerable. This impact would be **significant and unavoidable.**

Impact CUM-7: Cumulative Impacts Related to Noise and Vibration (*Less than Significant*)

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 CIP projects. Several projects listed in Table 18-3 fit this description. Additionally, projects that may be constructed in the future in accordance with applicable jurisdictions' 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 is unknown and/or is subject to change, this analysis makes the conservative assumption that overlaps would occur, potentially producing significant cumulative 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. This would not be a considerable contribution to cumulative impacts. **Mitigation Measures NOI-1** through **NOI-4** would reduce these effects through a variety of means.

In conclusion, temporary or periodic increases in ambient noise levels caused by the Proposed Program (after mitigation) would not make a considerable contribution to significant cumulative noise impacts. Therefore, it is **less than significant with mitigation.**

Impact CUM-8: Cumulative Impacts Related to Transportation (*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, City of Turlock, and 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 replacement water 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 Program components.

Because the 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-9: 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 wastewater infrastructure or increased solid waste disposal needs. Additionally, the Proposed Program would provide necessary water supply 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 analyzed in detail 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 Project Alternative. The No Project 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 project or program, the State 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 15126.6(e)(2). If the “no project” alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives.

These guidelines were used in developing and evaluating the alternatives to the Proposed Program, 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 19.5, "Alternatives Analysis," describing their impacts as well as benefits.

19.3.1 Program Objectives

As stated in Chapter 2, *Project Description,* the objectives of the Proposed Program are as follows:

- To implement and support the City's economic goals and General Plan by planning for, and providing water infrastructure in a timely and cost-effective manner to serve new and existing development.
- To clearly define the City's long-term water supply needs (from both groundwater and the Modesto Irrigation District's [MID's] surface water supplies), and identify the associated infrastructure required to deliver these supplies to existing and future customers.
- To provide the flexibility, system redundancy and reliability at a reasonable cost to accommodate possible changing future conditions (regulatory, climate, additional conservation, etc.).
- To repair and replace aging water infrastructure.
- To ensure adequate water infrastructure and services are available to serve new growth within the General Plan area, the City's SOI, and the outlying service areas.
- To plan for state-of-the-art facilities that reliably and economically meet changing regulatory requirements.
- To provide safe and reliable water supply by planning for and constructing appropriately sized storage facilities, redundancies, and alternate (back up) power supplies for key facilities.
- To provide adequate storage capacity to meet operational, fire flow and emergency storage needs.
- To maintain system pressures that meet regulatory requirements and peak demand conditions.
- To provide transmission and distribution pipelines to safely and reliably convey water throughout the water system.
- To provide safe and reliable water that meets regulatory water quality requirements.

- To evaluate a groundwater aquifer storage and recovery program.
- To sustainably utilize and protect groundwater resources.

19.3.2 Significant Environmental Impacts of the Proposed Program

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 Draft EIR (DEIR).

19.3.3 Significant and Unavoidable Environmental Impacts of the Proposed Program

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)
- Involve Other Changes in the Existing Environment Which, Due to Their Location or Nature, Could Result in Conversion of Farmland to Non-agricultural Use (Impact AG-3)
- 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)
- 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 (Impact HYD/WQ-2)
- Cumulative Impacts on Agriculture (Impact CUM-2)
- Cumulative Impacts on Air Quality and GHG (Impact CUM-3
- Cumulative Impacts on Hydrology and Water Quality (Impact CUM-6)

19.4 Alternatives Considered and Eliminated

The following alternatives were considered, but ultimately were 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:

- **Reduced Program Alternative:** Under this alternative, only a portion of the identified WMP components would be constructed to address rehabilitation/repair needs, capacity issues, and water supply shortfall issues. This alternative was eliminated from consideration because it would not meet the City's responsibility to provide water supply capacity for both existing demand and planned growth.

- **Contiguous Service Area Only Alternative:** Under this alternative, only those CIPs identified within the contiguous service area would be implemented. This alternative was eliminated from consideration because it would not meet the City's responsibility to serve the outlying service areas included within the adopted service area.

