

## **Introduction**

This chapter describes the alternatives considered for the proposed construction of the Modesto Regional Water Treatment Plant (MRWTP) Phase Two Expansion and associated downstream facilities. It considers first the alternatives described in the 1990 EIR, and then discusses the alternatives considered for the proposed project, including alternatives considered but dismissed from further consideration, and the No Project Alternative. Finally, the environmentally superior alternatives are discussed.

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the project that could feasibly attain most of the objectives of the project, and would avoid or substantially lessen any of the significant effects of the project. The analysis evaluates the comparative merits of the alternatives (CEQA Guidelines, Section 15126.6[a]).

Additionally, Section 15126.6 (b) of the CEQA Guidelines requires consideration of alternatives that could reduce to a less-than-significant level or eliminate any significant adverse environmental effects of the proposed project, including alternatives that may be more costly or could otherwise impede to some degree the attainment of the project's objectives (as described in Chapter 2.0). The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

The objectives of the proposed project are to:

- provide water treatment and delivery capacity through expansion of MID's existing MRWTP and terminal reservoir/pump station to provide existing users with a reliable source of potable water and accommodate future planned development in the City, in accordance with the City of Modesto's Urban Area General Plan (General Plan); manage the water resources of MID to provide a safe, reliable and sustainable supply for MID's agricultural and urban customers;

- put MID's water rights to beneficial use for the benefit of the residents of MID;
- meet peak treated water demands and maintain pressures for existing users;
- improve water supply reliability for the City;
- increase operational flexibility and reliability in the City's water transmission and distribution system;
- develop a more comprehensive conjunctive use system for domestic water treatment and delivery, and reduce the City's reliance on groundwater; and
- use environmentally sensitive and cost-effective means of achieving the above objectives.

The 1990 EIR considered several alternatives to the proposed project, as identified below. In preparing this subsequent EIR, one or more new alternatives would be needed if substantial new information indicates that an alternative previously considered and dismissed as infeasible is now feasible, or if a new and considerably different alternative would avoid a new or more severe significant impact (CEQA Guidelines, Section 15162[a][3]).

## 1990 EIR Alternatives

The 1990 EIR for the construction of the MRWTP Phase One considered the following project alternatives:

- **No Project:** The alternative assumed continued reliance on groundwater to fulfill all of Modesto's water demands.
- **Alternative A:** Obtain untreated water directly from Modesto Reservoir. This alternative considered four different water treatment plant sites near Modesto Reservoir (Sites A1, A2, A3, and A4).
- **Alternative B:** Locate the water treatment plant on the east side of Modesto, and convey untreated water from Modesto Reservoir to the plant via the MID Main Canal and Lateral 1.
- **Alternative C:** Locate the water treatment plant several miles northeast of Modesto, and convey untreated water via the MID Main Canal.
- **Alternative D:** Locate the water treatment plant on the east side of Modesto (in the same location as Alternative B), and divert water directly from the Tuolumne River downstream of Don Pedro Reservoir. Water releases would use one of three options:
  - **Alternative D1:** No project water would be released as long as the river flow at the diversion point near Modesto was adequate to meet project demands, considering instream flow requirements. Water would be released from Don Pedro Reservoir as necessary to meet project demands.

- ❑ **Alternative D2:** Project water would be diverted from Don Pedro Reservoir to the Modesto Reservoir, released to the Main Canal, and then released into the Tuolumne River at Poletti Spill, east of Waterford.
- ❑ **Alternative D3:** Project water would be released from Don Pedro Reservoir directly into the Tuolumne River in an amount equivalent to that diverted to the water treatment plant.

Alternative A was the alternative that was eventually built in Phase One due to its proximity to Modesto Reservoir, a high-quality water source. This approach would require less treatment and fewer miles of open-water laterals.

## Phase Two Alternatives

### MID Facilities

The MID facilities addressed in this SEIR represent Phase Two expansion of the existing MRWTP and the terminal reservoir/pump station (TR/PS). The 1990 EIR considered a variety of alternatives, as discussed above, including the No Project Alternative. There are no changed circumstances that make feasible any alternatives previously identified as infeasible, or substantially change the conclusions of the analysis of the No Project alternative given in the 1990 EIR; for this reason, these alternatives are not revisited in the SEIR.

However, several other feasible alternatives have been identified. These include two options for expansion of the MRWTP—the membrane and conventional options—as well as a delayed alternative (a variant off of a reduced intensity alternative).

### City Facilities

This SEIR considers nine alternative sites for construction of the water storage tanks and their associated pipelines, as well as seven alternative alignments for the main pipelines. As the preferred sites have not yet been named for construction of the City's downstream facilities, the potential environmental impacts of all nine tank sites, their associated tank pipelines, control valves, and seven main pipeline alignments are all analyzed in Chapter 3, *Environmental Analysis*.

In addition, the No Project alternative, and a delayed alternative (a variant off of a reduced intensity alternative), are also considered.