- **Alternate Sites Alternative:** The locations of existing facilities needing improvements are known and identified in the CIPs. The exact locations of some new facilities have yet to be finalized; however, in some cases tentative sites have been identified. In general, under the Proposed Program, CIP sites with significant environmental impacts would not be developed, and would be replaced by alternate sites with lesser environmental impacts. Therefore, this alternative was eliminated from consideration because many of the CIPs are site specific, and replacing those sites would require extensive redesign of the City's water infrastructure. For new CIPs not tied to existing facilities, the process of identifying suitable sites already takes into consideration the environmental impacts of those components. Thus, this alternative would not be anticipated to ultimately reduce significant environmental impacts of the Proposed Program and could increase those impacts.

19.5 Alternatives Analysis

The following alternatives were considered for the Proposed Program:

- No Program Alternative
- Deferred Implementation Alternative
- Alternative Sources of Water Supply

These alternatives were identified in the context of the primary environmental concerns raised during EIR scoping, and the significant impacts of the Proposed Program. Section 19.5.3 summarizes the alternatives considered and compares them to the Proposed Program.

19.5.1 No Program Alternative

Characteristics of this Alternative

Under this alternative, no new water supply infrastructure would be constructed or upgraded. Operation of the City's water treatment, pumping, storage, and conveyance infrastructure would continue similar to existing conditions. The existing storage tanks and booster pump stations, groundwater wells, and transmission/distribution pipeline network would continue to operate. Facilities that are currently operating in the contiguous service area and the outlying service areas would continue functioning, but capacity issues would not be addressed and would likely increase over time as the population of the contiguous service areas is projected to increase by

approximately 52 percent (from 255,906 to 388,579) by 2050. The Del Rio and Grayson areas would experience some growth until buildout. The City's outlying water service area in Turlock is already at buildout.

Impact Analysis

Aesthetics

Under this alternative, significant and unavoidable impacts on visual character or quality would be avoided. Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts on scenic vistas, scenic resources, and light and glare would not occur.

Agricultural Resources

Under this alternative, significant and unavoidable impacts of direct conversion of Important Farmland would be avoided. Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts on zoning for agricultural use or Williamson Act contracts would not occur.

Air Quality

Under this alternative, significant and unavoidable impacts of conflicts with applicable air quality plans, violation of air quality standards, and cumulatively considerable net increases in criteria pollutants would be avoided. Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts on sensitive receptors from pollutant concentrations and increases in objectionable odors would not occur.

Biological Resources

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts on biological resources would not occur.

Cultural, Tribal, and Paleontological Resources

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts on archaeological, tribal, or paleontological resources or human remains would not occur.

Geology, Soils, and Seismicity

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to geology, soils, and seismicity would not occur.

Greenhouse Gas Emissions and Energy Resources

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to greenhouse gas emissions, consumption of energy, and energy demand would not occur.

Hazards and Hazardous Materials

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to routine transport, use, or disposal of hazardous materials; upset and accident conditions; proximity of hazardous materials to schools; location on a hazardous materials site or in an airport land use plan; interference with an emergency response plan; or exposure to wildfire would not occur. The potential exists for fire risk to increase as a result of the City's failure to address shortfalls or needed expansion of water supply to meet fire flow requirements.

Hydrology and Water Quality

Under this alternative, significant and unavoidable impacts of groundwater depletion and interference with groundwater recharge would be avoided. Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to violation of water quality standards, drainage patterns, groundwater recharge, siltation, runoff, and flooding would not occur. However, under this alternative, more wells could go out of production due to water quality concerns, without the installation of new wells or wellhead treatment to address the issue. Therefore, this could adversely affect the City's water supply as groundwater resources may be less available.

Land Use and Planning

Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to land use and planning would not occur. It is assumed that the City would not approve development which would result in demand for water supply that cannot be met under the No Program Alternative. As such, this alternative would impede attainment of the City's land use plans and policies which rely upon the water supply that would be made available by the Proposed Program.

Noise and Vibration

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to increases in ambient noise levels, groundborne noise or vibration levels, and other noise and vibration impacts would not occur.

Population and Housing

Under this alternative, impacts of long-term inducement of substantial population growth, and the secondary impacts of growth, would be reduced. Because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to inducement of population growth and displacement of population would not occur.

Transportation

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to effectiveness of the circulation system, congestion management programs, design hazards, emergency access, and alternative transportation would not occur.