## Alternatives Considered, but Dismissed from Further Consideration

The following alternatives to the proposed MRWTP Phase Two expansion were considered, but dismissed from further consideration for the reasons stated:

- **Additional Water Conservation:** Water conservation measures are currently implemented, as identified in the City's 2000 Urban Water Management Plan (City of Modesto and MID 2000). These measures are part of the overall water supply projections and approach for the City. In May 2004 the City Council also directed staff to begin installation and operation of water metering for various land uses. No additional feasible conservation measures have been identified that could adequately supply the needed demand.
- **Alternatives to the Downstream Facilities:** With the exception of alternative water storage tank sites and alternative main pipeline alignments, no feasible alternative methods or locations for the downstream facilities have been identified that would achieve project objectives and ensure adequate water pressure and operational reliability throughout the City's distribution system.
- **Alternative Sources of Potable Water:** No significant impacts have been identified associated with the proposed source of water (the Tuolumne River). While alternative sources of water may be available, these sources would be anticipated to have similar growth-inducing effects, and would not reduce or avoid any significant impacts related to the source of water. In addition, these alternatives would be likely to require the construction of new pipelines and possibly treatment facilities, which would have additional environmental effects. Finally, these alternative sources would be unlikely to be obtained within the timeframe needed to meet project objectives. For these reasons, alternative sources of potable water were not considered further.

## Alternatives Considered

### No Project Alternative

CEQA requires analysis of the No Project Alternative, which comprises continued use of existing downstream water conveyance facilities in the case that the proposed project is not built. As previously stated, consideration of alternatives to the MID component of the project is not required.

## Alternative Characteristics

There would be no construction of downstream facilities. The City would rely on groundwater to supply additional water demands and would likely install additional groundwater wells for this purpose. Buildout of the City's General Plan could be constrained if construction of these wells did not proceed at an adequate pace.

Problems with water pressure and operational reliability in the City's system would continue, and these problems would be likely to increase as peak water demand grows in the City.

## Impact Analysis

### Aesthetics

The No Project Alternative would not result in the construction of additional water storage facilities within the City. To meet the increased demand for water resulting from anticipated population growth, additional groundwater wells would have to be constructed within the city limits. These wells would have a potentially significant impact on the aesthetic quality of the adjacent areas and would require some level of mitigation to reduce visual impacts. However, because the locations of such wells are unknown, this SEIR cannot state the extent of the impact and the necessary site-specific mitigation.

### Agricultural Resources

The No Project Alternative would involve the development of the proposed sites for the uses specified in the City's General Plan (i.e., industrial, business park, and village residential). Therefore, conversion of Prime Farmland to non-agricultural use would still occur, and conflicts with agricultural uses on nearby properties and long-term conversion of farmland to non-agricultural use would also be likely. Impacts to agricultural lands under Williamson Act contract would still be possible but might be less likely since a longer timeframe would allow for property owners to apply for non-renewal of their contracts.

### Air Quality

Under the No Project Alternative there would be no construction of additional water storage facilities within the City. To meet the increased demand for water resulting from anticipated population growth, additional groundwater wells would have to be constructed within the city limits. Construction activities would have a potentially significant impact on air quality. As discussed above under the proposed project impacts, the City would comply with SJVUAPCD Regulation VIII, which would be sufficient to eliminate any potentially

significant air quality effects generated by construction activities. Construction-related diesel health risk would also be considered less than significant due to the short-term nature of construction activities.

## **Biological Resources**

Because no structures would be built, no potential for impacts on biological resources exists. There is no impact.

## **Cultural Resources**

Under the No Project Alternative there would be no construction of additional water storage facilities within the City. However, the No Project Alternative would involve the development of the proposed sites for the uses specified in the City's General Plan (i.e., industrial, business park, and village residential). While no archeological or historic resources are known to exist on these sites, the potential for degradation of previously undiscovered resources would persist.

## **Geology, Soils, and Mineral Resources**

Because no structures would be built, no people would be exposed to additional risks related to seismicity or geologic/soil hazards. No erosion or loss of topsoil or mineral resources would occur. There is no impact.

## **Hazards and Hazardous Materials**

Because no actions would be taken that would involve hazardous materials or exposure of persons to hazards, no hazards or risk of exposure to hazardous materials would result from the No Project Alternative. There is no impact.

## **Water Resources, Hydrology and Water Quality**

Without construction of tanks and pipelines, the City would continue to experience water pressure problems in the relevant areas of its distribution system. These difficulties would likely increase over time as population in the City, and hence water demand, grows. Other issues related to operational flexibility would also continue. Potential for construction-related impacts associated with these facilities would be avoided.

## Land Use and Planning

The No Project Alternative would not divide an established community, conflict with any land use plan or policy, or conflict with any habitat conservation plan or natural community conservation plan. However, the No Project Alternative would conflict with the assumptions of the City of Modesto's General Plan, which anticipated the proposed project would be implemented to supply potable water in support of buildout of the General Plan. Although implementation of the proposed project was an assumption of the General Plan, it was not explicitly addressed in General Plan policy and can therefore be reasonably deemed to have no conflict. As it does not explicitly conflict with General Plan policy, it is considered a less-than-significant impact.

## Noise

The No Project Alternative would not result in the construction of additional water storage facilities within the City. To meet the increased demand for water resulting from anticipated population growth, additional groundwater wells and associated pumps would have to be constructed within the city limits. These facilities would have a potentially significant noise impact on adjacent sensitive receptors and would require some level of mitigation. However, because the locations of such wells are unknown, this SEIR cannot state the extent of the impact and the necessary site-specific mitigation.

## Population and Housing

The No Project Alternative would not remove infrastructural obstacles to growth presented by limitations in potable water supply for the City of Modesto. Additional growth of housing and population would therefore be limited as alternative water supply was sought. Because the No Project Alternative would neither induce substantial growth nor displace a substantial number of existing residents, it is a less-than-significant impact.

## Public Services and Utilities

While the No Project Alternative would generally not require or result in the need for government facilities or services, it would necessitate the construction of additional groundwater wells to support increased water demand associated with growth in the City of Modesto. The City currently extracts groundwater at nearly the maximum safe yield of the aquifer. Although groundwater levels have risen and pumping levels have fallen since construction of Phase One of the MRWTP, additional reliance on groundwater in the case of No Project could result in aquifer extractions in excess of the City's portion of the aquifer's safe yield. A net deficit in aquifer volume could result, such that water supplies may not be sufficient from this existing resource along with the City's other entitlements. This is considered a significant impact.

The No Project alternative would not generate any liquid or solid waste that could exceed wastewater treatment requirements, require construction of additional wastewater or stormwater treatment facilities, or exceed capacity of any landfills.

## Recreation

Under the No Project Alternative, no changes would occur that could affect recreational facilities or activities. There is no impact.

## Transportation and Traffic

The No Project Alternative would not involve any actions that would affect traffic or transportation patterns. There is no impact.

## Delayed Alternative

As discussed in Chapter 2, *Project Description*, construction of downstream facilities would occur in two tiers. Under the proposed project, Tier 1 downstream facilities, including the MRWTP expansion, would begin construction in 2006, and Tier 2 downstream facilities would begin construction in 2007. Under the Delayed Alternative, construction would not occur in two tiers and construction of all facilities (including the expansion of the MRWTP) would be postponed indefinitely.

## Alternative Characteristics

Construction of the facilities would be delayed indefinitely. Problems related to water pressure and operational reliability in the City's system would continue indefinitely until construction occurred. Buildout of the City's General Plan could be constrained if water pressure and operational reliability problems impaired the City's ability to supply additional demands. In addition, the City may need to seek out alternative sources of water supply to provide for planned growth, which could include increased groundwater pumping.

## Impact Analysis

The Delayed Alternative would generally have the same impacts as those of the proposed project. However, the impacts of the facilities would be delayed indefinitely until such time as construction would occur. In some cases, impacts would also be different from the proposed project, and not simply delayed. Only topics for which impacts would be different and not simply delayed are discussed below:

## **Aesthetics**

During the delay in constructing the facilities, additional development could occur surrounding the various facility sites. For this reason, this alternative could result in a larger number of sensitive receptors being exposed to construction-related aesthetic impacts, as well as those associated with the tanks after construction is completed.

## **Water Resources, Hydrology and Water Quality**

Without the expanded MRWTP and the new storage and distribution facilities, the need for surface water from Don Pedro reservoir would be decreased, and would result in reduced effects on water levels in Don Pedro Reservoir and flows in the Tuolumne River until such a time as the facilities were to be constructed. Note that these impacts of the proposed project were not identified as significant in this SEIR.

In addition, this alternative could result in significant adverse effects on groundwater levels if groundwater were used as an alternative source of supply and it was pumped in excess of sustainable yield of the aquifer.

## **Land Use and Planning**

The Delayed Alternative, if it were to constrain development on the basis of water supply, would conflict with the buildout projections in the City's Urban Area General Plan. This result would be a significant impact that was not identified as associated with the proposed project.

## **Noise**

This alternative would delay construction of facilities to a future point where ambient noise levels are likely to be somewhat greater due to the greater degree of development in the City and County. The incremental impacts of construction-related noise would be less in a noisier environment than under the proposed project; however, they could contribute to a cumulative noise impact under these conditions. Regardless, measures would still be available to adequately mitigate impacts.

## **Population and Housing**

The Delayed Alternative would delay construction of facilities indefinitely. Infrastructural obstacles to growth presented by limitations in potable water supply for the City of Modesto would be removed at such time when construction would occur. To this extent, the Delayed Alternative would have reduced growth-inducing effects relative to the proposed project.

## Transportation and Traffic

Traffic is anticipated to increase in the City and County over time; for this reason, delaying construction of the facilities would result in increased potential for construction-related traffic impacts.