Utilities and Service Systems

Under this alternative, because no new construction or additional operation of infrastructure would result aside from ongoing operations, impacts related to expansion of wastewater or stormwater drainage facilities, solid waste disposal, and need for additional permitted landfill capacity would not occur. The potential exists for increased impacts related to the need for new or expanded water supply or entitlements as a result of the No Program Alternative, if growth in population and housing proceeds in the absence of additional water supply infrastructure and/or if the existing infrastructure becomes deteriorated or otherwise incapable due to pressure or groundwater quality issues of providing adequate water supplies to the City's water service area.

19.5.2 Deferred Implementation Alternative

Characteristics of this Alternative

Under the Deferred Implementation Alternative, the schedule for construction of all Program-level WMP components would be delayed by 5 years compared to the schedule for implementation of the Proposed Program. Under this alternative, new water supply infrastructure would be constructed or upgraded as indicated for the Proposed Program, but at a later date. Similarly, operation of the City's water treatment, pumping, storage, and conveyance infrastructure would be improved and expanded, but at a slower pace. Maintenance and addition of storage tanks and booster pump stations, groundwater wells, and the transmission/distribution pipeline network would continue, but some shortfalls in capacity or pressure flows may result from the delay in implementation of identified CIPs. Facilities in the contiguous service area and the outlying service areas would continue to operate, but capacity and pressure issues may not be addressed in a timely manner. Development in the City's water service area may be delayed to the extent that construction of necessary infrastructure to support such development would be delayed under this alternative.

Impact Analysis

Aesthetics

Under this alternative, significant and unavoidable impacts on visual character or quality would still occur but would take place later in time. Because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts on scenic vistas, scenic resources, and light and glare would occur but on an extended timeline.

Agricultural Resources

Under this alternative, significant and unavoidable impacts of direct conversion of Important Farmland could be delayed but would remain. Because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts on zoning for agricultural use or Williamson Act contracts would occur later in time.

Air Quality

Under this alternative, significant and unavoidable impacts of conflicts with applicable air quality plans, violation of air quality standards, and cumulatively considerable net increases in criteria pollutants would remain. Because new construction and additional operation of infrastructure

would be implemented as under the Proposed Program, similar impacts on sensitive receptors from pollutant concentrations and increases in objectionable odors would occur, but later in time.

Biological Resources

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts on biological resources would occur, but 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, Tribal, and Paleontological Resources

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts on archaeological, tribal, or paleontological resources or human remains would occur but later in time.

Geology, Soils, and Seismicity

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to geology, soils, and seismicity would occur but later in time.

Greenhouse Gas Emissions and Energy Resources

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to increased GHG emissions and conflicts with GHG reduction policies; wasteful, inefficient, and unnecessary consumption of energy; and increase in energy demand would occur but later in time.

Hazards and Hazardous Materials

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to routine transport, use, or disposal of hazardous materials; upset and accident conditions; proximity of hazardous materials to schools; location on a hazardous materials site or in an airport land use plan; interference with an emergency response plan; or exposure to wildfire would occur but later in time. The potential exists for fire risk to increase if the extended timeline results in delays in addressing shortfalls or needed expansion of water supply to meet fire flow requirements.

Hydrology and Water Quality

Under this alternative, potential for significant and unavoidable impacts of groundwater depletion would be delayed but could still occur. Because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to violation of water quality standards, drainage patterns, groundwater recharge, siltation, runoff, and flooding would occur, but later in 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

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to increases in ambient noise levels, groundborne noise or vibration levels, and other noise and vibration impacts would occur but later in time.

Population and Housing

Under this alternative, impacts of long-term inducement of substantial population growth, and related secondary impacts, would remain, but would be delayed as growth would be impeded by the lack of adequate water supply infrastructure.

Transportation

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to effectiveness of the circulation system, congestion management programs, design hazards, emergency access, and alternative transportation would occur but later in time.

Utilities and Service Systems

Under this alternative, because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts related to expansion of wastewater or stormwater drainage facilities, solid waste disposal, and need for additional permitted landfill capacity would occur but later in time.