## Alternative MRWTP Expansion Options

### Alternative Characteristics

MID is considering two options for expansion of the MRWTP – the conventional option and the membrane option. Details regarding these two options are given in Chapter 2, *Project Description*, and shown in Figures 2-2 and 2-3. Both alternatives are feasible, and both would meet project objectives.

### Impact Analysis

Chapter 3, *Environmental Analysis*, of this SEIR provides an impact analysis for the MRWTP expansion. With the exception of Air Quality, no significant impacts related to the type of treatment technology used at the expanded MRWTP have been identified that are not mitigated to a level of less-than-significant. The following impacts would be reduced by implementation of the membrane option, as follows:

- **Footprint:** the membrane option would use a smaller area on the MRTWP site. For this reason, construction-related impacts related to the area of construction (e.g., amount of soil disturbance, dust emissions) would be reduced. In the case of ozone precursor emissions from construction vehicles, this reduced footprint would reduce impacts, but not to a level of less-than-significant.
- **Construction Duration:** the membrane option would have a shorter construction duration. For this reason, the duration of all construction-related impacts (e.g., noise, dust, construction-related vehicle traffic) would be reduced. As above, ozone precursor emissions from construction vehicles would be reduced by the reduced construction duration, but not to a level of less-than-significant.
- **Energy Consumption:** it is not clear which option will use less energy; however, it is possible that the membrane option would have reduced energy demands relative to the conventional option due to fewer required treatment processes.
- **Sludge Generation:** it is possible that the membrane option will result in less sludge generation. However, the amount of coagulant usage under the two options cannot be definitively predicted until the plant is operational.

## Alternative Water Storage Tank Sites

### Alternative Characteristics

The City has considered multiple alternative locations for tanks that would store potable water for urban customers within the water service area. This SEIR has evaluated the alternative tank sites at an equal level of detail. These nine alternative tank sites are described in Chapter 2, *Project Description*, and identified in Figures 2-5 through 2-7. These alternative tank sites represent a reasonable range of alternatives. All are feasible, and all would meet project objectives.

### Impact Analysis

Chapter 3, *Environmental Analysis*, of this SEIR includes a detailed impact analysis for each alternative tank site. The impacts of the various tank sites are summarized in Table 5-1, *Summary of Impacts and Mitigation Measures related to Alternative Tank Sites*.

## Alternative Main Pipeline Alignments

### Alternative Characteristics

The City has considered several alternative alignments for the main pipelines that would convey treated water from MID's transmission system throughout the water service area. This SEIR has evaluated the alternative main pipeline alignments at an equal level of detail. These seven alternative main pipeline alignments are described in Chapter 2, *Project Description*, and identified in Figure 2-8. These alternative pipeline alignments represent a reasonable range of alternatives. All are feasible, and all would meet project objectives.

### Impact Analysis

Chapter 3, *Environmental Analysis*, of this SEIR includes a detailed impact analysis for each alternative main pipeline alignment. The impacts of the various pipeline alignments are summarized in Table 5-2, *Summary of Impacts and Mitigation Measures related to Alternative Main Pipeline Alignments*.

## Environmentally Superior Alternative

Selection of the environmentally superior alternative generally depends on the existence of any significant environmental impacts, particularly significant and

unavoidable impacts. Based on the assessment of environmental impacts for the feasible alternatives described above, the environmentally superior alternative is the No Project Alternative, which would avoid the significant adverse impacts of the proposed project, particularly as it relates to agricultural and aesthetic resources. However, it should be noted that under the No Project Alternative, many of the sites for City of Modesto facilities would still be developed in accordance with the City's General Plan, resulting in many of the construction-related impacts identified under the proposed project. Also, under the No Project Alternative, adverse impacts to aquifer levels would be expected as a result of the City's increased reliance on groundwater as a drinking water source. This increased reliance would not occur under the proposed project.

If the No Project Alternative is selected as the environmentally superior alternative, CEQA Guidelines require that an environmentally superior alternative among the other analyzed alternatives be identified. The Delayed Alternative is the only other programmatic alternative to the proposed project, and would therefore be considered the environmentally superior alternative. Note that while the proposed project, by definition, is not an alternative, and therefore cannot be the environmentally superior alternative, it is thought to be environmentally superior to either the No Project or Delayed Alternatives, since it would avoid potential impacts on groundwater, and it would lessen construction-related impacts that are anticipated to be exacerbated by the Delayed Alternative.

In addition, because MID is considering two options for expansion of the MRWTP, an environmentally superior alternative is identified from among those options. Similarly, an environmentally superior alternative is identified for each of the three tanks and for each of the three main pipelines.

Although an environmentally superior alternative must be identified, MID and/or the City are not legally obligated to choose that alternative. As long as all of the impacts of project implementation are disclosed, MID and/or the City may move forward with implementation of any of the alternatives.

## MRWTP Expansion Options

The membrane option is identified as the environmentally superior alternative, as it would reduce the construction duration and footprint, and as such would result in decreased impacts related to construction, such as dust, construction-related vehicle emissions, traffic, and noise. It bears noting that the membrane option would not reduce significant impacts related to air quality to a less-than-significant level.

**Table 5-1.** Summary of Impacts and Mitigation Measures related to Alternative Tank Sites

Impact	Alternative Tank Sites									Mitigation
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3	
<b>Aesthetics</b>										
Impact AES-3. Adverse Effect on Views of Open Space During Construction	LS	LS	SU	SU	SU	SU	LS	LS	LS	Environmental commitments CS-1—CS-3, as stated in the Project Description.
Impact AES-4. Adverse Effect on Views of Open Space During Operation	SU	SU	SU	SU	SU	SU	LS	LS	LS	Environmental commitments SD-1—SD-7, as stated in the Project Description.
Impact AES-5. Changes in Light and Glare	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental commitments SD-3 and SD-4, as stated in the Project Description.
<b>Agricultural Resources</b>										
Impact AG-4: Conversion of Prime Farmland to non-agricultural use	SU	SU	SU	NI	SU	SU	NI	NI	NI	Mitigation Measure AG-4: Compensation for Loss of Farmland. Determined to be feasible but will not reduce impact below significance thresholds.
Impact AG-5: Conflict with existing zoning for agricultural use or Williamson Act contracts	NI	SU	SU	NI	SU	NI	NI	NI	NI	Mitigation Measure AG-4: Compensation for Loss of Farmland. Determined to be feasible but will not reduce impact below significance thresholds.
Impact AG-6: Cause conflicts with agricultural uses on nearby properties and long-term conversion of farmland to non-agricultural use	SU	SU	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.

**Impacts:**

SU = significant and unavoidable  
S = significant but mitigable

PS = potentially significant but mitigable  
LS = less than significant  
NI = no impact

B = beneficial impact  
n/a = not applicable

Impact	Alternative Tank Sites									Mitigation	
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3		
<b>Air Quality</b>											
Impact Air-5: Temporary Increase in Construction-Related Emissions during Construction Activities of the City of Modesto Facilities	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	Environmental commitment AQ-1, AQ-2, GC-3 – GC-7, and GC-10, as stated in the Project Description.
Impact Air-6: Emissions during operation of standby generators	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.
Impact Air-7: Construction-Related Diesel Health Risk	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact Air-8: Growth-Related Vehicle Emissions	SU	SU	SU	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.
<b>Water Resources</b>											
Impact WR-10: Change in Drainage Patterns	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental commitment WQ-1, as stated in the Project Description.
Impact WR-11: Construction-Related Water Quality Effects	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental commitments WQ-1 – WQ-3, as stated in the Project Description.
Impact WR-12: Water Quality Impacts from Increased Drainage	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Environmental commitment WQ-1, as stated in the Project Description.  Mitigation Measure WR-12a: Street Sweeping.  Mitigation Measure WR-12b: BMPs to Maximize Storm Water Quality.  Mitigation Measure WR-12c: Appropriate Design on Retention Facilities.
Impact WR-13: Water Quality Impacts from Project Operations	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.

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Impact	Alternative Tank Sites									Mitigation
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3	
Impact WR-14: Changes in Groundwater Quantity	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact WR-15: Flood Hazards	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact WR-16: Seiche, Tsunami, or Mudflow Hazards	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
<b>Noise</b>	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental commitments NR-1 – NR-3 and GC-9 – GC-10, as stated in the Project Description.
Impact NZ-3: Exposure of Noise-Sensitive Receptors to Construction Noise										
Impact NZ-4: Exposure of Noise-Sensitive Receptors to Noise from Project Operation in Excess of 65 dBA, Ldn	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
<b>Population and Housing</b>										
Impact POP-1: Displacement of Existing Housing Unit	NI	NI	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact POP-2: Substantial Induction of Growth in the City of Modesto	SU	SU	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.
<b>Recreation</b>										
Impact REC-2: Temporary Disruption to Recreational Opportunities during Construction.	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required
<b>Cultural Resources</b>										
Impact CR-1: Disturbance to Previously Undiscovered Archaeological Resources.	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure CR-1: Stop work, contact qualified archaeologist, assess significance of the find, and develop appropriate treatment measures.
Impact CR-2: Disturbance to Previously Undiscovered Human Remains.	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure CR-2: stop work, notify county coroner, and notify California Native American Heritage Commission if remains are Native American in origin.