19.5.3 Alternative Sources of Water Supply

Characteristics of this Alternative

Under this alternative, alternative sources of water supply would be used to address existing system deficiencies and meet increases in demand. This would alter the mosaic of capital improvements needed to deliver water to City customers. This alternative would not ultimately alter the amount of water to be used; however, it would rely on a greater range of sources for that water, aside from groundwater and surface water. Different capital facilities would be required to utilize this water throughout the City's service area compared to those proposed under the Program. The actual facilities would depend upon the sources selected and their relative contributions to the overall supply. The additional sources identified for this alternative are assumed to be in addition to alternative water supply sources already being developed by the City, such as water conservation through the City's water shortage contingency plan, in-lieu groundwater recharge, and Aquifer Storage and Recovery (ASR).

Alternative sources of water supply under this alternative could include the following:

- **Additional Sources of Potable Water:** A MRWTP Phase Three Expansion project may be possible if there is a sizable future conversion of agricultural land to urban uses that would allow for a corresponding redistribution of MID's existing surface water rights.

- **Development of Recycled Water Options:** Recycled water could be used in future Comprehensive Planning Districts. This additional supply, however, may affect potable

water supply needs by supporting additional and future irrigation of golf courses and parks with non-potable water supply sources. The existing non-potable water supply sources, however, may be subject to cut-backs during dry years; the City would need to use groundwater to make up the difference. Recycled water supplies are not subject to cut-backs and, therefore, could reduce groundwater extractions during dry years.

Impact Analysis

Aesthetics

Under this alternative, some new aboveground facilities would be constructed that could have adverse effects on visual resources. These impacts could be greater or less than those of the Proposed Program, depending upon the facilities. For facilities that would be different from those of the Proposed Program, impacts would occur in different locations.

Agricultural Resources

Because new construction and additional operation of infrastructure would be implemented as under the Proposed Program, similar impacts on zoning for agricultural use or Williamson Act contracts would occur with this alternative.

In addition, one of the potential sources of water supply under this alternative would be water previously used for agriculture. As such, it would be dependent upon the conversion of agricultural lands to non-agricultural uses.

Air Quality

The new facilities that would be built under this alternative could result in some construction-related and operational emissions. These impacts could be greater or less than those of the Proposed Program, depending upon the extent of construction required to implement the various water supply options.

Biological Resources

The new facilities that would be built under this alternative could result in impacts to biological resources. These impacts could be greater or less than those of the Proposed Program, depending upon the extent of construction required to implement the various water supply options.

Cultural, Tribal, and Paleontological Resources

The new facilities that would be built under this alternative could result in impacts to cultural, tribal and paleontological resources. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

Geology, Soils, and Seismicity

The new facilities that would be built under this alternative would result in impacts to geology, soils and mineral resources that are similar to those of the Proposed Program. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

Greenhouse Gas Emissions and Energy Resources

The new facilities that would be built under this alternative would result in impacts to greenhouse gas emissions and energy resources that are similar to those of the Proposed Program. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

Hazards and Hazardous Materials

Under this alternative, construction and operation of the proposed facilities could result in the release of, or exposure to, hazardous materials. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

Hydrology and Water Quality

Under this alternative, new facilities would be constructed that could cause impacts to water quality or affect flooding conditions. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

The alternative, by using alternative means of addressing system deficiencies and meeting future water demand, would reduce the need for the sources of potable water identified for the Proposed Program (i.e., groundwater and surface water supplies from MID). As such, the impacts related to use of those water sources would be avoided. However, these new sources of water could have their own set of environmental impacts. While the water supply options evaluated under this alternative are very general in nature, examples of impacts include: reductions or changes of instream flows and related effects on water quality and/or instream habitat, injury to other legal holders of water rights, and third-party effects, such as changes in land uses associated with changed water usage patterns. Appropriate mitigation would need to be developed to address any such impacts. No water supplies would be tapped without a prior agreement with their water rights holders.

While altered approaches to groundwater management may be implemented as part of this alternative, the alternative would be required to comply with SGMA and the region's GSP and thus would not involve groundwater pumping beyond the long-term sustainable yield of the aquifer. Therefore, it would not result in overdraft conditions.

Land Use and Planning

Similar to the Proposed Program, this alternative would not result in any development that would have potential to physically divide an established community. This alternative would be consistent with relevant general plans by providing the necessary infrastructure and sources of water to support the development envisioned in those plans.