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Impact	Alternative Tank Sites									Mitigation	
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3		
Impact CR-3: Disturbance to Built Environmental Resources	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	No mitigation required
Impact CR-4: Disturbance to Cultural Resources within Archaeological Resources Zones	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
<b>Biological Resources</b>											
Impact BIO-2: Potential Disturbance or Loss of Special-Status Wildlife Species and Their Habitat	NI	NI	NI	NI	NI	NI	NI	PS	PS	PS	Mitigation Measure Bio-2a: Conduct Preconstruction Surveys for Valley Elderberry Longhorn Beetle and Avoid or Compensate for Loss of Habitat.  Mitigation Measure BIO-2b: Avoid and Protect VELB Habitat.  Mitigation Measure BIO-2c: Transplant Elderberry Shrubs.
Impact BIO-3: Loss of up to 15 Acres of Foraging Habitat for Swainson’s Hawk, White-tailed Kite, and other Special-Status and Non-Special-Status Migratory Birds and Raptors	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-3: Implement the DFG Guidelines for Swainson’s Hawk Foraging Habitat Mitigation.
Impact BIO-4: Potential Disturbance of Nesting Swainson’s Hawks	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-4: Retain a Qualified Biologist to Conduct a Preconstruction Survey for Nesting Swainson’s Hawk.

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Impact	Alternative Tank Sites									Mitigation	
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3		
Impact BIO-5: Loss of Western Burrowing Owl Nesting and Foraging Habitat	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-5: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the DFG Guidelines for Burrowing Owl Mitigation, if Necessary.
<b>Transportation</b>											
Impact TR-3: Temporary Traffic Increases and Potential for LOS Degradation during Construction of Water Storage Tanks and Control Valves	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental Commitment TC-1, per the Project Description.
Impact TR-4: Temporary Traffic Increases and Potential for LOS Degradation during Construction of Pipelines	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Environmental Commitment TC-1, per the Project Description.  Mitigation Measure TR-4: Maintain Traffic Lanes and Limit Hours of Construction.
Impact TR-5: Temporary Traffic Increases and Potential for Degradation of Traffic Safety during Construction of Pipelines	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental Commitment TC-1, per the Project Description.
Impact TR-6: Interference with Emergency Access and Circulation during Construction of Pipelines	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	Environmental Commitment TC-1, per the Project Description.
Impact TR-7: Temporary Increase in Parking Demand for Construction Workers and Equipment	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact TR-9: Potential for Increased Traffic and LOS Degradation from Operation and Maintenance	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact TR-10: Increased Parking Demand Due to Operations and Maintenance	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	No mitigation required.

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Impact	Alternative Tank Sites									Mitigation
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3	
<b>Cumulative</b>										
Direct Loss of Prime Farmland	SU	SU	SU	NI	SU	SU	NI	NI	NI	No mitigation feasible.
Direct Loss of Williamson Act Lands	NI	SU	SU	NI	SU	NI	NI	NI	NI	No mitigation feasible.
Indirect Conversion of Agricultural Lands from Growth	SU	SU	SU	SU	SU	SU	SU	SU	SU	No mitigation feasible.
Construction-Related Emissions of PM10, Ozone, and Ozone Precursors	SU	SU	SU	SU	SU	SU	SU	SU	SU	Environmental Commitments AQ-1, AQ-2, GC-3, GC-4, GC-5, GC-6, GC-7, and GC-10 as stated in the Project Description.  Mitigation Measure CUME1— Implement enhanced measures to control PM10 generation, as recommended by SJVUAPCD (2002).  Mitigation Measure CUME2— Require use of other measures to reduce emissions.
Effects on Water Bodies Listed as Impaired	LS	LS	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Short-Term Noise Effects from Construction	SU	SU	SU	SU	SU	SU	SU	SU	SU	Environmental Commitments NR-1, NR-2, and NR-3
Short-Term Disturbance of Wildlife due to Multiple Construction Projects Occurring at the Same Time	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-4: Retain a Qualified Biologist to Conduct a Preconstruction Survey for Nesting Swainson’s Hawk.

**Impacts:**

SU = significant and unavoidable  
S = significant but mitigable

PS = potentially significant but mitigable  
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B = beneficial impact  
n/a = not applicable

Impact	Alternative Tank Sites									Mitigation	
	N-1	N-2	N-3	W-1	W-2	W-3	S-1	S-2	S-3		
Long-Term Loss of Foraging Habitat	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-3: Implement the DFG Guidelines for Swainson’s Hawk Foraging Habitat Mitigation.
Construction-Related Traffic Impacts	LS	PS	PS	PS	PS	PS	PS	PS	PS	PS	Environmental Commitment TC-1

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**Table 5-2.** Summary of Impacts and Mitigation Measures related to Alternative Main Pipeline Alignments

Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
<b>Aesthetics</b>								
Impact AES-3. Adverse Effect on Scenic Vistas During Construction	LS	LS	LS	LS	LS	LS	LS	Environmental commitments CS-1—CS-3, as stated in the Project Description.
Impact AES-5. Changes in Light and Glare	LS	LS	LS	LS	LS	LS	LS	Environmental commitments SD-3 and SD-4, as stated in the Project Description.
<b>Agricultural Resources</b>								
Impact AG-4: Conversion of Prime Farmland to Non-Agricultural Use	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact AG-5: Conflict with Existing Zoning for Agricultural Use or Williamson Act Contracts	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact AG-6: Conflict with Agricultural Uses on Nearby Properties and Long-Term Conversion of Farmland to Non-Agricultural Use	SU	SU	SU	SU	SU	SU	SU	No mitigation feasible.
<b>Air Quality</b>								
Impact Air-5: Temporary Increase in Construction-Related Emissions during Construction Activities of the City of Modesto Facilities	SU	SU	SU	SU	SU	SU	SU	Environmental commitment AQ-1, AQ-2, GC-3 – GC-7, and GC-10, as stated in the Project Description.
Impact Air-7: Construction-Related Diesel Health Risk	LS	LS	LS	LS	LS	LS	LS	No mitigation required.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
Impact Air-8: Growth-Related Vehicle Emissions	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.
<b>Water Resources</b>								
Impact WR-10: Change in Drainage Patterns	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact WR-110: Construction-Related Water Quality Effects	LS	LS	LS	LS	LS	LS	LS	Environmental commitments WQ-1 – WQ-3, as stated in the Project Description.
Impact WR-12: Water Quality Impacts from Increased Drainage	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact WR-13: Water Quality Impacts from Project Operations	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact WR-14: Changes in Groundwater Quantity	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact WR-15: Flood Hazards	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact WR-16: Seiche, Tsunami, or Mudflow Hazards	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
<b>Noise</b>								
Impact NZ-3: Exposure of Noise-Sensitive Receptors to Construction Noise	LS	LS	LS	LS	LS	LS	LS	Environmental commitments NR-1 – NR-3 and GC-9 – GC-10, as stated in the Project Description.
Impact NZ-4: Exposure of Noise-Sensitive Receptors to Noise from Project Operation in Excess of 65 dBA, L <sub>dn</sub>	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
<b>Population and Housing</b>								
Impact POP-1. Displacement of Existing Housing Unit	NI	NI	NI	NI	NI	NI	NI	No mitigation required.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
Impact POP-2: Substantial Induction of Growth in the City of Modesto	SU	SU	SU	SU	SU	SU	SU	No feasible mitigation.
<b>Recreation</b>								
Impact REC-2: Temporary Disruption to Recreational Opportunities during Construction	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
<b>Cultural Resources</b>								
Impact CR-1: Disturbance to Previously Undiscovered Archaeological Resources	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure CR-1: Stop work, contact qualified archaeologist, assess significance of the find, and develop appropriate treatment measures.
Impact CR-2: Disturbance to Previously Undiscovered Human Remains	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure CR-2: stop work, notify county coroner, and notify California Native American Heritage Commission if remains are Native American in origin.
Impact CR-3: Disturbance to Built Environmental Resources	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Impact CR-4: Disturbance to Cultural Resources within Archaeological Resources Zones	NI	NI	NI	NI	PS	PS	PS	Mitigation Measure CR-4a: Conduct cultural resources surveys in Archaeological Resources Zones prior to construction.
								Mitigation Measure CR-4b: Complete a Cultural Resources Treatment Plan.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
<b>Biological Resources</b>								
Impact BIO-2: Potential Disturbance or Loss of Special-Status Wildlife Species and Their Habitat	NI	NI	NI	NI	PS	PS	PS	Mitigation Measure Bio-2a: Conduct Preconstruction Surveys for Valley Elderberry Longhorn Beetle and Avoid or Compensate for Loss of Habitat.  Mitigation Measure BIO-2b: Avoid and Protect VELB Habitat.  Mitigation Measure BIO-2c: Transplant Elderberry Shrubs.
Impact BIO-3: Loss of up to 15 Acres of Foraging Habitat for Swainson’s Hawk, White-tailed Kite, and other Special-Status and Non-Special-Status Migratory Birds and Raptors	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact BIO-4: Potential Disturbance of Nesting Swainson’s Hawks	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-4: Retain a Qualified Biologist to Conduct a Preconstruction Survey for Nesting Swainson’s Hawk.
Impact BIO-5: Loss of Western Burrowing Owl Nesting and Foraging Habitat	LS	LS	LS	LS	LS	LS	LS	No mitigation required.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
<b>Transportation</b>								
Impact TR-4: Temporary Traffic Increases and Potential for LOS Degradation during Construction of Pipelines	PS	PS	PS	PS	PS	PS	PS	Environmental Commitment TC-1, as stated in the Project Description.
								Mitigation Measure TR-4: Maintain Traffic Lanes and Limit Hours of Construction..
Impact TR-5: Temporary Traffic Increases and Potential for Degradation of Traffic Safety during Construction of Pipelines	LS	LS	LS	LS	LS	LS	LS	Environmental Commitment TC-1, as stated in the Project Description.
Impact TR-6: Interference with Emergency Access and Circulation during Construction of Pipelines	LS	LS	LS	LS	LS	LS	LS	Environmental Commitment TC-1, as stated in the Project Description.
Impact TR-7: Temporary Increase in Parking Demand for Construction Workers and Equipment	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact TR-8: Potential Pedestrian and Bicycle Hazards from Pathway and Bikeway Closures or Disruption during Construction of Tank and Main Pipelines.	NI	LS	LS	LS	NI	NI	NI	Environmental Commitment TC-1, as stated in the Project Description.
Impact TR-9: Potential for Increased Traffic and LOS Degradation from Operation and Maintenance	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Impact TR-10: Increased Parking Demand Due to Operations and Maintenance	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
<b>Cumulative</b>	NI	NI	NI	NI	NI	NI	NI	No mitigation required.
Direct Loss of Prime Farmland								
Direct Loss of Williamson Act Lands	NI	NI	NI	NI	NI	NI	NI	No mitigation required.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
Indirect Conversion of Agricultural Lands from Growth	SU	SU	SU	SU	SU	SU	SU	No mitigation feasible.
Construction-Related Emissions of PM10, Ozone, and Ozone Precursors	SU	SU	SU	SU	SU	SU	SU	Environmental Commitments AQ-1, AQ-2, GC-3, GC-4, GC-5, GC-6, GC-7, and GC-10 as stated in the Project Description.  Mitigation Measure CUME1— Implement enhanced measures to control PM10 generation, as recommended by SJVUAPCD (2002).  Mitigation Measure CUME2—Require use of other measures to reduce emissions.
Effects on Water Bodies Listed as Impaired	LS	LS	LS	LS	LS	LS	LS	No mitigation required.
Short-Term Noise Effects from Construction	SU	SU	SU	SU	SU	SU	SU	Environmental Commitments NR-1, NR-2, and NR-3
Short-Term Disturbance of Wildlife due to Multiple Construction Projects Occurring at the Same Time	PS	PS	PS	PS	PS	PS	PS	Mitigation Measure BIO-4: Retain a Qualified Biologist to Conduct a Preconstruction Survey for Nesting Swainson’s Hawk.
Long-Term Loss of Foraging Habitat	LS	LS	LS	LS	LS	LS	LS	Mitigation Measure BIO-3: Implement the DFG Guidelines for Swainson’s Hawk Foraging Habitat Mitigation.