Noise and Vibration

Under this alternative, construction and operation of the proposed facilities could generate new sources of noise. These impacts could be greater or less than those of the Proposed Program, depending on the extent and location of new facilities.

Population and Housing

This alternative would provide infrastructure that would remove an obstacle to growth. The alternative would therefore be considered growth-inducing and would have related secondary impacts that are similar to those of the Proposed Program.

Transportation

The new facilities that would be built under this alternative would result in impacts to transportation and traffic that are similar to those of the Proposed Program. These impacts could be greater or less than those of the Proposed Program, depending upon the extent and location of new facilities.

Utilities and Service Systems

Under this alternative, construction of new facilities could affect the provision of public services, such as fire and police protection. These impacts could be greater or less than those of the Proposed Program, depending upon the duration of construction and location of new facilities. The alternative would have similar impacts as the Proposed Program in terms of the volume of potable water required. The alternative would not generate substantial need for wastewater and stormwater infrastructure, solid waste disposal, schools, or parks.

19.5.4 Comparison of Alternatives

Table 19-1 compares each of the alternatives analyzed above to the Proposed Program by environmental topic. For each topic, significant impacts of the Proposed Program are summarized; each alternative is noted as having less, similar, or greater impacts in comparison to the Proposed Program.

Table 19-1. Summary of Alternatives and Comparison to the Proposed Program

Impact Category	Proposed Program	No Program Alternative	Deferred Implementation Alternative	Alternative Sources of Water Supply
Aesthetics and Visual Resources	Short-term and long-term degradation of visual character or quality; substantial source of light and glare	Less	Delayed	Similar
Agricultural Resources	Direct or indirect conversion of Important Farmland	Less	Delayed	Similar
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	Delayed	Similar

Impact Category	Proposed Program	No Program Alternative	Deferred Implementation Alternative	Alternative Sources of Water Supply
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	Similar
Cultural, Tribal, and Paleontological Resources	Impacts on historical, archaeological, tribal, or paleontological resources or human remains	Less	Delayed	Similar
Geology, Soils, and Seismicity	Impacts from expansive soils; erosion; or subsidence, liquefaction, or collapse	Less	Delayed	Similar
Greenhouse Gas Emissions and Energy Resources	Substantial GHG emissions or conflict with applicable plan or policy	Less	Delayed	Similar
Hazards and Hazardous Materials	Upset and accident conditions involving the release of hazardous materials	Less	Delayed	Similar
Hydrology and Water Quality	Violate water quality standards or otherwise degrade water quality; deplete groundwater supplies; alter drainage patterns	Less	Delayed	Less
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)	Similar
Noise and Vibration	Violate noise standards; excessive groundborne vibration or noise; increase in ambient noise levels	Less	Delayed	Similar

Impact Category	Proposed Program	No Program Alternative	Deferred Implementation Alternative	Alternative Sources of Water Supply
Population and Housing	Inducement of substantial population growth	Less	Delayed	Greater
Transportation	No significant impacts	Less	Delayed	Similar
Utilities and Service Systems	No significant impacts	Less	Delayed	Similar

19.6 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 the impacts of the Proposed Program. This alternative, however, would result in increased impacts related to land use and planning as growth planned by the City would not be able to proceed because necessary infrastructure to support development would not be constructed.

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. Therefore, the Deferred Implementation Alternative, has been selected as environmentally superior; this alternative would avoid impacts during the interim period during which the program would be delayed (although the impacts would eventually occur). The Deferred Implementation Alternative would result in increased impacts related to land use and planning as growth planned by the City would not be able to proceed in the interim period while necessary infrastructure to support development is not completed. As such, the Deferred Implementation Alternative would not as effectively meet program objectives, as necessary infrastructure to address system deficiencies and support planned development would be delayed.

The Alternative Sources of Water Supply Alternative is not considered to be environmentally superior because, while it would reduce some impacts through use of alternative water supplies, it would be anticipated to have impacts that are, on the whole, similar to those of the Proposed Program.

For this reason, the Proposed Program has been selected for implementation, as it would have the same impacts over the long term and would more fully meet Program objectives.

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Chapter 21
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CHAPTER 19. ALTERNATIVES

None cited.