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Impact	Alternative Main Pipeline Alignments							Mitigation
	Briggsmore Ave	Orangeburg Ave	Virginia Corridor	Tully Road	Yosemite Boulevard	M&ET Railroad	Oregon Drive	
Construction-Related Traffic Impacts	PS	PS	PS	PS	PS	PS	PS	Environmental Commitment TC-1.

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## Water Storage Tank Sites

### North Tank

Alternative site N-1 is identified as the environmentally superior alternative, as it would avoid impacts to aesthetics identified for Alternative site N-3, and would avoid conflicts with Williamson Act contracts identified for Alternative sites N-2 and N-3. This alternative would result in potentially significant impacts to transportation services, particularly on McHenry Avenue where the volume to capacity ratio would exceed 2.4. However, impacts to traffic would be temporary.

### West Tank

Alternative site W-1 is identified as the environmentally superior alternative. Alternative site W-1 would avoid impacts identified for Alternative site W-2 related to conflicts with Williamson Act contracts and conversion of Prime Farmland to non-agricultural use. This alternative would result in potentially significant impacts to transportation services, particularly on Carpenter Road where the volume to capacity (V/C) ratio would be higher than Alternatives W-2 and W-3 (V/C for W-1 would be 2.3, versus 2.0 for W-3 and 1.2 for W-2). However, impacts to traffic would be temporary; thus W-1 is the superior alternative.

### Southeast Tank

Alternative site S-1 is identified as the environmentally superior alternative, as it would avoid potential impacts identified for Alternative sites S-2 and S-3 related to presence of Valley Elderberry Longhorn Beetle habitat in close proximity to those sites. There would be no conflicts with Williamson Act contracts or conversion of Prime Farmland. The V/C ratio for traffic along Yosemite Boulevard would fail level of service criteria. However, impacts on traffic would be temporary.

## Main Pipeline Alignments

### North-South Main Pipeline

The Virginia Corridor alignment is identified as the environmentally superior alternative, as it would require the shortest construction time - 3 to 4 weeks, as opposed to 10 to 11 weeks required for the Tully Road alignment. A shorter construction period would reduce all construction-related impacts. In addition, traffic impacts would be substantially reduced relative to the Tully alignments since the alignment would be primarily located outside of City streets.

## East-West Main Pipeline

The Orangeburg alignment is identified as the environmentally superior alternative due to its reduced construction time. The Orangeburg alignment would require 15 to 16 weeks for construction, while the Briggsmore alignment would require 18 to 19 weeks. A shorter construction period would reduce all construction-related impacts. The Orangeburg alignment also has the smaller construction V/C ratio, 1.1 versus 2.0 from the Briggsmore alignment; therefore it would result in traffic impacts of reduced intensity.

## Southern Main Pipeline

The Oregon Drive alignment is identified as the environmentally superior alternative as it would reduce all construction-related impacts due to a shorter construction period, compared to the Yosemite Boulevard and Modesto & M&ET Railroad alignments. It would also reduce the traffic impacts relative to the other two alignments due to the greater portion constructed off-road.